



‘Switching onto Sunlight in Wales’ Mid Wales Energy Agency, Wales, UK

Summary

In March 2005, following assistance from Mid Wales Energy Agency (MWEA) and Dulas Ltd, Bronllys Hospital in Powys, Wales (owned by Powys Local Health Board) became the first UK national health hospital to generate electricity from sunlight. The 60.62 kW Photovoltaic (PV) installation developed by Dulas Ltd employed 14 people during the construction period. The array will generate around 45,500 kWh / year, displacing an average of 20 tonnes of carbon dioxide/year.

The project received funding from the European Regional Development Fund and the UK’s Major Solar Demonstration Programme. The UK Carbon Trust has also helped to raise awareness of energy efficiency. Income from electricity generated will be invested into further energy efficiency measures.

End-user area	Target Audience	Technical
New buildings	Citizens	Energy efficiency
Refurbishment of buildings	Households	Heating
Transport and mobility	Property owners	Cooling
Financial instruments	Schools and universities	Appliances
Industry	Decision makers	Lighting
Legal initiatives (regulations, directives, etc)	Local and regional authorities	CHP
Planning issues	Transport companies	District Heating
Sustainable communities	Utilities	Solar energy
User behaviour	ESCOs	Biomass
Education	Architects and engineers	Wind
Other - Health	Financial institutions	Geothermal
Other - Public Service	Other	Hydro power
		Other

Context

Bronllys Hospital is a Powys Local Health Board (part of the NHS Trust in the UK) hospital in Wales. It is situated in the rural region of South Powys. The main health services are based around ten community hospitals with a range of diagnostic and rehabilitation facilities. The Board employs around 2,000 people mostly providing direct patient care. Sustainable energy is encouraged and welcomed in response to climate change responsibility and increasing recognition of the relationship between clean energy and health. The project has far reaching consequences - it deals with energy efficiency awareness, practice; and renewable energy generation. These are experienced by the staff, the patients and the visitors.

Objectives

The aim of this project was to identify and implement opportunities for quite high profile, public buildings to implement energy efficiency and renewable energy in the UK. It also aimed to improve energy use and efficiency of the hospital building and raise awareness of the relationship between clean energy and good health. This was achieved by raising staff awareness of energy issues through information provided by the Carbon Trust; and the installation of energy efficient measures. This was followed by exploration and implementation of renewable energy at the site. The project has involved significant public/private sector



partnership working by the hospital, through the Carbon Trust, Mid Wales Energy Agency, Dulas (installers) and the grant funders (detailed below).

Process

Following advice and improvements to energy use in the hospital, the managers considered renewable energy. Bronllys was built to provide TB sufferers with the best aspect to speed their recovery and so is south facing – ideal for PV's. Wood-heating was also considered. However, there was already an efficient heating system in place. Funding sources for PV were available, and following confirmation from Dulas Ltd the PV proposal was clearly technically viable.

The direct end users in this project are the hospital staff and patients. The awareness raising context however is most relevant for the Health Board in general, and the National Health and other public sector bodies, via press releases and a launch.

The project is one of the first in the UK that worked with local and national bodies to improve energy use and generation in a public sector hospital.

The phases of the project were 1. Identifying and carrying out energy efficiency opportunities; 2. Raising awareness; 3. Identifying option for renewables; 4. Applying for funding; 5. Developing an activity and payment schedule; 6. Installing and commissioning the system; 7. Launching and promoting the project

In the UK one of the main challenges to public sector capital investment is that the public- sector does not have disposable income or a high priority remit for sustainable energy. This means that until specific funds are made available there is no funding for much of the public sector to improve energy efficiency and renewable energy. There are four factors which contributed to the success of the project (in no priority – all were essential):

1. The enthusiasm and flexibility and patience of the Hospital / Local Health Board.
2. The availability of an independent Energy Agency (Mid Wales) to co-ordinate the Project.
3. The availability of European ERDF funding and the UK's Major PV Demonstration Programme at the same time.
4. The good working relationship, patience and flexibility of the funders, the hospital officers; and supporting bodies of MWEA and Dulas Ltd (consultants and installers).

Financial resources and partners

The project client was Powys Local Health Board (LHB) which carries out National Health Services in mid Wales. This public sector body has specific duties and budgets. The partners in the project were:

- The Carbon Trust who work to improve energy efficiency and raise awareness
- Mid Wales Energy Agency which identified the most appropriate renewable energy, co-ordination and hand-holding when required, helped to access funding and acted as a co-ordinator between the working and funding bodies
- Dulas Ltd, the installer company (plus sub-contractors) who committed a significant amount of time to project development as well as installation & commissioning work
- The Department for Trade and Industry, via their Solar Demonstration Programme; and the ERDF Objective 2 Office in Wales were also prevelant in adapting to the project timescale.

The total project cost was €547,586 (capital, installation and commissioning). Approximately 38% came from European Regional Development Fund and 62% came from the UK Government / Department for Trade and Industry Solar Demonstration Programme.

Support bodies:

Carbon Trust, UK Government
Mid Wales Energy Agency
Dulas Ltd (solar department)

www.thecarbontrust.co.uk
www.mwea.org.uk
www.dulas.org.uk

for energy efficiency
for renewable energy
for supply & installation

**Financial contributors:**

Department for Trade and Industry	Major PV Programme	€ 346,182
European ERDF Funds	Mid Wales Energy Agency	€ 201,404

(1 British Pound = 1.47360 Euro)**Results**

Installed:	60.625 kW	(485 modules @ 0.125kWp each)
Quantity:	45,450 kWh	
Total cost:	€ 547,586	(capital, installation and commissioning)
€/ kWh:	€ 0.11	

The market for the energy efficiency measures were mostly the hospital staff, who received energy awareness information.

The electricity generated from the PV's goes onto the national grid so everyone will potentially benefit from the generation of clean electricity, contributing towards reducing our dependency on fossil fuels.

During the project development approximately 8 meetings were held. These initially discussed the viability of the scheme, funding and application form completion. The later meetings were between Dulas and the Hospital staff to confirm preparation, installation procedures and payment schedules. A launch of the system is planned for later in 2005.

The process provided valuable and interesting experiences in regard to working across sectors – public and private. It had to include quite in depth communication between all involved in order to cater for the funding in particular (the Health Board finance had not dealt with grants before so needed to adapt to grant funding procedures)

Environmental benefits

- Improved energy conservation and use and therefore, reduced associated emissions
- Offsetting carbon use through renewable electricity generation (20 tonnes +/-year)
- Awareness of energy use within the hospital is most likely to become part of home life, thereby increasing energy reductions further.



Socio-economic benefits

- Improved comfort for the hospital, staff and residents
- Improved energy conservation and use and therefore, reduced fuel bills
- Local job creation / strengthening – 14 positions were supported in the project (project management, scaffolders, electricians, etc)
- Experience on the second largest PV installation in Wales
- Experience on the first NHS Hospital to create renewable energy from PV
- Local control and greater security of supply for electricity
- Benefits the local economy by keeping the majority of the finance circulating locally

Lessons learned and repeatability

Strengths

- Involving, strengthening and forming new and strengthened working relationships which overcame barriers and increased understanding between sectors and organisations
- Enthusiastic and committed partners
- Building on and stimulating enthusiasm for sustainable energy in the public health sector
- Empowering local organisations and individuals
- Availability of funding and access to one to one communication with designated funding officers to overcome time delays
- Linking energy efficiency and renewable energy to maximise on energy savings and clean generation

Opportunities for...

- Sustainable energy companies and agencies to increase experience, expertise and skills base
- Supporting existing, and creating jobs through project support and installation
- investment of funds and interest into local area
- Others to build on existing project and use its experience as a case study to repeat
- Others to have confidence to develop their own project elsewhere
- Raising awareness of sustainable energy
- Raising confidence of those involved through collaborative work, increasing knowledge, etc
- Developing a framework for public sector sustainable energy schemes
- Reducing dependency on fossil fuels
- Reducing CO₂ and other emissions associated with extraction, processing and use of fossil fuels

Considerations for future projects

- It all takes TIME – meetings, waiting for responses, official procedures, drawing up documents, tender process, implementation, unforeseen issues
- Regularly reviewing and keeping up with strategy of action, and communicating to encourage and support activity
- There is nearly always a solution and it often takes more than one person to find it – communication
- Ensure provision of accurate information to everyone that should know about the project. Providing a contact gives those interested an opportunity to discuss their interest and concerns. Information helps to build understanding, initiate discussion and enable a smoother flow of development, such as with statutory bodies and department not familiar with the grants or technologies involved.
- Involving key and local people helps to profile and promote projects, and supports the locality more
- What technology is being employed? What is its size, emissions, noise, aesthetics, installation time, proximity of homes, health and safety implications. Is the technology familiar? If not extra information may be required



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- Is there enough expertise? Are the people and experts to develop the project available? Where are they based? Are they available?
- How will the launch be co-ordinated. Funders and others involved may wish to carry out own media promotion. Provision of accurate information and maintaining communication will help to avoid conflict
- Who will deal with post-project requests for information and evaluation? Preparation of the project history, key contacts, photographs, etc can help save time in the long run.
- Ensure that there is one partner / person who will co-ordinate and push the project along; and that they are available and contactable

Challenges

- The best solution is not always the cheapest, bodies have different priorities, for one it might be CO2 savings, for another least disruption and another the cheapest option, etc. Different priorities can create issues (e.g. funding) but can be solved together as well.
- Building new relationships and protocols, especially with statutory bodies
- Ensuring and providing accurate and detailed information for those involved
- Finding funding to enable the project. Applications can require much detail and often have deadlines. It takes time for decisions to be made and there are often requests for more information. Letters of support and high profile can strengthen applications.
- Be prepared for the unforeseen, particularly with unique/ first projects and with new technology
- In terms of hospitals, schools and other public areas, and or, where there are vulnerable communities health and safety can become very detailed, particularly during construction so make sure everything is in place, including contingencies, times of work, etc
- Protocol such as planning, local authority processes, funding applications and developing contracts takes time. Some bodies only meet quarterly which means waiting for responses

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