

Solar Photovoltaics

As part of the renovation of old farm buildings as Mucknell Abbey, 12 kW of solar photovoltaic panels were installed on the new community building to supply part of the Abbey's electricity needs.

Technical Details

Manufacturers and models:

Sharp NU-180E1 180W monocrystalline silicon solar photovoltaic modules

Sunny Boy SB 3300 4kW inverters

Installer:

Solar Technologies, part of British Gas,

www.solartechnologies.co.uk

Solar Technologies and the system installed are
Micro-generation Certification Scheme accredited.

Module area: 86.5 m²

Orientation of roof: tilt 13°, azimuth 180°

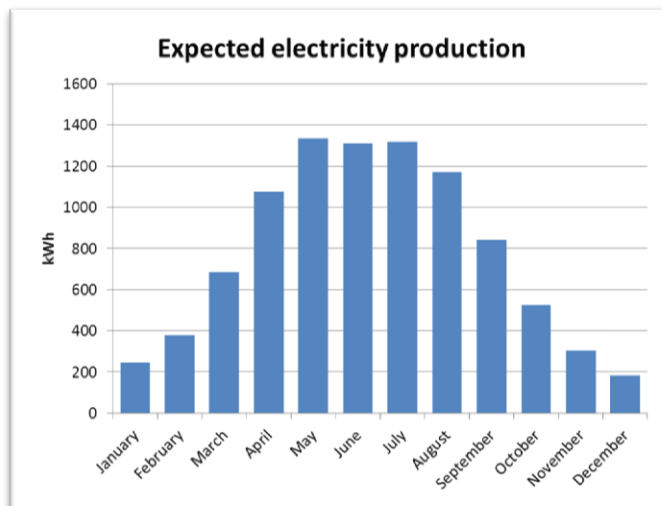
Nominal power output: 12kWp

Expected annual generation: 9,400 kWh

System Integration

The panels generate DC electricity, which is marshalled through three inverters to convert it to AC. This current is metered and fed into the main distribution board. The electricity generated is available to use on site, avoiding importing electricity. Any surplus is exported, and imports and exports are metered on the main meter. The inversion process uses mains power, so the system will shut down in the event of a power cut. Being completely off-grid would require different inverters, and now extensive rewiring.





About Mucknell

Mucknell Abbey is a contemplative monastic community of nuns and monks living under the [Rule of St Benedict](#) and part of the [Church of England](#).

More information on [sustainability at Mucknell](#), and further factsheets on the renewable technologies and grounds are available at www.mucknellabbey.org.uk.

Environment

Day by day generation of electricity from PVs is almost entirely carbon and other pollutant free, apart from the electricity consumed by inverters. For most, avoiding the import of grid electricity means avoiding the grid's average carbon emissions of 0.5 kg CO₂ per kWh. Our electricity supplier, Green Energy, offers two tariffs: Deep Green matches 100% of the electricity used with renewables supply, with zero emissions per kWh; Pale Green is made up of 17.5% renewables and 82.5% from accredited combined heat and power (CHP), with emissions 1/3 of the grid average.

Manufacture of the PVs and other components does have an environmental impact. Some of the chemicals used are toxic, but manufacturers should be handling these in a responsible manner, and recycling and reusing from the production processes. The energy required to make PVs should be recovered in 2-3 years, depending on latitude, module orientation and technology.

Revenue Funding and Grants

The electricity generated by the PVs is eligible for [Feed-In Tariffs](#), also known as the Clean Energy Cashback, and we have registered for these via Green Energy. The tariff for installations between 10 and 100kW is 31.4p per kWh generated, index-linked for 25 years. (Note that it would make better financial sense to be at the upper end of a FITs tariff band rather than at the lower end as we are, but also that the government is reviewing FITs for schemes over 50 kW.) Green Energy also pay us 3p for every kWh we export.

Most government grant schemes for renewable energy have now closed. It may be worth investigating the schemes below, but they are very unlikely to fund a PV-only project, because of the availability of the Feed-In Tariffs.

EDF Energy – Green Fund
 ScottishPower – Green Energy Trust
 E.ON – Sustainable Energy Fund
 Big Lottery – Awards for All
 Landfill Communities Fund

Naturesave Trust – Community Renewable Energy Project
 Malvern Hills AONB – Sustainable Development Fund
 Cotswolds AONB – Sustainable Development Fund
 Worcestershire LEADER Programme (Local Action Group)
 ... and other AONBs, LAGs across the country