



South Somerset District Council Project Brief

Approved Budget within Service Plan? No

Project Number: 2017

Project Name: Installation of 14 kW photovoltaic array on the roof of the new Yeovil Innovation Centre extension

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0 Document Control

0.1 Document Approval

Name	Organisation	Role	Approval	Date

0.2 Revision History

Version	Author	Review	Reason For Issue	Date

0.3 Document Distribution

Name	Organisation	Role
Catherine Hood	SSDC	
Laurence Willis	SSDC	
Peter Biggenden	SSDC	
Henry Hobhouse	SSDC	

0.4 Document References

Section Reference	Document Referred	Document Title

1 Purpose

This document details how energy costs and carbon emissions will be reduced through installation of a 14.08 kilowatts (kW) photovoltaic (PV) array of panels on the new extension of the Yeovil Innovation Centre

2 Project Outline

This is an Income Generation Project expected to have long term financial value due to reduction of electricity bills and income from deemed export and the feed in tariff.

2.1 Authority Responsible

The Income Generation Board has requested this project because it has a long term financial value.

2.2 Background

Equipment prices have dropped and grid electricity prices will continue to rise. Although the feed in tariff has dropped considerably it is currently still in place and the EPC level D for the building enables the higher rate of 4.36p/kWh. Deemed export of 50% of total generation will provide an additional income of 5.03p/kWh. The YIC has high daytime occupancy and therefore all solar electricity generated will be used weekdays and possibly the weekend. This will displace grid electricity costing 8.1p/kWh

The six PV arrays already installed on the council's buildings have performed well, giving returns equal to or exceeding original estimates.

The architect for the building specified the position and number of PV panels and our Property Services Team have been consulted on the details of installation.

2.3 Project Objectives

- Council Plan Environment focus; "To keep South Somerset clean, green and attractive we will promote a high quality built environment in line with the local plan"
- Council priority project for 2017/2018; Delivery of Phase 2 of the YIC (PV is included in the design)
- Reduction of electricity import and subsequent reduction of carbon emissions and electricity costs (as measured through quarterly electricity bills.)
- The asset will be owned by the council

2.4 Project Scope

Inclusions

We will purchase photovoltaic panels, mounting gear, inverters, grid connection equipment, generation meters, all cabling and installation.

Exclusions

The cost of scaffolding is not included as the timing of installation is expected to coincide with the build scaffolding still in place.

Constraints and Decisions

Constraint	Mitigation
The array design must conform to the architects drawings	Design drawings were shared with prospective installers
Installation must be co-ordinated with the extension construction programme	The timing is being co-ordinated with our property services team
Property Services will need to prioritise this installation amongst many other tasks competing for their attention	The YIC extension project is prioritised by members and is included in the council plan.

Interfaces

This installation will be the seventh on council buildings to date.

2.5 Quality Expectations

To ensure best value and comply with the council's procurement rules, four quotes from supplier / installers were sought. These were considered by the Climate Change Officer and Spectrum Electrical chosen as the preferred installation company.

The renewable electricity generation will be recorded on a generation meter. This will enable quantification of the financial and carbon savings. It will also be used to claim the Feed in Tariff.

2.6 Carbon Management

Estimated carbon savings are quantified below using the Photovoltaic Solutions (PVSOL) computer modelling, which is the standard package used by the photovoltaics industry. It uses all relevant variables – such as location, roof pitch, orientation to south, panel and inverter type - and is therefore a relatively accurate assessment but deliberately designed to underestimate performance. Six existing arrays have outperformed original estimates by around 20%.

Array location	Size	Output PVSOL (kWhy)	CO ₂ savings (tonnes year)
YIC extension roof	14.08	13,576 kWhy	5.7

3 Initial Business Case

3.1 Reasons

We need to reduce spending on electricity bills at the Yeovil Innovation Centre in the long term and carbon emissions from our electricity use to meet our carbon targets. The government has an expectation that local authorities will reduce their carbon emissions year on year.

3.2 Anticipated Benefits

Use of grid electricity and emissions of carbon dioxide from that electricity use will be reduced. Equipment suppliers and installers - Spectrum Electrical – have used industry standard methodology PV Sol to estimate the annual electricity generation, which is designed to ensure that generation is not overestimated. Financial benefits are based on the current feed in tariff rate of 4.36p/kWh, electrical import at 8.1p/kWh and deemed 50% export at 5.03p/kWh

Financial benefit

System size (kW)	Estimated annual output (kWh)	Annual value of feed in tariff , electrical export and reduced bills	Cost	ROI (20 yr interest at 2.23%)
14.08	13,576	Feed in tariff £ 592 Reduction in electricity bill £1122 deemed 50% export £ 341 Total £2,033	£16,111	8.4%

Based on experience to date of our current six arrays, the reality will be different. Our current portfolio of five PV arrays generated 20% more during 2016 than the pre-installation annual estimates. The decision by Income Generation Board to proceed was based on was based on the 8.4% RIO achieved with 20% enhancement of the PVsol estimate. However, the financial analysis below is based on standard PVsol estimates.

The electrical output generally peaks at midday (dependent on cloud cover), which matches very well the peak in electrical demand at the Yeovil Innovation Centre. The electrical output over the course of a year represents about 6% of the buildings demand. It is expected that all the electricity generated during working days will be used on site, thus giving it the highest possible value. Feed in tariffs for this size of installation are 4.36 p / kWh. The day time rate for imported electricity at the Yeovil Innovation Centre is 8.1 p / kWh.

3.3 Options

Officers asked for quotes for two different qualities of panel. Although the panels chosen are the most expensive, they are 2% more efficient, which means they will generate more electricity and income.

3.4.1 Expected Duration Of Project				
	Start date:	March 2018		
	Other Key Milestones with Dates:	Installation		
	Expected Completion Date:	March 2018		
3.4.2 Estimate of Officer Time Required: -				
	Officer's Name	Estimate of Officer hrs	Officer available? Y/N	Agreement of Officer? Y/N
	Property Management Officer	4	Yes	Yes
	Climate Change Officer	6	Yes	Yes
	Comment by Property Services:	Resources exist within Engineering and Property Services to manage this project.		
	Comment by Information Systems (if new IT system):	Not applicable		

	Comment by Equalities Officer:	Not applicable
	Comment by Other Services requiring significant input:	Not applicable
3.4.3 Risk Assessment		
	Risk	Steps taken to mitigate Risk
	The supply and installation company must be of good reputation.	We used Spectrum Electrical to install our most recent PV installation at Brympton with no problems
	Vandalism to equipment	Security systems are in place to prevent unauthorised entry to site and the PV cannot be seen from the ground
	There is a quarterly deployment cap on feed in tariff applications raising the possibility that we could be rolled over to the following quarter with a reduced tariff	In the quarter up to 30 th June 2017, only 9,542 kW have been deployed but the cap is 49,563 kW. The risk that the deployment cap is reached before our FIT application is therefore considered very low.

4 Financial Investment

4.1 Financial Investment – Capital Projects

4.1.1	Total Costs and Funding – Capital Project					
		Funding Body			£' 000	
	SSDC Capital: -	District Executive			16.1	
	Other Sources: - - Grants					
	Total Capital Cost				16.1	
4.1.2 Breakdown of main areas of cost						
		2017/18 £'000	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000
	Design, supply and installation	16.1				
	Totals	16.1				

4.1.3 External funds to be received							
		Secured? Y/N	2017/18 £'000	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000
	Not applicable		0				
	Totals		0				
4.1.4 Revenue Implications of Capital scheme							
		Cost Centre	2017/18 £'000	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000
	Loss of interest @ 2.23% (PWLB 20 yr rate 5.10.17)	FT922		0.360			
	Reduction in electricity bills	KP146 1220 L143		(1.100)			
	Revenue Costs by Individual Budget: Capital repayment	KP146 3990		0.650			
	Revenue Income FIT Electrical export	KP146 9617 L143		(0.590) (0.340)			
	Total Revenue Expenditure / (Net saving)			(1.020)			
	Cumulative			(1.020)			
4.1.5 Whole Life Costing							
	Estimated useful life of asset (years)	20					
	Total Revenue Costs Year 1 to 5	0					
	Annual Revenue Cost after year 5	Potentially £950 to replace inverter which is guaranteed for 12 years but could last 20 years					
	Total cost over whole life of asset	£17,061					
4.1.6 VAT Implications							
	SSDC has opted to tax Yeovil Innovation Centre and therefore VAT will be fully recoverable						
4.1.7 Impact on Band D							
	Additional spend	£16,111					
	Lost interest at 2.07%	£360					
	Divided by tax base	59313					
	Cost per band D tax payer	£0.006					

5 Project Organisation

5.1 Provisional Project Management Team

Name	Role/ Title
Income Generation Board	Project Sponsor
Keith Wheaton-Green	Project Manager
Henry Hobhouse	User Representative
Andy Seal	Supplier Representative

5.2 Interested Parties

Name	Reason	Action required
Laurence Willis	Income Generation Board	Keep fully informed
Peter Biggenden	Property Services	Keep fully informed

6 Other Useful Information

The rate of PV deployment is currently low because knowledge of equipment price drops amongst potential customers has not kept up with the knowledge that feed in tariffs have dropped substantially.
