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nsc

BRE National Solar Centre
Helping the solar industry to grow, mature and thrive

Project Part-Financed by the European Union
European Regional Development Fund

Department of Energy & Climate Change

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CORNWALL COUNCIL
working in partnership

BRE NATIONAL SOLAR CENTRE

Solar use is increasing rapidly. As prices continue to fall, it is now being seen as a large contributor to the world's future electricity requirements. In the UK 2GW have been connected in 2 years and the Government's Renewable Roadmap is indicating a potential 10 fold increase by 2020. The Solar Industry was until recently a cottage industry and we now have the opportunity to transform it into a serious energy player in a sustainable market. The BRE National Solar Centre has been established to take on this challenge.

The aim of BRE National Solar Centre (NSC) is to help the solar industry to grow, mature and thrive. It will do this by researching and channelling evidence-based information on design and installation techniques, performance, durability and costs to the industry, government and all other stakeholders. This will help to promote genuine industry growth, and continuous improvement in the quality of PV and solar thermal products.

From its headquarters in Cornwall, the NSC will lever valuable knowledge and experience from industry, universities and other research organisations across Europe.

There is a need for a shift towards the integration of photovoltaic and construction products, and the NSC intends to play a pivotal role in this. The NSC will also take account of the aesthetic effects on buildings via a programme of research into the design, testing and integration of solar building components (Building-Integrated PV).

As large solar become commonplace, there is a need to provide technical services and new standards. The NSC will provide due diligence technical services to the funders of large ground and roof solar arrays. Also, the development of large system standards will assist investors and installers in constructing PV projects with the capability to become a significant net contributor to the UK energy mix.

BRE's reputation of independence and technical credibility will allow the NSC to drive these opportunities in a way in which solar PV companies cannot do in isolation. Partnerships between industry, academia and the NSC will provide an effective platform from which to drive forward new standards, technical developments and dissemination of robust information on solar in the UK. For example, one of the first projects to be initiated will be to collect performance data nationally, from real systems, in order to understand the effects of technology choices, local meteorological variations, installation quality, etc. A key outcome of this work will be the availability of dependable, accurate data.

Image: solarcentury.co.uk

How you can get involved with the BRE National Solar Centre

We are looking for organisations to become NSC supporters of the through a one-off financial contribution. The amount pledged will be an investment in the future of the solar industry - a way of supporting it to grow and gain recognition as a significant contributor to the UK's future low carbon economy. The NSC is not a membership organisation and will not charge annual fees.

The suggested rates are as follows:

Type of organisation	NSC Supporter suggested contribution
NSC founding partner (limited to 30)	£5,000
NSC partner - banks, utilities, retailers (limited to 10)	£10,000
NSC supporters	£3,000

Contributions can be tailored around financial years and available budgets.

The Benefits of becoming a supporter

By becoming a supporter you can directly influence the scope of the NSC and contribute to the work that we will conduct for the benefit of the UK solar PV industry and associated companies. Your contributions will be met 3 to 1 by the ERDF grant award.

Please note that contributions will be made to the BRE Trust and then passed on to the NSC. As the BRE Trust is a registered charity, all contributions made by registered companies can be written off against taxable profits.

Benefits:

1. Have influence on the developing agenda and scope of the NSC
2. Be the first to receive publications and research
3. Contribute and benefit from our research programmes
4. Promotion of your brand via our publications and website
5. The use of the NSC logo on your website (subject to agreement)

List of companies already involved

To date a large number of leading solar and supply chain companies have expressed an interested in becoming an NSC founding partner or supporter. All organisations that become involved will be acknowledged in publications, selected publicity material and on the NSC website.

Next Steps

If you would like to know more about how to become involved in the NSC, please contact Jonny Williams on nsc@bre.co.uk or on 01792 630 107 or 07772 228 787

We look forward to working with you for a successful solar future!

NSC observatory activities

Core activities funded by ERDF, industry match funding and on-going research opportunities

Data analysis

The NSC will gather validated data sets on PV generation from across the UK. It will analyse the information and produce performance, technology and good practice advice for the benefit of the whole industry, leading to improved quality, efficiency and profitability in this important industry.

We would welcome the opportunity to explore the options around collecting data from your company's installations. Only aggregated, anonymous data will be published.

Technical code of practice

In association with industry partners and the Institution of Engineering and Technology (IET), a Code of Practice for solar installations will be created. This will be published in early 2014

Planning –best practice guide

Building on the existing regional guide developed by Cornwall Council, a more broadly applicable planning guide will be produced for use in other local authority areas. It will cover planning policy, grid connections, and pre-assessment by the Distribution Network Operators (DNO) / National Grid. The guide can be seen as a way to demonstrate that developers are minimising the environmental impacts of solar parks through taking into consideration a wide range of factors. Local authorities will be able to use this guide as a Material Consideration in planning decisions. Industry input will be sought to ensure the validity of the document.

This guide is available free of charge from April 2013.

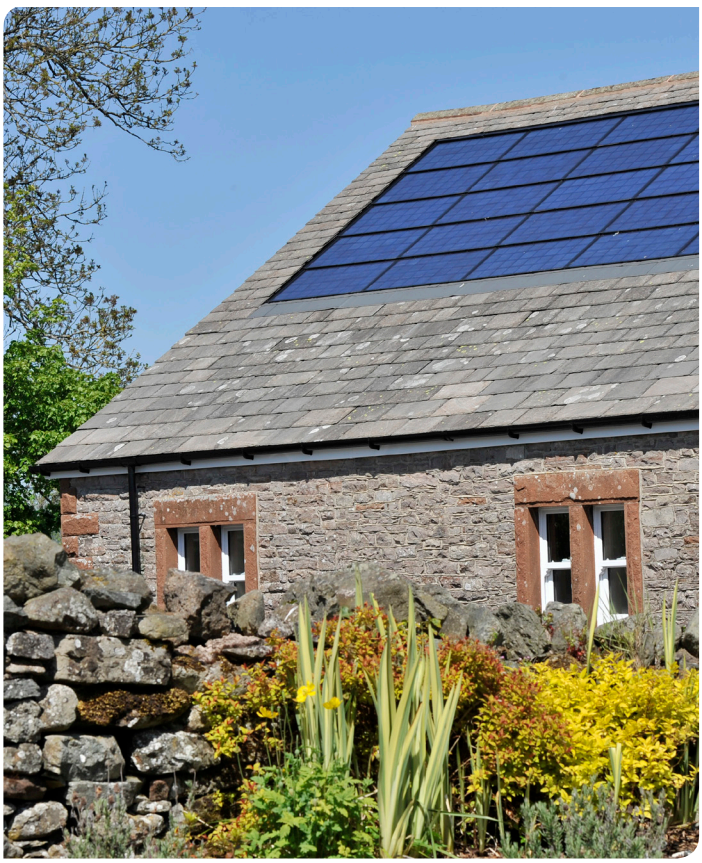

Image: Sundog

NSC data & research services

NSC team and UK and international partners

- Data collection
  - Direct data collection from Founders and Supporters
  - FITs data
  - MCS data
  - Data from international research partners
  - Regional met data
  - Data from NSC research
- Research and analysis
  - Establishing performance norms
  - Technology comparisons
  - Installation practices
  - Validation of G83 / G59 connections (DNO's)
  - Code of practice (>50kW)
  - Building-Integrated PV - practices, technologies, promotions
- Reporting and dissemination
  - **For:**
    - Founding memebers advance information
    - Public and commercial facing information bodies
    - Training companies
    - Investors
    - Manufacturers
    - Installers
  - **How:**
    - Publications: Code of practice, performance factors, technology comparisons
    - Conference and events

Plant 1
Plant 2
Plant X
Optional maintenance alerts
Raw data from PV power plants
Regional climate data
Individual plant monitoring
FITs data

NSC data collection service

UK wide analysis and reporting

Results: Performance norms
Technology comparisons
Installation codes of practice and comparisons
Regional data variations

Free and advance information to founding members, sponsors and supporters

Selected information free to public domain, including sponsor acknowledgements

Benefits for the UK solar industry

- Contribute system yield data
- Receive best practice information (UK and overseas)
- Input to codes of practice
- Contribute to research projects
- Receive information or attend seminars on innovative products
- Receive market information
- Receive information / contribute to BIPV research and promotion
- Become a Founder Member and obtain exposure for your company

Image: Western Solar

Guide for commercial rooftops

Provision of dependable information for the use of solar PV on commercial roofs is essential to develop this market. Specifically both conventional and BIPV approaches will be considered. The results of this work will be published in a report and in shorter technical papers. The report will be a general overview covering corporate strategy, specification choices, finance, contracts, planning, building regulations, risk management and aesthetics. The technical papers will summarise the most relevant information.

These publications will be made available at a nominal cost to industry and will be free to NSC partners and supporters.

Grid connection and DNOs

A best practice guide will be written with input from DNOs, consultants, developers and other relevant institutions from the electricity market. This guide is aimed at DNOs and will be marketed alongside training courses on solar PV. The aim of this activity is to speed up the DNO grid connection process. It will be coupled with work to identify areas most suitable for Distributed Generation.

This guide will be made available at a nominal cost to industry and at a discounted rate to NSC Partners and Supporters.

Research into storage and grid integration

The key to the long term growth of solar PV as significant contributor to the UK's electricity supply is the use of storage for load balancing and supply/demand matching. Support from DNOs, the National Grid and from Government is required to realise significant contributions. Encouragingly the Renewable Energy Roadmap and the DECC Energy Storage funding competition are supporting progress in this field.

This is an emerging area and one which the NSC will support. There are opportunities to develop pilot projects onsite at the NSC in St Austell and at other sites in Cornwall. A number of opportunities with overseas technologies and UK universities are currently being examined.

Training and coaching

In association with BRE Training and other training bodies, the National Solar Centre will develop a range of training courses to be rolled out across the UK. This activity will focus on added value courses that go beyond what is currently available. For example courses will include training for DNOs, complex designs, fault finding, "train the trainers" type courses, and finally outreach courses for young people demonstrating the benefits of solar PV.

Embodied environmental and social impacts

A project that examines the embodied environment impacts of solar PV production. A corresponding methodology for environmental certification will be developed in association with manufacturers.

BRE has significant expertise in developing environmental profiling tools and codes of practice, e.g. BREEAM, the Code for Sustainable Homes and the Green Guide for construction products. It is proposed that a similar approach is taken towards the environmental impact of solar PV. The issues of embodied impacts and end of life options will only grow as the industry expands and therefore tackling this issue is important to help the industry develop and mature.

Engagement with government agencies

The NSC will endeavour to engage with the relevant government departments at national and local levels to ensure that the solar PV industry is promoted in a positive way, based on impartial and accurate information. The NSC will co-ordinate efforts with organisations such as the Solar Trade Association and the National Farmer Union as appropriate.

Mapping of sites / grid / land / roofs

Working with DNOs, the Met Office, land agents, solar developers, consultants and planners, the NSC plans to develop an overarching map which describes among other things: land type and value; solar availability; energy demand profiles; grid strength and distributed generation areas; National Grid location; and DNO networks. By taking of overlay GIS approach it will be possible to develop this as a live tool.

Direct Support for cornish SMEs

The NSC will be holding a number of support events and one-to-one sessions with cornish SMEs. The aim of this support will be to develop expertise and business capabilities through coaching which will deliver innovation, improve processes, reduce costs and improve quality. There is scope to engage in research with a number of cornish SMEs as required – e.g. the NSC can commit time towards product development, developing research bids or providing consultancy expertise.

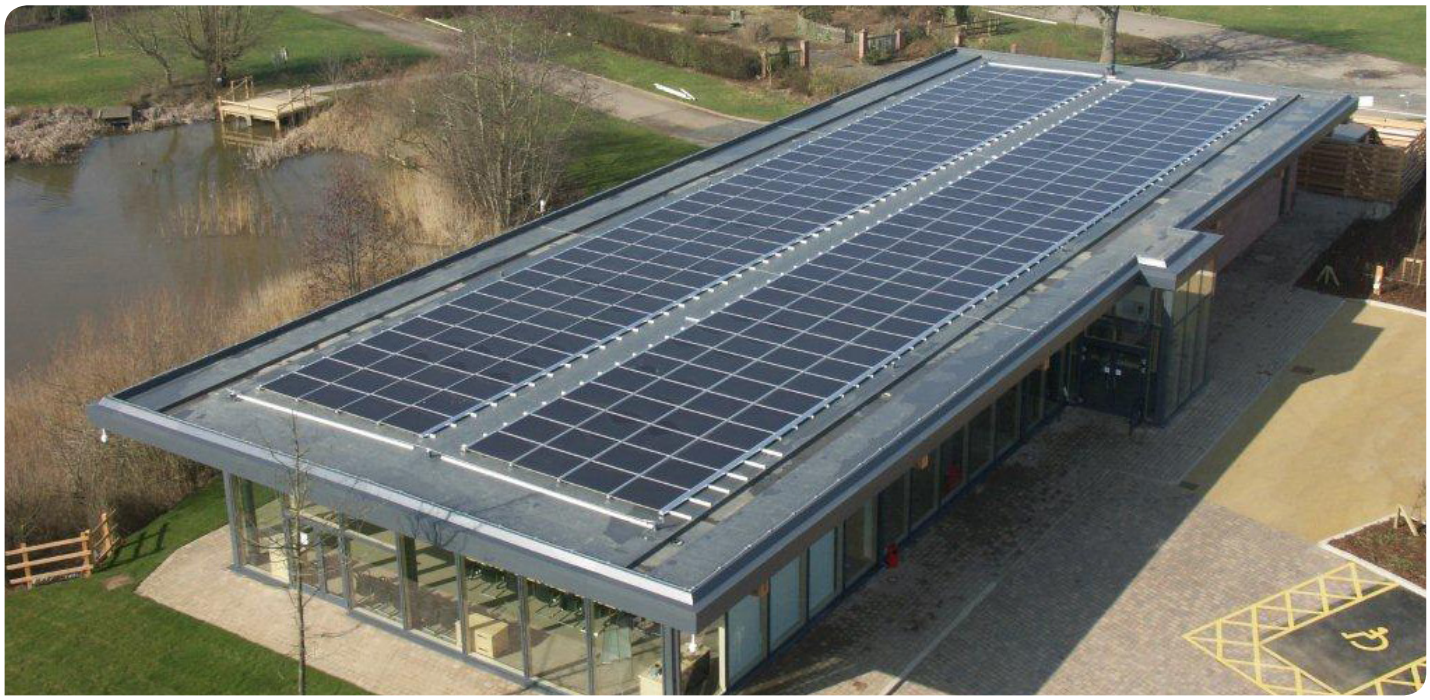

Image: National Farmers Union

Image: Sundog

Image: Ecotricity.co.uk

Commercial services

Services which are available on a commercial basis.

Due diligence services for project funders

The NSC will provide technical due diligence services on behalf of the funders of large scale solar developments. It will take an involved approach to ensure that high standards are met for quality, performance and reliability, to ensure that the most favourable rates of borrowing can be achieved. We plan to take a hands-on approach to optimise system performance based on the specifics of individual sites.

Scope includes: yield analysis, site visits, technical assessments, module performance testing and factory visits.

Design services for developers

The NSC team will include experienced engineers who have expertise in solar EPC works. As such they will be able to advise developers as required on specific problems, strategic issues or engineering challenges.

Fault finding for existing systems

The NSC will have a team of experience engineers who can engage in fault finding for existing installations. This service is targeting at installers, and to system owners and will provide recommendations for systems rectification and independent expert witness for any disputes.

The NSC will work with Cornish contractors to provide guidance on how they can improve their own operations by learning from the findings made through this commercial function. This will be delivered at various seminars and coaching events as detailed above.

Module testing for system performance evaluation

The NSC will have a test field for the evaluation of solar panels from different manufacturers. This facility will be used to evaluate panel performance under real UK weather conditions using a robust, scientific methodology. This information will be invaluable in terms of providing a UK reference test data which can be used by installers, developers and funders alike.

BIPV product development and testing

With a strong market forecast by a number of analysts, the Building Integrated PV market is set to rise in the medium term. The NSC in conjunction with BRE can provide testing and product development services. In particular the interaction with facades, roofing, and building structures will be examined in the context of structural standards and the Building Regulations. Part of this work will include expanding BRE's existing database of BIPV products.

We are keen to provide in situ testing of different BIPV configurations to provide calibrated data on performance.

Industry innovations

PV-thermal hybrid panels and fall within the scope of the NSC and will be the subject of research and certification activities. This area of emerging technology is one which we are keen to monitor and support where appropriate.

Integration with BIM and construction

BRE is actively developing opportunities in the rapidly expanding area of Building Information Modelling (BIM). Part of our activity to date has been to lead on applied research to develop renewable energy modules for use with BIM software. This will allow the modelling of solar PV to be better integrated with modern computer integrated construction, design and implementation processes. The NSC will trial this software with proactive construction companies, solar PV installers and software providers.

BRE Trust
The BRE Trust uses profits made by BRE Group to fund new research and education programmes, that will help it meet its goal of 'building a better world'.

The BRE Trust is a registered charity in England & Wales: No. 1092193, and Scotland: No. SC039320.

BRE National Solar Centre
BRE Wales & South West
Ethos, Kings Road
Swansea Waterfront, SA18AS

BRE National Solar Centre,
St Austell Business Park,
St Austell, PL25 4EJ

T +44 (0)1792 630100
E nsc@bre.co.uk
www.bre.co.uk/nsc