

Opportunities from Solar Canopies

Public Power Solutions

Swansea Civic Offices, 31st October 2017

Richard Sansom



Background



Power

- 170MW of Solar PV already developed by PPS
- Wholly owned by Swindon Borough Council
- OJEU approved Dynamic Purchasing System
- UK's first Innovative Finance ISA (IFISA) allowing local community to invest in renewable energy with tax free returns



Waste

- UK's first Solid Recovered Fuel (SRF) Annual saving c£1m p/a to Swindon Borough Council
- 97% of waste diverted from landfill
- Waste to Energy plant in early planning
- 2.5 MW Barnfield solar private wire project to power the SRF Plant delivering
- Addition of battery storage in 2019



Winner of the Association for Public Service Excellence award, 'Best Renewable Energy or Energy Efficiency Initiative' for Chapel Farm Solar Park, September 2017



Winner of Regen South West Green Energy award, 'Most Proactive Public Sector Organisation' December 2016

Solar Carports Benefits

- Local Authorities well placed to benefit
 - c17,000 parking facilities in the UK - 40% owned by Local Authorities
 - £1.5 bn /pa turnover



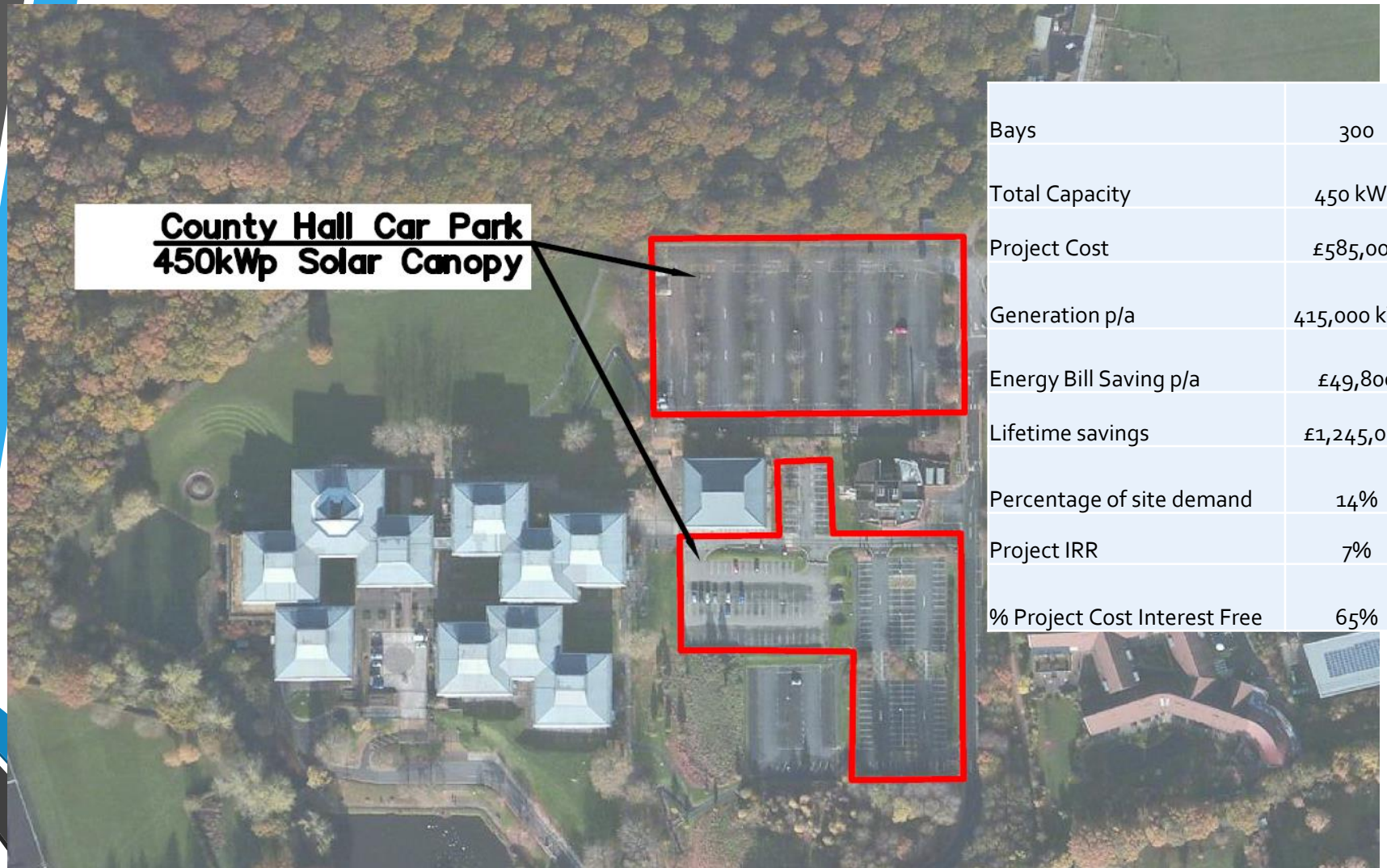
- Opportunity to maximise revenue / deliver savings from an unexploited asset
 - Car parks often located near to ideal off-takers – Civic Centre, leisure centre, shopping centres
 - Sites of high and constant electricity demand
 - Long Tenure , 20 years +
 - Private wire self consumption or PPA to a third party
 - Self consumption / direct sale to an end customer best return
 - New MW+ car ports in construction

Solar Carports Benefits

- Environmental benefits
 - Significant carbon savings 500 kWp system – 160 tCO₂ /pa
 - Connecting to a building can improve environmental score
 - 80% of the population support solar
 - Highly visible demonstration of low carbon leadership
- Further financial benefits
 - Premium for covered parking , higher footfall
 - Shelter from the elements for the user
- Future proofing for expected rollout of EV charge-points
 - EV charging infrastructure sites well with solar car ports
 - Dual siting of EV chargers and solar car ports reduces installation costs
 - Enabling works for EV charging included at marginal cost
 - Site future proofed for EV rollout with positive return from solar pv
- Battery Storage – grid services revenue
- Lighting Upgrade?

County Hall Case Study

**County Hall Car Park
450kWp Solar Canopy**



Bays	300
Total Capacity	450 kWp
Project Cost	£585,000
Generation p/a	415,000 kWh
Energy Bill Saving p/a	£49,800
Lifetime savings	£1,245,000
Percentage of site demand	14%
Project IRR	7%
% Project Cost Interest Free	65%

Solar Car Park Practicalities

- Location near to appropriate off-taker important to maximise return
- Costs and timescales for grid connection is critical – G59 required for >50 kWp
- Surface vs multi-storey car parks?
- Long double rows more cost effective
- Financial return – duopitch more cost-effective than monopitch



- Timescales
 - 65 working days for grid offer
 - Minimum 6 weeks planning
 - Procurement
 - Minimum 4 weeks for install of 1 MWp

Solar Car Park Costs and Funding

More expensive than ground mounted and standard rooftop

- > 1 MWp £1,100 / kWp but as low as £850 / kWp...
- < 1 MWp £1,200 / kWp

Funding

- Cash reserves or PWLB funding
- Salix / Green Growth Wales interest free loan
- Community Funding?

PPA from 3rd party?

- No capital outlay
- For the right off-taker profitable return for PPA model for solar car por

Summary

Shared Benefits

- Cost-effective - sharing of construction costs of solar canopies and EV charging infrastructure
- Future proof parking facilities for EV charging rollout whilst generating a positive financial and environmental return
- Share funding streams such as Green Growth Wales interest free finance

Next Steps

High level assessment of parking facilities -
Location to buildings with high energy demand
Grid
Planning
Solar generation capacity



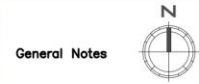
Questions?



Paxton Road SOLAR Car Park
 500kWp Power capacity
 506.8 MWh/year Produced Energy

Proposed Point of connection at the existing
 County Hall WPD 11/6.6kV substation

This Drawing Is Copyright And
 Not Be Reproduced Or Used
 For Any Purpose Other Than
 That Intended Without The
 Prior Written Agreement Of
 Public Power Solutions Ltd



- LAND IN SAME OWNERSHIP — (blue line)
- OPTIONED AREA SOLAR CAR PARK 500kWp Power Capacity — (red line)
- PRIVATE CONNECTION LINE — (yellow line)
- POC • (yellow dot)

Coordinates	
OS X (Eastings)	265423
OS Y (Northings)	192437
Nearest Post Code	SA1 3SA
Lat (WGS84)	N51:36:53 (51.614627)
Long (WGS84)	W3:56:42 (-3.945097)



Public Power Solutions Ltd
 Waterside Park, Cheney Manor
 Industrial Estate, Darby Close
 Swindon, SN2 2PN
www.publicpowersolutions.co.uk

Project
 Paxton Road Car Park,
 Paxton Street Car Park,
 Bathurst Street, SA1 3SA.

Date 18/10/2017
 Scale As Shown @ A1
 Rev. 17.25.SWA.GE.FEAO.Rev.1