

Surrey Schools Solar Event 2014



Welcome

To provide schools with the necessary information to equip them the knowledge and greater confidence in making the right decisions in respect of solar pv projects

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SCC – Energy
Team

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Sustainability
Team

Ethical Power:
Energy Provider
– 3rd Party
Lease

Joanne
Gold/Sarah
Walker: SCC –
Property
Services

Things to remember!

Only some schools will be suitable for solar panels:

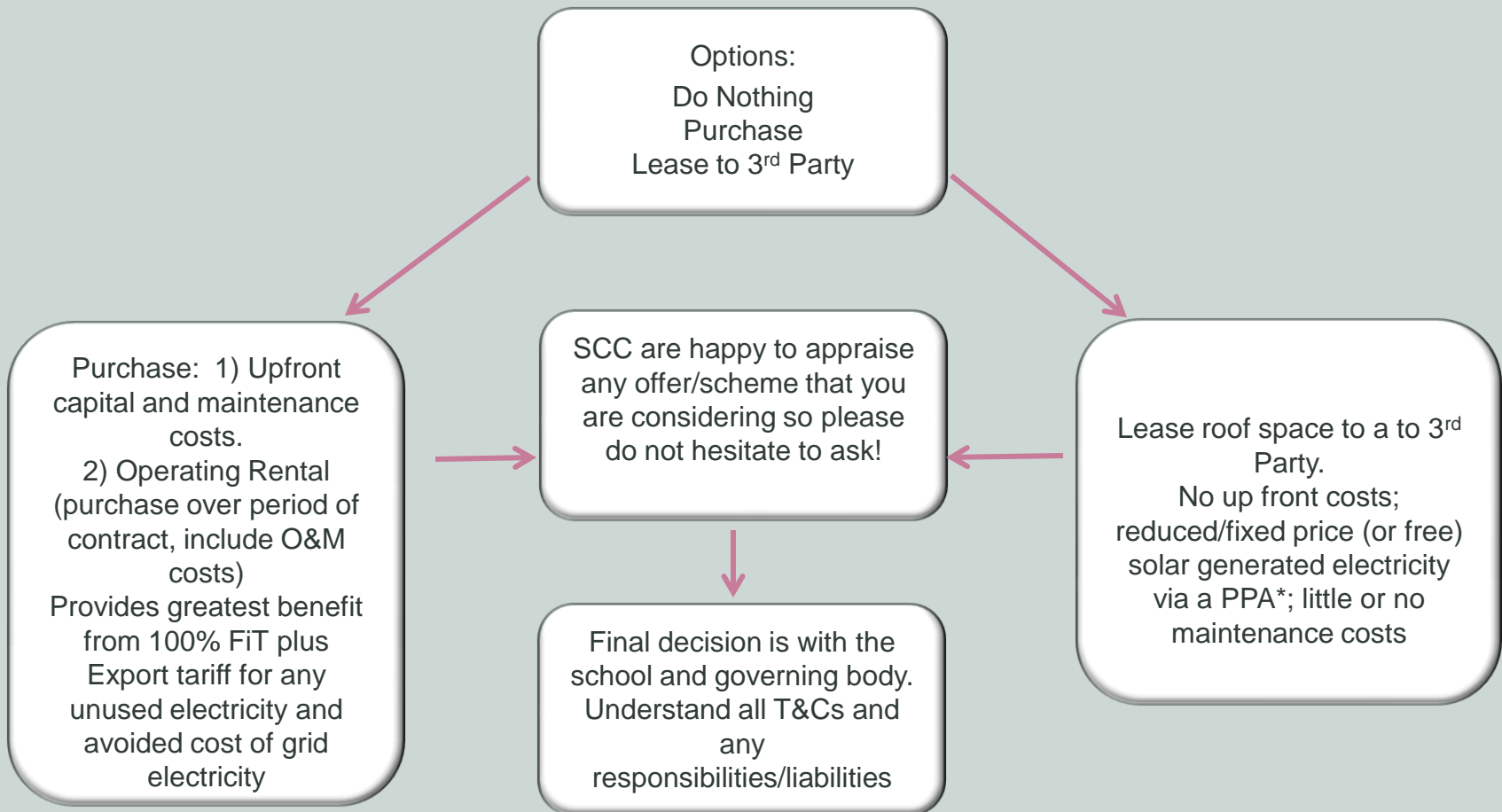
- Roof orientation – south or south east or south west facing
- No shading
- Roof structure – ability to support the panels



Total benefits will depend on:

- Size of system and generated electricity
- Amount of generated electricity used onsite
- Future cost of grid electricity
- Good energy management/behaviour

The variables above mean that there is no 'one size fits all' – benefits/costs will be individual to each school



*PPA – Power Purchase Agreement: agreement between school and provider for the school to purchase the solar generated electricity from the Provider at a fixed price and will last 20 – 25 years

3rd Party Offers known to SCC:

- Ethical Power
- Wey Valley Solar (Community Co-op)
- Evogreen (Eco Schools – current)
- Winch Energy (Eco Schools - original)
- Thameswey Solar (owned by Woking Borough)
- British Gas (My Solar School)

Elements of Proposal

Each proposal will be different and will depend on the objectives and expected return of the investors.

- Cost of electricity – is it free?
- Will the school receive some or all of the FiT?
- Is there a rental charge?
- Is the PPA fixed or plus RPI?
- How long does the PPA continue for?
- Will you be charged a maintenance fee?
- Is there a profit sharing scheme?
- What happens to the panels at the end of the contract?

Current Offers

3rd Party Lease with PPA

Who	Cost of Equipment	Price of PPA	FiT/ Export payments	Maintenance Fee	Term of Contract	Installations – Surrey Schools
Ethical Power	No upfront costs to school	5p/kWh + RPI	Ethical	None	25 years	5 +
Wey Valley Solar (Community Co-op)	No upfront costs to school (school is able to invest)	6p/kWh (fixed) + profit if returns are >6%	Wey Valley	None	20 years	6
Winch Energy (original Eco Schools partner)	No upfront costs to school	7.5p/kWh + RPI	Winch	None	25 years	5
*Thameswey	No upfront costs to school	0p/kWh for 1 st 25% of power. 7.5p/kWh thereafter.	Thameswey	1.5p/kWh generated	25 years	4

*Thameswey - currently not active in the schools market, although constantly review and are open to discussions with schools.

3rd Party – No PPA

Who	Cost of Equipment	Price of PPA	FiT/ Export payments	Maintenance Fee	Term of Contract	Installations – Surrey Schools
Evogreen (current Eco Schools partner)	No upfront cost. Operating rental agreement – paid over agreed term	N/A	School	Part of Rental agreement	Up to 20 years	New offer
British Gas (limited offer – 200 schools nationally)	No upfront. School owns panels	N/A	British Gas receives for Energy For Tomorrow Fund	Yes, will be responsible for O&M costs	20 year	1+
Solar Schools* (fund raising support)	School fund raises for capital and therefore will own the equipment	N/A	School	School	N/A	Not aware of any Surrey schools ?

Purchase – Capital required

Who	Cost of Equipment	Price of PPA	FiT/ Export payments	Maintenance Fee	Term of Contract	Installations – Surrey Schools
Solar Schools* (fund raising support)	School fund raises for capital and therefore will own the equipment	N/A	School	School	N/A	Not aware of any Surrey schools ?

*Solar Schools - Solar Schools is run by [10:10](#), a climate change project that offers positive, practical ways to cut carbon. Providing schools with the tools, training and support they need to fundraise the cost of panels. Limited spaces but are taking applications now.

What is good value? How do we compare different offers?

➤ Two offers appear the same:

- Cost of electricity
- Term of contract
- Maintenance liabilities
- Applicable income streams (FIT)

Cumulative benefit to the school may appear different depending on what assumptions have been made regarding the other common variables!



Common Variables:

By applying the same value – equal playing field, eg:

- Yield 900 kWh/kWp
- Panel degradation 1% pa
- RPI 3%
- Electricity Inflation 7%
- Retain 80% onsite

Based on average industry values and projections



Helps illustrate the offers are of the same value. School chooses preferred provider and who they feel they can better work with? And who will work with SCC!

Similar but not quite the same!!

30 kW

Common Variables:

- ✓ Yield 900 kWh/kWp
- ✓ Panel degradation 1% pa
- ✓ RPI 3%
- ✓ Electricity Inflation 7%
- ✓ Retain 80% onsite

Element	Offer 1	Offer 2
Cost of Electricity	5p/kWh plus RPI	6p/kWh plus RPI
Income from FiT/Export	None	None
Rental Charges	None	None
Contract Term	25 years	20 years
Operation and Maintenance	None	None
Ownership of panels at end of contract (will incur O&M charges)	School	School
Outcome	£83,000	£49,000*
	*Plus 5 years free electricity (including O & M costs)	£83,000

Purchasing 30KW system:

Inputs	
Unit cost of System & Installation (cash)	£1,600 (per KW)
Cost of System	£48,000
Operation and Maintenance	£16,000
Total Benefits (Savings/Income – O&M)	£160,000
Payback	10.7 yrs
IRR	13.0%

- ❑ This example is for indicative purposes only.
- ❑ It is based on purchasing without finance (ie cash purchase).
- ❑ Assumes 80% use of solar generated energy
- ❑ FiT at Jan – 31 March 2014 @ 12.57p/kWh (between 10 and 50KW)

- Any financial benefit will depend on:
- ❑ price of panels and O&M contracts.
 - ❑ Amount of electricity generated
 - ❑ Amount of electricity consumed on site (energy management)
 - ❑ FiT level at time of project
 - ❑ Future cost of grid electricity

Impact of Solar on Electricity

Some limited analysis has been undertaken to ascertain the impact of solar pv on a school's grid electricity consumption.

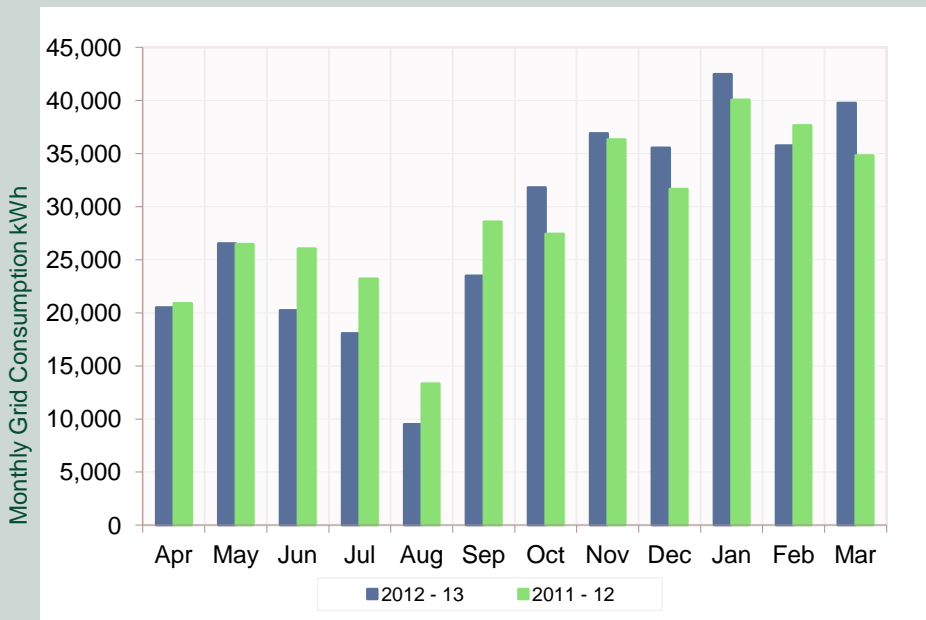
- Used data from Systems Link to analyse data over a 2 year period (before and after installation).
- Solar schools compared with non-solar schools.
- Did not take account of other influencing factors - schools' energy management/user behaviour, building use, school expansion, energy efficiency measures etc.

Limitations:

- Only one data source – Systems Link
- Data often insufficient for full 2 year analysis
- Abnormal data – eg unusually high grid consumption during otherwise low demand period

Systems Link Data Set – example of complete data

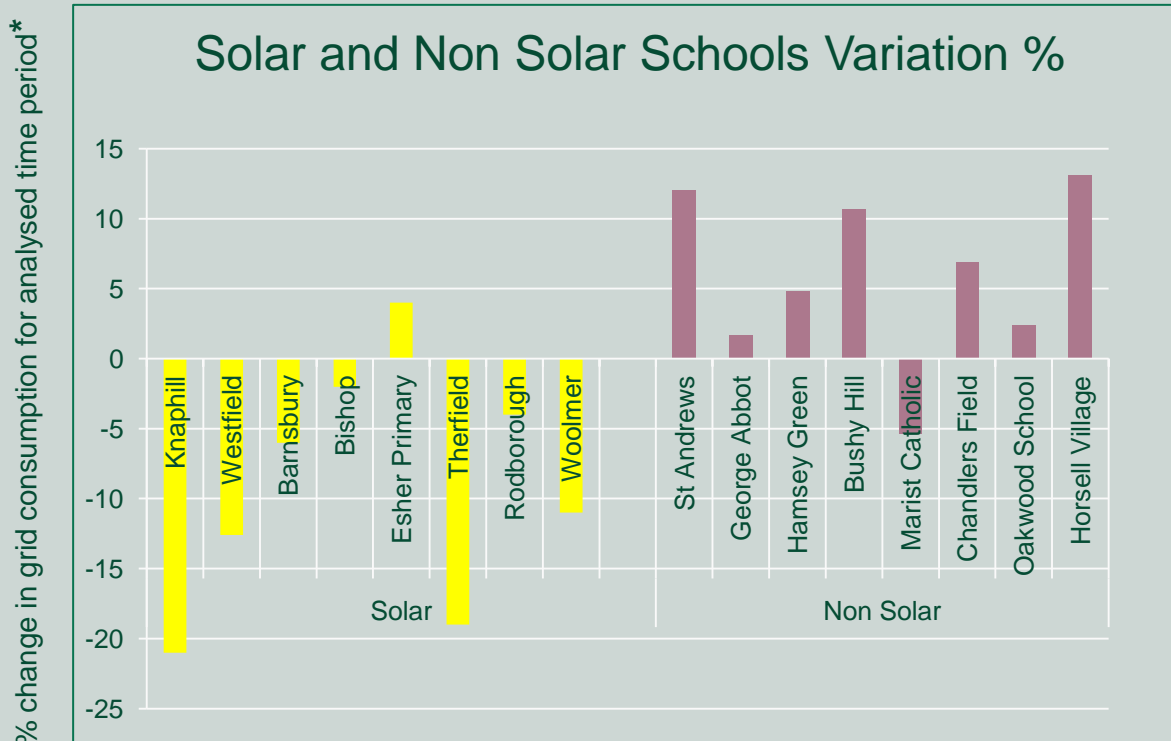
30KW Installation date: **30/3/12** - data present for 12 months pre and post installation*



Month	2012 - 13 kWh	2011 - 12 kWh	Variation kWh	%
Mar				
Apr	20,512	20,902	-390	-1.9
May	26,511	26,458	52	0.2
Jun	20,221	26,029	-5,808	-22.3
Jul	18,050	23,214	-5,164	-22.2
Aug	9,502	13,328	-3,826	-28.7
Sep	23,474	28,562	-5,088	-17.8
Oct	31,806	27,423	4,383	16.0
Nov	36,879	36,304	575	1.6
Dec	35,546	31,635	3,911	12.4
Jan	42,466	40,043	2,423	6.1
Feb	35,744	37,640	-1,896	-5.0
Mar	39,753	34,821	4,932	14.2
Total	340,464	346,358	-5,894	-1.7

- Complete - Likely a Laser school that means Surrey receives ½ hourly or monthly data
- 1.7% may appear small but equates to ~ £5700 in avoided electricity costs

Results



* Period pre and post solar installation or year on year for non solar (2011-12 and 2012-13)

For schools with sufficient data for analysis, results show a varying degree of impact on grid consumption.

As a comparison, a random sample of schools that do not have solar panels were also analysed using data available for a similar 2 year period, being 2011-12 and 2012-13.

Whilst results obviously vary across schools, it is noticeable that 7 out of 8 schools with solar have experienced reduction in their grid consumption following installation. This is compared to only 1 of the non-solar schools analysed.