Techfor Energy Ltd
Unit 4, Walnut Tree Park
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T: 0800 888 6544
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Estimate

20th August 2012

3.71 kWp PV Generating Systems

(with string inverter)

Mr Garry Woods
Camley Street Natural Park
Camden
N1C 4PW

V3.1

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SUMMARY

Dear Mr Woods

Thank you for giving Techfor Energy the opportunity to provide an estimate for the following work:

3.712 kWp solar PV flat roof system based on Yingli 265W (YL265C-30b) silver panels and Power-One Aurora PVI-3.6 Outdoors (16A Limited) string inverter.

Please note the following:

1. This is an estimate only and designs, specifications and costs are subject to change pending the results of a technical site survey.
2. The estimated costs provided here are based on the following assumptions:
   - That the roof is approximately 18 metres long by 7 metres wide and there are no, chimneys, vent pipes, roof windows or other obstructions on the roof area.
   - The roof is flat at a maximum of 5 degrees running from SE to NW and there is **no** ridge
   - The height of the building is 3m high and its structural integrity is suitable for the solar PV system stated in this estimate. This estimate does not include additional strengthening of rafters (if required) and if it is found during the site survey that the building is not structurally sound for the flat roof system a structural engineer may be required to assess the suitability of the building.
   - The trees surrounding the property are deciduous and are positioned along the NW and SW sides of the building 5m and are 10m high. And one tree 8m away from the SE side of the building and is 7m high.
   - There is no spareway available in the electrical Consumer Unit and hence a mini consumer unit is supplied by us
   - The roof space is accessible.
3. The estimated financial returns provided here are based on a reduction in annual energy production from the shading loss due to the position and number of trees stated in this estimate. It is also based on the high rate tariff for the up to the 4kWp banding, i.e. the EPC on the building is at level D or above.
4. A SAP energy prediction will be calculated after the technical site survey.
5. The company is not charity registered and so 20% VAT has been applied in the costings.

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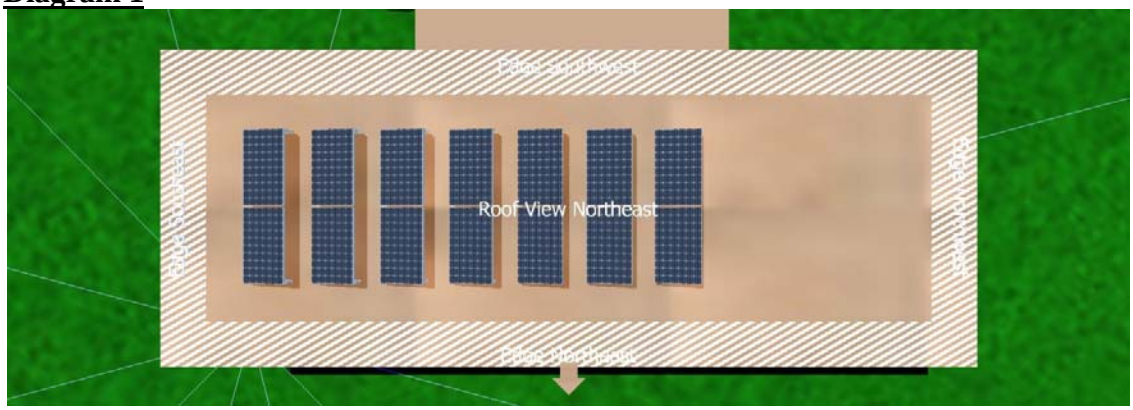
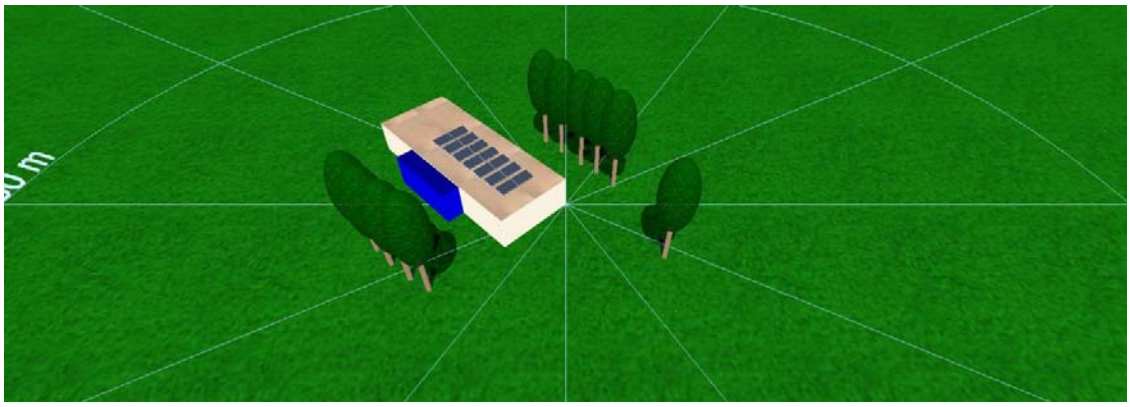
Proposed Solar PV Design Layout

3.71 kWp Yingli 265W PV System with string inverter

We propose that your 3.71 kWp solar PV system will consist of 14 Yingli 265W (YL265C-30b) silver frame landscape panels facing the south-east. Please see diagram 1 below for the proposed PV layout.

Diagram 1





We have also carried out a shade analysis using shade frequency distribution software please see diagram 2 below showing which panels have been affected by the irradiation reduction due to the surrounding trees.

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The green colour indicates minimum irradiation loss, yellow is average and orange (not on any of the panels) indicates maximum loss.

Diagram 2

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Financial Returns

3.71 kWp Yingli 265W PV System with string inverter

Cost of system (ex VAT)	£7,716.54
Index-linked income Profit	£21,094.08
Return on investment over 25 years	273%
Average Return on Investment	11%
Payback in Years	7.4

The above figures are calculated as detailed below:

Assumptions	
Electricity cost (£/kWh)	0.12
Export FIT (£/kWh)	0.045
Exported electricity actual*	2%
PV System degradation (annual)	0.50%
FIT and export rate Inflation (RPI)	3.77%
Energy Price Inflation	7.30%
Exported electricity Deemed	50%

*The actual electricity exported to the grid depends on your onsite energy usage during daylight hours and so may be higher or lower than 2%.
If the property is fitted with an energy smart meter then the deemed exported electricity **equals actual
Calculations do not include company tax **benefits**

Year 1 Energy yield worked out as follows:	
"Power-One" energy prediction*=	3285
Shading Loss =	269.37
Sub-Total	3015.63
Micro-inverter boost 0 %	0.00
TOTAL (kWh)	3015.63

***Other online energy prediction:**
http://re.jrc.ec.europa.eu/pvgis/apps4/pvest.php

*We have used the SMA design tool to obtain the energy prediction as this software gives a more realistic reading compared to the Power-One Aurora design tool. That is, unlike the Power-One software the SMA software takes into consideration: 5 UK locations, roof angle, orientation of roof and cable loss.

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Years	Energy Yield (kWh)	FIT (pence)	FIT Income	Electricity Cost (£/kWh)	Saving (£)	Deemed Export (£)	Annual Total (£)*	Payback Period	Cumulative Total (£)
0							-£7,716.54	0	
1	3015.6	16.00	£482.50	£0.120	£354.64	£67.85	£904.99	0	£904.99
2	3001	16.60	£498.19	£0.129	£378.62	£70.06	£946.87	0	£1,851.86
3	2986	17.23	£514.38	£0.138	£404.23	£69.71	£988.32	0	£2,840.18
4	2971	17.88	£531.11	£0.148	£431.57	£69.36	£1,032.04	0	£3,872.22
5	2956	18.55	£548.37	£0.159	£460.76	£69.01	£1,078.15	0	£4,950.37
6	2941	19.25	£566.20	£0.171	£491.93	£68.67	£1,126.80	0	£6,077.17
7	2926	19.98	£584.61	£0.183	£525.20	£68.32	£1,178.13	0	£7,255.30
8	2912	20.73	£603.62	£0.197	£560.72	£67.98	£1,232.32	7.374287	£8,487.62
9	2897	21.51	£623.24	£0.211	£598.64	£67.64	£1,289.53		£9,777.15
10	2883	22.32	£643.51	£0.226	£639.13	£67.30	£1,349.94		£11,127.09
11	2868	23.17	£664.43	£0.243	£682.36	£66.97	£1,413.75		£12,540.84
12	2854	24.04	£686.03	£0.260	£728.51	£66.63	£1,481.17		£14,022.01
13	2840	24.94	£708.33	£0.279	£777.78	£66.30	£1,552.42		£15,574.43
14	2825	25.89	£731.36	£0.300	£830.39	£65.97	£1,627.72		£17,202.15
15	2811	26.86	£755.14	£0.322	£886.55	£65.64	£1,707.33		£18,909.48
16	2797	27.87	£779.69	£0.345	£946.51	£65.31	£1,791.51		£20,700.99
17	2783	28.92	£805.04	£0.370	£1,010.53	£64.98	£1,880.55		£22,581.54
18	2769	30.02	£831.21	£0.398	£1,078.88	£64.66	£1,974.75		£24,556.29
19	2755	31.15	£858.23	£0.427	£1,151.85	£64.34	£2,074.42		£26,630.71
20	2742	32.32	£886.14	£0.458	£1,229.76	£64.01	£2,179.91		£28,810.62

Important Note: The calculation of the yield is based on estimated values and mathematical models. The actual yields of the photovoltaic system can deviate from these values due to fluctuations in the weather, the efficiency of modules and inverters and other factors. Techfor Energy is in no case liable for the real yield and FIT income.

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Additional Financial Return notes
The above projections should not be considered as a guarantee and are for illustrative purposes only.

The onsite usage during the day has been assumed to be 98% of solar PV generated electricity, this can easily be achieved by using timers to switch heavy electricity usage items such as washing machines to be turned on during the day instead of during the evening.

If you feel that this figure of 98% does not reflect your possible usage and needs to be either reduced or increased please let us know and we will be happy to recalculate the financial returns using the new figure.

Please also note that we have not considered income tax savings in the financial returns calculations.

Notes:
1. This is an estimate only and designs, specifications and costs are subject to change pending the results of a technical site survey.
2. Exceptional or non-predictable site-specific conditions may lead to alteration of the proposed works and/or associated costs. Relevant notifications will be made prior to works should this prove necessary. Confirmation of availability of the above list is correct as of the date of this estimate but cannot be guaranteed. Prices are subject to change if alternate products are required due to availability.

I trust that I have answered your enquiry to your satisfaction; however, should you have any questions, please do not hesitate to contact me; otherwise I await your further instruction.

Yours sincerely

Glenn Ashby

Mr GM Ashby
Technical Director