



## Kirklees Council Solar PV Projects

Kirklees Council is the local governing body for an area of 253 km<sup>2</sup> in northern England consisting of the towns of Huddersfield, Batley and Dewsbury and surrounding areas, with a population of over 380 000 people. The Council has a dedicated Environment Unit covering areas of work such as biodiversity, energy management and renewable energy, environmental management systems, planning and policy development.

Kirklees Council was one of the first municipal authorities in the UK to promote the widespread use of PV on buildings within the urban area. The Council participated in the European funded project SunCities which led to the installation of 350 kWp of PV, mainly on social housing. The Council has also installed PV on council buildings and schools. The Environment Unit is the central point for co-ordinating renewable energy projects and initiatives.

Within PV UP-SCALE interviews were held with many people who have been involved over the years that the Kirklees PV projects have been developed. These included members of the Kirklees Council Environment Unit, housing associations, tenants and commercial developers.

Discussions focused on the benefits they saw from policies promoting renewables and the PV projects undertaken as well as lessons learnt and problems and solutions to pass on to others. A key question asked was what factors had in their opinion led to Kirklees becoming one of the leading areas to install PV in the UK? What problems had arisen and how had they been overcome?



*PV and Solar Thermal retrofit to houses in Primrose Hill*



## SunCities Solar PV project

Within the Kirklees district PV supplies renewable electricity to over 390 houses, apartments, schools, care homes and public buildings. The majority of these were installed under the SunCities project.

**SunCities** was a large European Commission funded project involving the installation of over 3 MWp of PV in the Netherlands, the UK and Germany. Kirklees was the location for the 351 kWp installed in the UK between 2000 and 2006.

The PV was installed in a number of locations.

- 40 kWp retrofit to 31 houses on Sackville Street, a Kirklees Community Association social housing complex in Ravensthorpe.
- 50 kWp on the roof of Titanic Mill, the conversion of an historic textile mill into 130 luxury apartments by a commercial developer as part of the CO<sub>2</sub> neutral development of the mill.
- 110 kWp in Fernside retrofit to 100 social housing properties, mainly occupied by elderly and disabled people, as well as 2 local schools.
- 113 kWp Primrose Hill – A solar village with 121 new and existing houses and flats.
- 40 kWp on 6 new build care homes for the elderly and people with disabilities.

Others projects:

- ZEN- Civic Centre III. PV (17.6 kWp), solar thermal and two 6kW wind turbines were installed on one of the main council buildings in the centre of Huddersfield as part of the Zero Emissions Neighbourhoods project.
- Moldgreen Primary School – 15.4 kWp with funding from the Major PV Demonstration Programme and the Councils Renewable Energy Fund.
- Scolar Programme – Cliffe House 0.8 kWp

The initial decision which eventually led to these successful PV projects was a decision in 2000 to set up the Kirklees Council Renewable Energy Capital Fund. The fund was set up using savings from reduced National Insurance contributions under the climate change levy.

The political decision to promote renewables was made reality by the Kirklees Council Environment Unit, which has a broad remit and enthusiastic renewable energy officers. The Environment Unit co-ordinates activities that promote and support the development of renewable energy both within and outside the Council including policy advice, technical and financial advice, developing demonstration schemes, securing and administering financial support for renewable energy.

Success in the early projects led to continuing political support, strengthening of policies to support renewables and further successful projects. Local enthusiasm and commitment to renewables was also strengthened when the Kirklees PV projects won an Ashden Award for Sustainable Energy, a British Renewable Energy Association Award and a Green Apple Award. Again these public measures of approval led to further political support for policies to promote renewables.

Like many success stories success has led to further success but would not have occurred without the presence of a number of individuals who were committed to renewables and persevered despite occasional set backs.



Council policies continue to develop in a manner that encourages renewables. The recently adopted 2025 Kirklees Environment Vision includes commitments to reduce greenhouse gasses, work with partners to become carbon neutral, continue to raise awareness of climate change and its impacts and to raise the environmental standards of buildings.

To meet these policies the council has set ambitious targets for the use of renewable energy in the district. Targets have been set in 4 areas:

1. Reducing the council's own CO<sub>2</sub> emissions by greater than 30% by 2020 from a 2005 baseline. This follows on from a successfully achieved target of a 30% reduction by 2005 from a 1990 baseline.
2. By 2010/11 all new council buildings will meet 30% of their energy demand from on-site renewable energy sources.
3. New developments across the district will be required, through the Local Development Framework, to reduce CO<sub>2</sub> emissions through increased efficiencies and incorporating renewable energy sources. Non-residential developments above a threshold of 500 m<sup>2</sup> along with all residential developments (new build, renovation or conversion) will aim to provide energy through incorporation of renewable energy sources to reduce predicted CO<sub>2</sub> emissions from the development by at least 10% by 2010, 15% up until 2015 and 20% up until 2020.
4. Increasing the proportion of the district's energy consumption coming from renewable resources to 10% by 2010. This follows on from a target to meet 5% of the districts energy consumption from renewable sources by 2005. Despite the considerable progress the Council has made in installing renewable energy across the district these targets are still a long way from being achieved. It is recognised that much larger scale projects are needed if these targets are to be reached.

Measures taken included:

- Analysis of renewable resources.
- Promoting and part funding domestic solar thermal systems through the Simply Solar Programme.
- Working in partnership for the development of exemplar projects such as the SunCities and ZEN projects.
- Administering the Renewable Energy Fund – a £200,000 Capital Grant Scheme for Council projects.

SunCities received funding from the Renewable Energy Fund as well as grants from the EC and the DTI major PV demonstration programme. The housing associations and the developers Lowry Renaissance also contributed to the costs. There was no charge to social housing tenants.

Retrofits also involved a programme of general refurbishment, increase in energy efficiency and insulation and solar water heating in some properties.

Housing Associations have set up maintenance contracts with installers or Kirklees Council Building Services.



## Summary of problems, barriers, solutions and recommendations

### **Building up positive political and popular commitment to PV was a vital part of getting substantial numbers of PV buildings installed in Kirklees**

Good projects lead to more good projects! Kirklees Council continues to develop policies and development plans which are positive to renewables. The success of the early PV projects led to confidence in renewable technologies and a willingness to push for more renewables in the area. Since the early 1990's Kirklees Council sought to take a lead on issues relating to the environment and energy. In 1992 the Council signed the Friends of the Earth Climate Resolution which included a commitment to making a 30% cut in greenhouse gas emissions by the end of 2005. This target was met and a further target for emissions reductions set. In 1998 the Energy and Water Conservation Fund was established to encourage energy and water conservation in Council services. The Council is the only local authority to participate in the UK Emissions Trading Scheme.

Recently the Council undertook a rebranding exercise which included redesign of their logo which now has a wind turbine as its inspiration. Council activities were refocused into four cornerstone 'Ambitions', one of them being *'Kirklees will be a beacon for green living'*.



In Kirklees support from local Councillors was a key point right from the beginning when Councillors voted to set up the Renewable Energy Fund.

Achieving good value and low cost was critical in demonstrating the effectiveness of PV as a technology and also assisted in securing external support. Value can be achieved in particular through innovation, increasing the scale of projects and achieving added value from effective integration e.g. displacing normal roofing costs and selling Renewable Obligation Certificates as well as power.



*PV on new housing at Primrose Hill*

Successful projects were built on by researching and publicizing the benefits obtained by early projects. For example in Kirklees the impact on the local economy was checked and the results publicized.

- Local jobs were created and local skills increased.
- More than £400,000 in external funds were brought in to the Kirklees community.
- The project attracted national attention.

In parallel consultation exercises residents in other areas of Kirklees expressed their support for more renewables to be installed in Kirklees.



### **Management of a complex project with multiple funding streams**

Funding is available from various sources to contribute to the costs of renewable energy systems such as PV systems. However the funding bodies normally have specific requirements, rules for eligible costs and times constraints. Obtaining and managing this funding has to be done within the constraints of a building programme which will have its own motivating forces, aims and timetable.

Solutions to this issue include:

- Keeping all partners engaged and committed throughout the project is crucial. Someone needs to take a lead on that. Note it may not be picked up by the person you think will do it.
- Projects often have multiple funding sources. Needs commitment from all partners to meeting the requirements of all funding streams. It may not be worthwhile to obtain small additions to the funding if it complicates the project management too much.

### **Getting projects started and finding the right buildings to put PV on**

Council policies aim to encourage the installation of renewable energy in the Kirklees area on buildings built or owned by a variety of different organizations.

- Good links between developers and the local council at the early stages of project development can lead to interesting projects.
- Individual developers may be interested enough to pursue renewable energy projects on their own.
- Encouraging developers or householders to take advice from other users/clients of PV systems allows them to obtain an objective view of the technology.
- For housing associations in particular having tenant representatives involved in the project can be a key to success. They can help with acceptance and security. As informed local residents they can be a focal point for enquiries and feedback, even taking part in workshops and talking to the media.



*PV on housing association properties in Fernside*

### **What to do with excess electricity?**

Electricity that is not used within the building will “spill out” on to the local electricity grid. In some countries a premium is paid for the export of this renewable energy but getting any payment at all



for exported electricity proved very difficult for the Kirklees projects, and obtaining a premium for producing renewable electricity has not so far proved possible.

Until recently only large renewable generators could realistically obtain Renewable Obligation Certificates (ROCs worth around 4.5 p/kWh) for the export of renewable electricity. Recent changes to legislation simplified the process for small scale generators, however a considerable amount of paperwork and effort is still required from householders to obtain and sell ROCs.

Kirklees Council Environment Unit wished to enable people to sell excess electricity and to group together to receive payment for ROCs. Kirklees Council conducted research on behalf of householders involved in the SunCities solar PV project to explore the options for selling back electricity. It was apparent that it can be very difficult for a householder to sell back electricity - it is a complex process and may involve switching to a more expensive electricity tariff. Since the research conducted in August 2005, the situation has improved. There are a number of suppliers who will offer to buy back energy from householders. They suggest that householders talk to their electricity company first to investigate whether it is necessary to switch tariffs and how this will impact on the cost per unit paid for energy consumed versus how much is paid per unit generated. However the majority of householders have not obtained agreements to sell excess electricity. Nor has it so far proved possible for householders to group together and aggregate ROCs to sell. These problems led to Kirklees Council lobbying for better payment for export of electricity and easier access to ROCs for small generators.

Actions suggested to maximise the benefits obtained from the electricity generated include:

- Starting with buildings with a good match between supply and consumption. Many of the PV powered buildings in Kirklees have a substantial demand for electricity in the daytime which maximizes the use of the PV generated electricity by the occupants. Examples include care homes and houses for young families and the elderly. The Titanic Mill building houses 130 apartments, many of which will be empty during the day, however the PV system is owned by Mill Energy Services, an energy service company that provides energy services to the building users. The PV generated electricity is used alongside a biomass fuelled CHP system to deliver energy to the ground floor spa and leisure centre, which has a substantially daytime demand, as well as to the apartments. The aim is to make the apartments CO<sub>2</sub> neutral.



*PV on the roof of Titanic Mill*

- Ensuring that the connection of the system to the local electricity grid is considered at an early stage in the design and discussed it with the electricity distribution network operator (DNO), as this can introduce a significant time delay within a project.



**PV systems are often described as needing minimal maintenance. However somebody still has to take responsibility for keeping an eye on them and ensuring they are running**

In Kirklees there have been very few problems with the PV systems. However it is still necessary to ensure that there is an effective plan for operation, maintenance and repair of systems. PV systems need to last to achieve their potential and elements of the systems, especially inverter devices, will require replacement and/or repair eventually, some inverters trip out and some tenants accidentally switched off their PV system. Access to individual properties for maintenance or repairs can be an issue; locating inverters in communal areas is one way around this problem in apartment or flats buildings.

With buildings such as schools or care homes it is important to make sure someone at the building “takes ownership” of the PV. For example at one site there was a fault showing on the display panel because one of the inverters was down, however it was not noticed or reported for some time. An operator’s handbook was available however there had been personnel changes since the system was installed and no maintenance personnel reside on-site. Kirklees Council Building Services staff received training in maintenance through the projects and the Council is now looking at providing recognised training courses (City & Guilds) for maintenance staff.

Private house owners who have chosen to install and pay for PV systems have a strong incentive to keep it working well, but if the house is sold the new owners will need to get to know the system and how to get the best from it. Creating an energy service company to own and run the PV system is an alternative to private ownership of the system by householders that particularly suits apartment buildings such as Titanic Mill.

Housing Association tenants need to know something about their PV systems. In Kirklees the housing associations prepared leaflets and the installers explained the systems when they were installed. The systems have been particularly successful at estates with a stable population and involved tenant representatives. Follow up can be done during a monitoring programme, for example at the Fernside solar village monitoring is done manually with a project officer visiting the houses on a monthly basis and noting meter readings. At the same time they can answer questions or concerns. At the first estate where PV systems were installed the tenants have changed fairly frequently leading to a poor understanding of energy issues with those tenants who were not there when the system was first installed. A tenant information sheet is now included in all new tenant packs.



*Fernside solar village housing*



### Sources of further information

Kirklees Council Environment Unit –

[www.kirklees.gov.uk/community/environment/renewable/renewable](http://www.kirklees.gov.uk/community/environment/renewable/renewable)

The Ashden awards - [www.ashdenawards.org/winners/mbc](http://www.ashdenawards.org/winners/mbc)

Titanic mill - [www.lowryhomes.com/titanicmill](http://www.lowryhomes.com/titanicmill)

Suncities - [www.suncities.nl](http://www.suncities.nl)

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