

16 Deards End Lane Energy and Performance Assessment

Project Reference:	25-021
Installation Address:	16 Deards End Lane, Knebworth Hertfordshire, SG3 6NL
Survey carried out by:	Stephen Wright, James Taylor

Within this document, you will find information and official MCS/EasyPV calculations for the savings gained from the proposed solar installation, as well as the amount of energy both given back to the local area and used within the property directly from the installation, further reducing the energy requirements of the local area.

This design further utilises an Electrical Energy Storage System (EESS)/Battery to store energy not being used within the property, allowing for further savings to the client, as well as reducing energy consumption from the local grid. The designed Inverter and battery system has the capability of being adjusted to cheaper tariff periods, helping to alleviate strain on the grid and further increase savings for the owner occupier.

With excess energy being feedback to the grid and utilising a battery system alongside the Solar Panels to reduce the average strain on the local network, this small-scale project would provide a valuable contribution to the local area as well as cutting greenhouse gas emissions. In relation to applications for renewable energy, paragraph 168 of the Framework states LPA's should recognise the benefits, outlined above, of these small-scale projects.

The Figures

If the system performs in line with the predictions set out by MCS, the following will apply. We have calculated the client will **self-consume 92%** of the energy produced, as determined by the method set out in MGD 003, therefore **exporting 9%**.

Annual Benefit to Property		
Estimated total annual output – kWh	4094kWh	per year
Grid independence: Estimated annual electricity savings	£924.00	per year
Annual income generated from Smart Export Guarantee	£37.00	per year
Estimated annual benefit of proposed Solar Installation:	£961.00	per year

Annual Benefit to Local Area		
Energy utilised from the installation/Reduction of local demand	3774kWh	per year
Energy Fed Back to Local Community	320kWh	per year
Combined Reduction of Grid Requirements	4094kWh	per year
Reduction of CO2 Emissions	838kg	per year

Total Cost and Payback Time		
Total Cost of Installation	£9,633.40	
Estimated annual benefit of proposed Solar Installation:	£961.00	per year
Payback Period	10 Years	

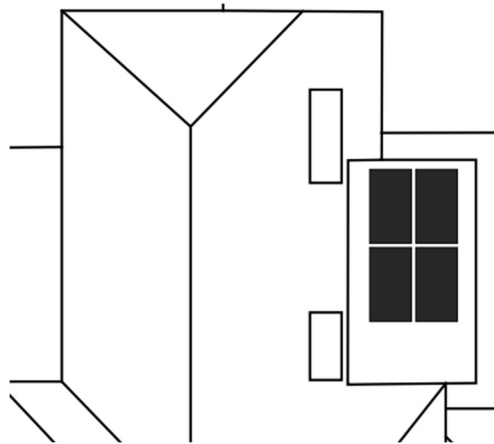
MCS & Easy PV Calculations

A. Solar PV Installation data	Garage Array	Kitchen Array
Installed capacity of PV system – kWp (stc)	5.4kWp	1.8kWp
Orientation of the PV system – degrees from South	-17	-105 & 75
Inclination of system – degrees from horizontal	10	10
Postcode region	1	
B. Performance calculations		
kWh/kWp (Kk) from table	894	803 & 842
Shade Factor (SF)	0.65	0.69 & 0.62
Estimated annual output (kWp x Kk x SF)	3,125	969
Estimated total annual output – kWh	4094	
C. Estimated PV self-consumption – PV Only		
Assumed occupancy archetype	Home half day	
Assumed annual domestic electricity consumption	10000kWh	
Expected solar PV self-consumption (PV Only)	2429kWh	
Grid electricity independence / Self-sufficiency (PV Only)	24%	
D. Estimated PV self-consumption – with EESS		
Assumed usable capacity of electrical energy storage device, which is used for self-consumption	8.76kWh	
Expected solar PV self-consumption (with EESS)	3774kWh	
Grid electricity independence / Self-sufficiency (with EESS)	37%	

The Microgeneration Certification Scheme (MCS) requires us to provide to the customer a performance estimate based on the standard procedure set out in the Microgeneration Installer Standard for Battery Storage systems – [MIS 3012](#). Easy PV has been used to extrapolate this data outside the remit of [MIS-3012](#).

Case Study for a reduced System

Below you'll find a Performance estimate for a reduced size installation on the same property, 16 Deards End Lane. This is designed to illustrate the inefficiencies of such a system, as well as the undesirable payback period of such a system. This system removes the garage array potentially seen from Deards End Lane, the array that could most effect the overall "amenity of the area".



Remaining panels on the kitchen roof in "Kitchen Only" system

<u>Annual Benefit to Property</u>		
Estimated total annual output – kWh	969kWh	per year
Grid independence: Estimated annual electricity savings	£238.00	per year
Annual income generated from Smart Export Guarantee	£0.00	per year
Estimated annual benefit of proposed Solar Installation:	£238.00	per year

<u>Annual Benefit to Local Area</u>		
Energy utilised from the installation/Reduction of local demand	969kWh	per year
Energy Fed Back to Local Community	0kWh	per year
Combined Reduction of Grid Requirements	969kWh	per year
Reduction of CO2 Emissions	201kg	per year

Total Cost and Payback Time		
Total Cost of Installation	£7,703.79	
Estimated annual benefit of proposed Solar Installation:	£238.00	per year
Payback Period	32.3 years	

While this reduced system is not visible from the highway, comparing this to the proposed full system, it is clear to see the environmental and financial benefits of a system fully utilising the available flat roof spaces far outweigh any reduction in visibility, or rather a reduction of impact on the local area. With the reduced system paying for itself within 32 Years, compared with the full system of 10Years.

The same MCS certified & Easy PV calculations have been used for the reduced system, and all previous disclaimers apply.