severn wye

Target 2030
Countdown to a low carbon economy

The Cotswold Bed Company Ltd Cheltenham

Energy Efficiency Report

September 2022

HM Government

EUROPEAN UNION
European Regional Development Fund

Project Background

Gloucestershire Target 2030 is an SME business energy efficiency project that aims to support businesses in achieving a step change in their energy consumption and putting themselves on a more sustainable footing for the future. The support service is funded through the European Structure and Investment Funds.

The programme aims to support 345 SMEs in a six year time scale.

Each business initially benefits from an on-site meeting with one of Severn Wye Energy Agency's (Severn Wye) business energy experts, an on-site energy audit, and a detailed energy action plan report highlighting the key points arising from this.

Following on from the initial energy efficiency advice SMEs are able to apply for partial grants towards energy efficiency measures. The grants are in the range of £500 to £60,000 to a maximum of 30% of the installation cost.

This report contains the survey findings and recommendations for The Cotswold Bed Company Ltd.

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Executive Summary

Severn Wye conducted an energy survey of Cotswold Bed Company Ltd premises on the 13th September 2022. The complete report has been presented together with a range of no, low, and capital cost recommendations.

The site has an estimated **annual energy spend of approximately £7-8,000 with 8.4 associated carbon emissions of tonnes**. Potential year round savings in electricity have been identified. The majority of energy used at the site is for space heating, lighting and for works equipment.

Potential year round savings of at least **£5,000** have been identified although it is expected that actual savings could be higher. A comprehensive list of recommendations identified in the report can be viewed in Section 4.

The following measures are recommended for consideration for funding under the Target 2030 grant scheme:

Measure	Annual Saving (£)	Ten Year Cost of Inaction (£)
	£	£
Cavity wall insulation	£500	£5,000
Replace electric heating with Air to Air heat pump solution	£2,000	£20,000
Improved heating controls (infrared heaters)	£150	£1,500
Install a 16.5-30kWp solar PV array.	£2,000 - £3,700	£20,000 - £37,000

Please note, the savings figures detailed in this report are considered individually and do not factor in the savings from cumulative (or previous) improvements.

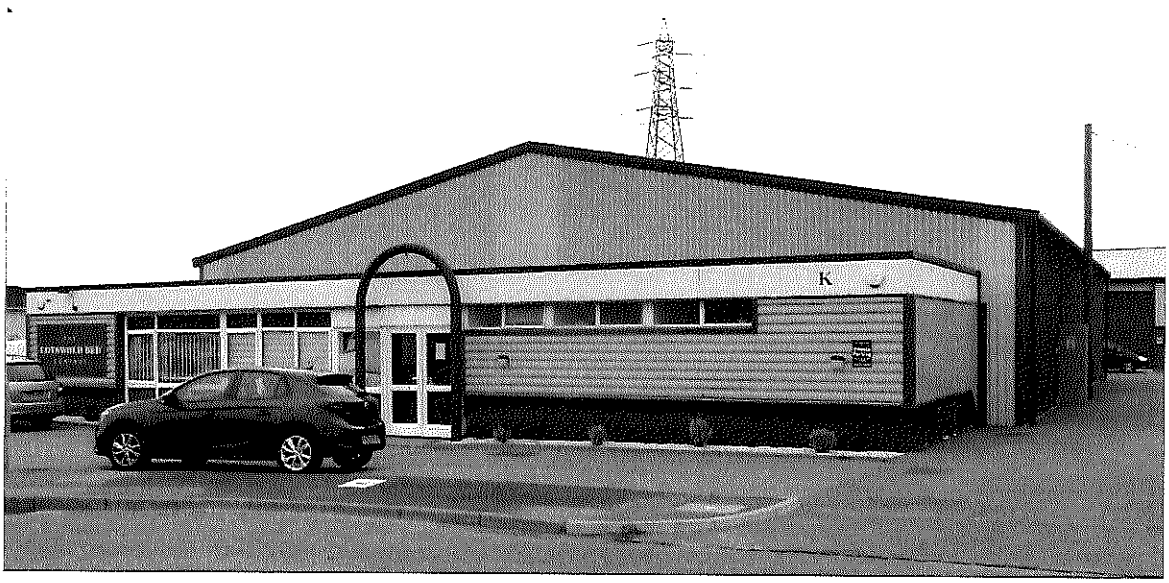
Severn Wye Energy Agency is pleased to be able to offer this energy report to you for consideration.

Contents

Introduction and General Description

The Cotswold Bed Company Ltd in Cheltenham produce bedroom and household furniture for wholesale and retail supply across the UK. The company is based on an industrial site close to the Swindon Village area of Cheltenham where they have two separate but adjacent buildings. They have been located at the site for the past four years. The company who were incorporated in 2005 employ around 30 staff members who typically work over a 7am to 6pm working day during the working week as well as opening on Saturday mornings.

The Cotswold Bed Company were interested in understanding where energy cost savings could be made across the building, particularly in regard to improvements to the site heating systems and opportunities for solar electricity generation. They also hope to understand the value of improvements that would help them to reduce their carbon impact and to become a more sustainable company in the future.



Energy Data

Electricity is currently used for all energy requirements as mains gas is not available to the site. The primary uses for electricity within the two buildings are for space heating, works equipment (including compressors and hand tools), lighting and IT facilities.

Electric bills for the building were not available, though energy costs for the past 12 months were estimated by the site owner. An estimated cost of 19p per unit of electricity (kWh) has been used to ascertain the likely energy costs for the site as a whole.

This energy data has allowed estimated annual energy use and carbon emissions to be calculated. More accurate calculations and saving estimations could be possible with monthly energy use data for each month over a year or for a longer period.

The table below shows the total annual energy consumption of the business.

	Annual Consumption		Annual Cost (ex VAT)		Carbon	
Utility	**kWh**	**%**	**£**	**%**	**kgCO2e**	**%**
Electricity	39,474	100	7,500	100	8,433	100
Total	**39,474**	**100**	**7,500**	**100**	**8,433**	**100**

Table 1: Annual consumption, cost, and carbon equivalent

Table 1 illustrates energy consumption at the business, converted into carbon dioxide emissions (CO2). This is for the purpose of understanding what impact business energy use is making environmentally. This equates to 8.4 metric tonnes of CO2 and given that the average household emits around six tonnes of CO2 per annum, the business emits the same amount of CO2 as close to 1.5 homes.

The following figures have been assumed when calculating the savings presented within this report.

- **Electricity unit cost:** 19p per kWh
- **Carbon emission factor**: 0.21364 kg CO_2e/kWh

Commentary

Energy costs have risen significantly in recent months, driven by increases in the wholesale energy markets. Domestic energy prices increased by approximately 50% in April 2022 and further increases of up to 80% were due to be introduced in October. An energy price cap for businesses is to be introduced for a six month period in November 2022. If The Cotswold Bed Company are within an agreed supply contract signed prior to April 1st 2022, and this contract

runs to beyond March 2023, then the price cap will not apply to the company. The price cap will be applied automatically if the company are currently out of contract, on a variable contract, or if a new contract is applied to during the six month scheme period.

Although costs may fall in the medium to long term, they are unlikely to return to previous levels.

A significant increase in charges should be expected when current rates are next renewed. Some businesses are seeing rates increase by 200-300%.

An increase in energy costs can be mitigated through the installation of energy efficiency measures including those suggested in this report.

Monitoring & Targeting

Detailed and regular energy monitoring is the key starting point in sound energy management practice. **What is not measured cannot be managed.**

Monitoring of energy consumption allows detailed analyses against previous weeks, months and years and can support the identification of reasons behind any large increases in consumption. Energy analysis can also be used to better understand the benefits of making improvements such as the potential investment in heat pumps or a solar PV array.

It is recommended that the energy supplier is asked about installing a 'smart meter'. These will offer more accurate billing as well as allowing for improved monitoring of energy use throughout the day. Regular monitoring, recording and analysis of electric use at the site will aid in developing an understanding of where and when energy is used.

This data should be discussed every year at management meetings to enable wider discussions on the company's environmental impacts to take place. This will also enable management to set realistic targets for reducing consumption year on year and also to disseminate performance to staff, and potentially clients through an annual report.

The organisation should consider setting a target for reducing energy consumption which should be reviewed year on year. It is recommended that the business consider setting a target for year one at 25%.

Ring Fencing Energy Savings

A proportion of the savings achieved from one year should be used to invest in further energy saving measures from the action plan at the end of this report. This results in a cycle of continuous improvement and energy cost reduction and firmly sets the organisation on its path to contributing to a Low Carbon future.

Trigger Points for Energy Efficiency Opportunities

A trigger point in terms of energy efficiency is a point within a building/organisation where a change is about to occur. The idea is to consider the following:

Is this an opportunity to reduce costs, improve efficiency or reduce carbon?

Examples of trigger points could include:

- Running services under a floor.
    - Could insulation be added while the floor is opened up and the disruption is already taking place?
- Weather proofing a roof
    - Could insulation be added at the same time, or a solar array added?
- Extending / refurbishing a building
    - Could the new building services be considered to improve the existing building?

It is important to stress that it may not always be possible to implement energy saving measures at every trigger point opportunity, but the question should still be asked. If the question is not asked, opportunities may be missed which could result in increased future costs and more disruption if the improvements are then added later.

Using an Energy Broker

One of the best ways for a business to keep a handle on energy costs is to ensure it is not on an overly expensive energy tariff. Most people are aware of comparison sites for domestic properties, but businesses need to be credit checked have to sign contracts with the energy supplier based on the past year of consumption and so each business needs to talk directly to the suppliers to get comparisons. It can be time consuming to call around suppliers and even then the best rate may not be offered.

Using a good Energy Broker has several benefits:

- They save the business time and stress by arranging for the energy suppliers to bid for contract on the same afternoon.
- Often a broker can get a better tariff than would be offered to the business direct. As the energy suppliers know that the broker has a good knowledge of how the industry works and will be arranging for multiple quotes on the same day and so if the energy supplier wants the business they will put in a good offer first time.
- Energy contracts often have unhelpful time clauses where the business must let the energy supplier know (often a few months before the end date) that they do not want to automatically remain with the existing supplier when the current contract runs out. The broker will contact the business to let them know when the contract is due and will ensure the contract is cancelled in writing at the correct time.

If a broker is not already used then it is recommended that one is contacted to help with future energy contracts.

It is also recommended that the bills are checked to see when the current energy contract comes to an end.

Survey

Building Fabric & Insulation

The buildings occupied by The Cotswold Bed Company are typical of light industrial units and are likely to have been built between the 1960's to 1990's and have been adapted to suit the use of the tenants over this time. It was commented that the pitched workshop roofs were insulated immediately prior to taking on the buildings and the majority of windows are of modern double glazed standard (though some single glazed area remains). The shutter door to the main full height workshop also appears to have been recently replaced.

The main building also has an enclosed single storey office area that also incorporates the staff kitchen, and bathrooms. It is not known if the flat roof above this area was insulated at the same time as the workshop.

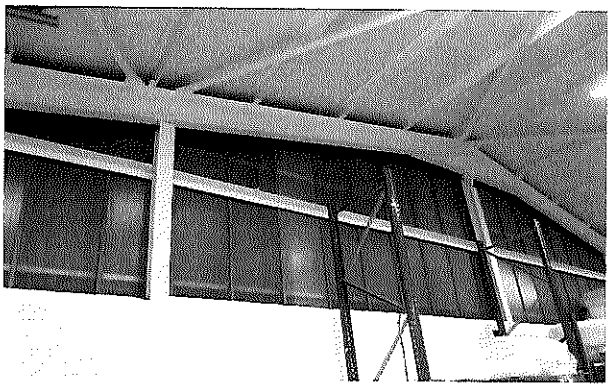
It was commented that heating costs are considered to contribute to a significant part of the annual energy costs. Thermal improvements to the building fabric should be considered to improve comfort as well as reducing heating and cooling costs.

Cavity Wall Insulation

Modern homes and many non-domestic buildings are constructed with two layers of masonry (brick or block) with at least a 50mm air gap ('cavity') in between them. Walls at the front and rear of the buildings have been clad, though the exposed side walls appear to suggest that the building is of cavity construction. At the time the building was constructed it was not always common practice to insulate this gap and there was no evidence of retro-filled insulation.

The air gap can be filled using insulating material to reduce the amount of heat lost through the walls. Specialist cavity insulation contractors offer free, no obligation surveys to confirm whether there is a cavity, and if so whether this can be filled. Adding insulation would help to improve comfort as well as reducing the overall heat demand & running costs. Savings are estimated at £500 annually based on a 15% saving against estimated heating costs.

The approximate cost of cavity wall insulation is £8 per m2. All cavity wall insulation is guaranteed for 25 years by a government backed scheme (CIGA).



Consideration has also been given to insulating the uninsulated glazed areas (that have been clad externally) within the workshops. This could be achieved by infilling the glazed area with insulation boards. This would not only help to reduce heat loss and associated energy costs, but also improve comfort for staff members.

Figure 1: Consider insulating old, glazed areas to reduce heat loss

Flat roof insulation

The single storey areas at the front of the buildings have flat roofs. It is not known if these roofs were also insulated at the same time as the pitched warehouse roofs. It is recommended that, when possible, insulation levels are checked, and opportunities are taken to improve insulation if required. An idea trigger point for this would be when repairs or roof cover replacement is required in the future. Improved insulation will reduce heat loss and associated energy costs.

There are a number of methods by which insulation could be added either from above the roof externally (Warm flat roof) or internally (Cold flat roof). Warm flat roof options are typically preferred as these methods avoid potential internal condensation issues that can arise with cold roof solutions. If a cold flat roof solution is preferred, an air gap is required between the roof and insulation which can reduce the effectiveness of the insulation.

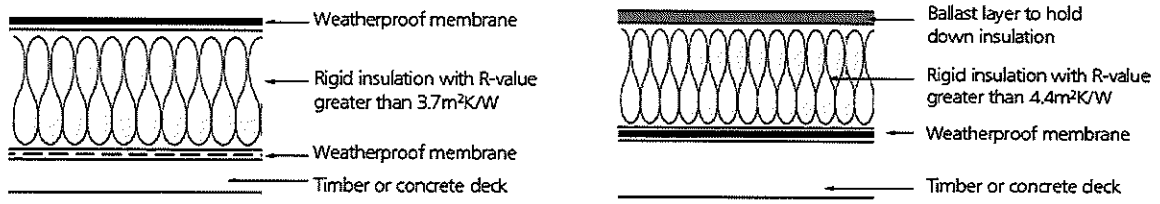


Figure 2: Warm Flat roof insulation methods

Glazing

It is recommended that the remaining single glazed windows are replaced with double glazed units. Energy cost savings would be relatively low when compared to the capital cost of new windows, though comfort improvements are likely to be noticeable, particularly if focus is given to improving single glazing in office areas initially. Windows in toilets and kitchens could then be replaced when viable or appropriate.

Heating & Hot Water

Offices, Sewing room & common areas

Space heating demand within the offices, sewing room and common use areas is primarily provided by electric convector heaters and plug in electric heaters that are used as necessary. The convector heaters incorporate thermostats and 24 hour timers. Electric convector heaters are well suited for use in bathrooms and toilets and other rooms that have a lower or only occasional heating requirement. Where used, electric heaters should incorporate accurate time and temperature control. A disadvantage of just having 24 hour timers (as opposed to 7 day timers) is it's possible heaters will operate when not required at weekends, wasting energy.

Assuming that the five plug in heaters and eight convector heaters run in the 2kW setting for 6 hours a day, 5 days a week during the heating season (approximately 20 weeks of the year) annual consumption would equate to around 15,800kWh (Around £3,000 based on assumed unit rate). If these units run 7 days a week, then they could be costing £4,200 or more if they are on for longer.

Alternative heating solutions

Alternative low carbon heating options, specifically the provision of heat pumps to provide a heating solution for the building should be considered and could reduce heating costs by over 50%.

An air-to-air heat pump system provides reasonably quick response warm air offering improved control and energy cost savings.

Air Source Heat Pumps (ASHP)

Air source heat pumps consist of external condenser units that absorb the heat from the outside air and internal units that provide the useful inside heat.

For every unit of electricity these units consume, they give out 3 to 4+ units of heat. These systems also have good controllability and so overall could reduce the associated heating costs at the site by up to £2,000 & 2.7t carbon. (Assuming an annual heat demand of 15,600kWh and heat pump COP of 3.0).

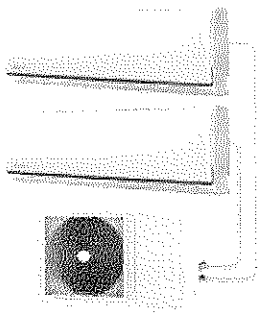
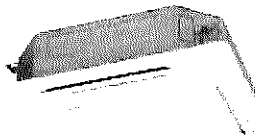


Figure 3: Air to air Heat pump



There are some extra functions of air-to-air heat pumps:

- Some of these systems can also provide cooling in the summer to prevent overheating (a number of plug in fans were noted across the site). If the cooling aspect was used it would increase energy consumption in the summer and if used too much could offset the savings during the winter. (Unless solar panels were also installed).
- Units can also be used to dehumidify the air.

An air-to-air heat pump that can provide heating, cooling and control the humidity is also known as air conditioning.

Workshop heating

Four independently controlled Infrared / radiant heaters located adjacent to workstations are used to provide occasional heating in the workshops.

Radiant heaters can be considered an energy efficient method of heating localised areas in large, open or draughty areas. Currently it is understood these heaters are switched on and off as required. The risk with this approach is that heaters are left on when not required potentially wasting energy.

Improved heating control

Improved control of radiant heaters will reduce unnecessary use and reduce energy costs. Assuming a 15% saving on assumed heating costs, savings in the region of £150 annually are possible.

Options to improve control could include the following:
Motion Sensors – PIR sensors that switch on individual heaters based on occupation within that area only.

Run down timers – Set to provide perhaps a single hour or 30 minutes of heat. Turned on at the heater as required. This would ensure heaters are not running for long periods unnecessarily.

Black bulb thermostats – A temperature sensor designed to measure and respond to radiation temperatures (as opposed to air temperatures).

Lighting

It was positive to note that a programme of works has been initiated to replace the vast majority of existing internal and external lighting with LED's. However, a small amount of fluorescent lighting was noted in the Woodmill and this could also be replaced.

Lighting controls

Consideration should also be given to fitting PIR motion and / or daylight dimming sensors. These would be beneficial in areas within the building that are not used regularly (such as toilets) and those areas which regularly receive a high proportion of natural light (daylight dimming – within the workshops).

This would avoid instances of these lights being left on during the day when they are not required and in areas used infrequently, they can save 50-70% of lighting energy use.

Electrical Equipment

A significant proportion of electric consumption at the site can be allocated to space heating, and lighting.

The remainder of the consumption is allocated to the following areas:

- Compressed air services
- Works machinery (including motors & fans)
- Hot water (hand & dishwashing only)
- IT Equipment
- Kitchen equipment / refrigeration

Compressed air

The Carbon Trust estimates that a compressor can typically account for up to 30% of a site's total electricity use. Of the total energy supplied to a compressor as little as 8-10% is converted into usable energy making this a very expensive method of transferring energy. Many systems waste around 30% of the compressed air through leaks, poor maintenance, misapplication and poor control.

It was encouraging to note that the compressors at the site have recently been replaced with modern efficient compressors.

Potential air compression system savings need to consider the entire air compressor system (not just the compressor itself) and this could be achieved by including the following:

- **Calculating the electrical consumption of the compressor and monitoring use.** This is best achieved if sub metering is possible. Alternatively, a data logging system could be used for a period of time. The pressure drop across the system can also be measured. For every one bar of pressure drop, energy costs can rise by around 7%.
- **Reducing the pressure within the system**. A 10% reduction in pressure will achieve a 5% saving on running costs. It is recommended that the pressure of the system is reviewed and reduced over a period of weeks if possible. This needs to be completed in small increments to check that operations are not affected. System pressures are often increased over time to overcome leaks and so the pressure should also be reviewed after repairing system leaks.

- **Leak reduction**. Around 90% of energy used in compressed air systems is lost as heat. As such leaks within the network can cost a considerable amount in wasted energy each year, it is recommended that after the initial system checks for leaks, the business have a system in place whereby all leaks are reported and repaired as soon as possible.
- **Staff training.** Ensure staff are aware of the costs associated with compressed air, the potential cost of air leaks and the importance of saving energy.
- **Switching it off**. Is equipment left working when not required? If not already incorporated, improved controls can ensure that compressors systems are only operational when required. Even when off-load compressors can consume up to 70% of their full load power.
- **Reuse the heat produced**. The compression process generates tremendous amounts of heat. It is possible to recover some of this heat and use it for other means. The heat could be transported by ducting the warm air to areas where it is needed such as to unheated warehouse rooms. This could be achieved by employing a specialist heat recovery design installer to engineer a solution.

Works machinery

It is estimated that up to 90% of pumps used in the UK are not variable speed. Updating pumps, motors and fans to make use of variable speeds can result in significant savings. A 20% speed reduction can save 50% in energy use

Kitchen equipment / refrigeration

When purchasing any refrigeration or kitchen appliances in the future ensure that these are the most energy efficient option possible to minimise operating costs & energy use. An old under-counter fridge could be costing more than a £100-150 a year to operate – often just to keep the odd bottle of milk cool. Modern A rated fridges cost a fraction of this to operate (£10-20 per year) and the energy use is clearly stated on the new energy labels that all new refrigeration units are packaged with. It should be noted that G is now the least efficient (new to market) fridge/freezer available.

Water Savings

Carbon reduction plans at the site should also consider the use of water. Reducing the volume of water consumed overall as well as the energy required to heat water.

Toilets

Consideration should be given to fitting volume adjusters such as a 'hippo bag' or a 'save-a-flush' to 9 litre WC cisterns. This will reduce the amount of water per flush by up to 2 litres. Care should be taken to not put too many in because if too little water flows then people will

start double flushing and end up using more water. Alternatively, dual-flush toilets could be specified when replacements are required.

Taps

As bathroom taps are not low-flow or incorporate an 'auto-off' function they may deliver a flow rate of up to 20 litres per minute.

Water efficient taps save not only water but can also reduce energy consumption due to the amount of energy required to heat hot water. Fitting a tap aerator at a cost of £5 per tap could result in water and sewerage savings of around £13 per tap per year.

Urinals

Urinal flush controls were not apparent in the gents toilets, though it is possible that these were located out of view. If not installed, PIR and / or timer controls are available to reduce wasted water from uncontrolled flushing. A system on a 20 minute fill/flush cycle could waste over 200,000 litres of water per annum.

Renewable Energy Options

In keeping with our sustainable energy hierarchy, Severn Wye always advises that the potential for small-scale renewable energy technologies is considered normally after all opportunities for energy saving have been implemented.

Solar Photovoltaic Panels

Background guidance

Solar photovoltaic (PV) is now a popular and widely deployed technology across all sectors, with recent growth driven by dramatic price falls and the UK arrival of feed-in tariffs (FITs) available 2010 - 2019.

System Costs

Typical small-scale solar PV systems would currently cost around £1,000–1,800 per kW of peak installed capacity, as reflected in the calculations presented later. It should be noted that only a few years ago, the cost would have been closer to £4,000–6,000 per kW. Further dramatic price falls are not expected, since the basic panel price is no longer the dominant component of overall system costs.

Energy Generation

A typical well-sited 1 kWp solar PV system in the facing south will generate 900-950 kWh annually, based on real data from a local installations monitored by Severn Wye. Some systems are achieving even higher outputs in this area, although annual figures will vary by +/- 5% based on the weather. While South facing systems will have the higher generation, systems can also work adequately on other orientations. East or West facing systems generate typically around 20% less and North East and west facing installations around 40% less.

Inclination (variation from horizontal)	Orientation (variation from south)																		
	NW			W			SW			S			SE			E			NE
Slope	135	120	105	90	75	60	45	30	15	0	15	30	45	60	75	90	105	120	135
90	32	37	44	50	56	61	65	68	70	70	70	68	65	61	56	50	44	37	32
80	37	44	50	57	64	69	74	78	80	80	80	78	74	69	64	57	50	44	37
70	43	50	57	64	71	77	82	86	88	88	88	86	82	77	71	64	57	50	43
60	49	55	63	70	77	83	88	92	94	95	94	92	88	83	77	70	63	55	49
50	54	61	68	75	81	87	92	95	98	98	98	95	92	87	81	75	68	61	54
40	60	66	72	78	84	89	94	97	99	100	99	97	94	89	84	78	72	66	60
30	66	71	76	81	86	90	94	97	99	99	99	97	94	90	86	81	76	71	66
20	72	75	79	83	86	90	92	95	96	96	96	95	92	90	86	83	79	75	72
10	78	80	82	84	86	88	89	90	91	91	91	90	89	88	86	84	82	80	78
0	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84

Figure 4: Percentage of achievable peak output

Safety & Maintenance

Solar panels require very little maintenance. They do need to be kept reasonably clean, but mounting the panels at a standard roof angle will ensure that rain will wash most of the dust

off the array. The panels can be cleaned by hand using a hose if required. The panels have a glass covering which can be smashed if hit by hard objects – it is best to site panels where they are unlikely to be subjected to vandalism or have things dropped on them.

Connections & Metering

As well as the panels, space needs to be found for one or more inverters, which convert DC power to grid-synchronised AC power before feeding it into your existing circuits or the grid. Inverters will shut down the PV system in the event of any grid anomalies, including power cuts; they can also start-up and re-synchronise automatically when the grid stabilises again. Inverters are always wired such that they can also be isolated manually via switches on both the DC and AC sides (see schematic), but under normal usage, their operation is fully automatic.

Metering is another important consideration: a generation meter records all units generated by the PV system. Generation meters are now to be fitted as standard by all solar PV installers. It is sometimes desirable to fit a separate export meter to record only the net units exported to the grid and this would be required to be eligible for any export payments.

Economics

Mainstream grant support for PV has long gone and the Government's Feed-In Tariff scheme closed at the end of March 2019. However, the introduction of a new government scheme in 2020 the 'Smart Export Guarantee' now requires large energy suppliers to pay for electricity exported from privately owned systems (typically up to 5p per kWh). A smart meter is required (or an export meter installed at the same time as the array). This can improve the payback period of any system installed.

Further guidance on the scheme can be found here:

www.ofgem.gov.uk/environmental-programmes/smart-export-guarantee-seg/about-smart-export-guarantee-seg

Site Suitability

Site Specifics

There is scope for a solar PV array to be installed on the south east and the north west facing roofs of the main building. A larger array could also be considered on the smaller south west facing roof of the woodmill.

The maximum size of an array may be determined by the power supply to the site and by the District Network Operator (DNO) who will need to give permission for systems over 4kW (or over 11kW if there is a three phase supply). Installers can typically advise on this aspect. The suitability of the roof structure, and its potential loading capacity would also be checked by solar installers.

Actual energy consumption and ideally daily energy profiles would allow for better sizing of a system to meet the demands of the properties. The table below shows the estimated energy generation and financial scenario for the installation of a 35kWp or 16.5kWp array assuming

that 65% (scenario 1) and 75% (scenario 2) of the annually generated electricity is used on site.

System Details	Scenario 1	Scenario 2
System capacity (kWp)	35	16.5
Annual generation (kWh)	30,205	14,248
Offset units (kWh)	19,633	10,686
Exported units (kWh)	10,572	3,562
Import savings	£3,730	£2,030
Export income	£529	£178
Total annual income/savings	£4,259	£2,208
Full installed cost	£30,782	£16,500
Simple payback	7.2	7.5

An import cost of 19p per unit has been assumed. This shows a payback on the investment in around 7-8 years. (Likely to be around 4 years based on future import costs of around 38p per kWh).

Assuming an array is possible, the company would need to decide if they wish to take an approach that prioritises Carbon or Finance.

Carbon – Assuming the DNO allows, a large enough system could be sized to provide for around 75% of the site electricity demand (Scenario 1) or 100% or more if the north west roof was also utilized.

However most of this generation would be in the summer and a high proportion would be sent back to the electricity grid, particularly at weekends when the site is not in use. Utilisation could be increased with batteries or charging of electric vehicles or if cooling is needed in the future.

Financial – The array would be sized to ensure the maximum proportion of the generation is utilized onsite to reduce the energy being imported from the grid (Scenario 2). This may also be combined with energy storage solutions.

Maximising the size of the array at the site to allow for increased future demand may be worth investigating. Alternatively, if a smaller array is specified, ensure it is installed with future expansion in mind.

Batteries

The battery market is rapidly growing as more manufacturers start looking at ways to innovate and address some of the challenges within the solar power industry.

Battery technology is coming of age with the energy supply industry now looking at time of day tariffs. Not only can batteries be used to store onsite generation they could also be used to help shift energy demand away from higher cost peak rate times.

Currently, a 9kWh battery system would cost in the region of £5,000 (Or 18kWh around £8,500).

Electric Vehicle Charging points

The Government have recently announced that new petrol and diesel cars and vans powered wholly by petrol or diesel will not be sold in the UK from 2030. Now could therefore be an ideal time to consider installing car charging points at the premises for staff, visitor and company vehicle use.

There are several types of vehicle chargers:

'Route' chargers (ultra fast) are typically sited at motorway services and are intended to recharge an electric vehicle in half an hour. They are expensive (£30k each) and require maintenance.

'Destination' chargers are sited at home, workplaces or hospitality venues and take from 2 to 8 hours to recharge a car. They are much cheaper to install (between £350 to £1,500 per charger) and can be set up to allow access for key holders only or be open for general use. These publicly available chargers can utilise a number of methods to allow the user to pay for their charge, and for the owner to cover the cost of the electric used and provide an income stream.

Deciding on the charger that would be suitable for the site will depend on a number of factors, typically:

- The available power supply
- Accessibility
- User demand (who will have access & how will they be charged)

If the company are interested in installing EV charging points it should look to apply for funding through the Governments 'Workplace Charging scheme' which is offering 75% of purchase and installation costs, up to a maximum of £350 for each socket, up to a maximum of 40 across all sites for each applicant.

https://www.gov.uk/government/publications/workplace-charging-scheme-guidance-for-applicants-installers-and-manufacturers

Recommendations

Suggested Action Plan

Physical and behavioural recommendations identified in the survey are detailed in the suggested three part action plan: Part one contains no cost measures; part two lists low cost measures and part three contains capital cost measures. Severn Wye can usually provide information, guidance, and assistance on financial and fiscal incentives available to implement these measures. Please note, any savings and payback figures detailed are considered individually and do not factor in the savings from cumulative (or previous) improvements.

Please take time to check the following action plan. Once the plan has been adjusted to include only those measures that you will consider implementing, please arrange for the action plan to be signed and returned to Severn Wye. Once an action plan is received, Severn Wye can provide follow up support in any areas that you may require.

Action plans assist businesses in taking steps to reduce energy consumption and cost, allow Severn Wye to provide relevant support, and meet the need to demonstrate to the ERDF (which is funding the programme) the predicted cost and CO2 savings.

Action plan: No cost measures

Action	Implementation date	Cost (£)	Person Responsible
Establish a simple written energy/carbon policy including cost considerations, energy management issues, and objectives.		0	
Take regular energy meter readings to aid in determining where and when energy is being used & to ensure accurate billing. Or request a Smart meter if not installed		0	
Consider utilising the services of an energy broker for electric supplies if not already used		0	
Ensure 'trigger points' in any building redecoration or refurbishment take into account energy efficiency		0	

Initiate regular cleaning and maintenance programme for lighting and any fans	0
Request a free, no obligation quote from a cavity wall installer to ascertain if cavity walls can be insulated	0
Consider introducing compressed air saving policies	0

Action plan: Low cost measures

Action	Implementation date	Cost (£)	Financial saving or Simple Payback	Person Responsible
Replace remaining fluorescent lighting & consider adding PIR motion sensors / daylight dimming to lighting in relevant areas		£15 lamps + install. £20 per sensor + install	Within 3-4 years	
Fit aerated / auto off taps		£5 (Aerators) to £100 (new taps) per sink Approx.	Within 2-3 years	
Fit water volume adjusters such as 'save-a-flush' / consider dual flush toilets when replacements are due		£3-5 per unit / £200 Approx. per toilet	Within one year	
Install PIR motion sensor control for urinal flush.		£200 (plus labour)	2-4 years	