Design and Access Statement

<table>
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<th>Project</th>
<th>Rothwell Library PV Installation</th>
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<td>Project Reference</td>
<td>PV012b</td>
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<tr>
<td>Site Address</td>
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<td>Type of Application</td>
<td>Full Planning</td>
</tr>
<tr>
<td>Date</td>
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</tr>
<tr>
<td>Applicant</td>
<td>Rothwell Library</td>
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<td></td>
<td>Market Hill, Rothwell, NN14 6EP</td>
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<tr>
<td>Agent</td>
<td>Prescient Power</td>
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<tr>
<td></td>
<td>98 Market Street, Ashby de la Zouch, Leicestershire, LE65 1AP</td>
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Purpose of this document

This statement is provided to explain the design and access considerations for the proposed solar photovoltaic (PV) system installation at Rothwell Library in order to gain planning permission for this scheme.

Introduction

Rothwell Library is a public amenity provided by Northamptonshire County Council located in Rothwell Town Centre. Both the Council and the Library are very keen to promote public awareness of environmental issues whilst reducing its own energy demands and carbon footprint. This installation is in line with local, regional and national environmental policies as outlined in the Planning Support Statement for this project.

Design

As Rothwell is a conservation area, it is important to consider the design and layout of the installation with particular care to ensure that the character and beauty of the area is not compromised. Special attention therefore has been given to ensuring a sympathetic Solar PV design and layout that best suits the shape, style and age of the building and its immediate surroundings.

The installation will comprise of solar modules mounted on a metal framework fixed to the south facing roof using brackets. A south facing aspect is ideal for the installation as it gathers the greatest...
solar energy ensuring that investment is paid back in the shortest possible time.

The modules will be installed on the upper part of the roof to avoid shading from the trees in front of the library, thereby maximising solar gain and hence energy output. This will result in both the greatest financial gain and highest possible carbon savings.

The type of solar module was selected to best match the profile of the roof and thereby minimise any visual impact. The metal framework will be hidden by the solar modules which sit flush with the roof so that from ground level they will be barely visible.

**USE**

Energy will be generated by the modules during daylight hours. Output is therefore greatest during long bright summer months and correspondingly lower in the winter months. The energy generated will be used on site at the library and will directly offset the energy demand of the library. This will result in lower running costs for the library. In addition to direct saving of imported energy costs (typically 10p per unit (kWh)), the library will also received a ‘Feed-in-Tariff’ of 41.3p for every unit (kWh) of energy generated by the Solar PV installation. This is paid by the energy supplier and is used to further offset the energy bill for the library. It is estimated that the installation will generate 1614 kWh/year with an annual CO2 emission saving of 0.85t. Typical payback periods are 10 years, whilst the Feed-in-Tariff is paid for 25 years, leading to an overall profit for the library/NCC of around £12,000.

**AMOUNT**

The solar PV system will consist of 10 solar modules, each of approximate dimension 1.65m (H) x 1m (W) x 50mm (D) installed in line with the roof at approximately 30 degrees (the same angle as the roof). The angle of the modules maximises the energy production and allows them to be self cleaning.

**LAYOUT**

The 10 panels will be laid out in portrait in one row. The total length of the row will be approximately 10m. In order to avoid shading from the trees, to maximise energy production and to minimise any perceived visual impact, the modules will be installed approximately 30cm down from the top of the roof. By placing the modules at the top of the roof and out-of-reach, the risk of vandalism and theft is also greatly reduced. This improves the safety of the installation as there is no requirement to access the modules for maintenance once installed.

**SCALE**

The drawings attached with this application show the scale of the installation. The total roof area is approximately 120m$^2$ of which approximately 16m$^2$ will be covered with solar modules.

**LANDSCAPING**

No trees will need to be felled or pruned for this installation.

**APPEARANCE**

The solar PV modules are dark blue-black in colour with a small silver coloured metal frame around each. Indicative 'before' and 'after' photographs of the installation are at Enclosure 2 to the Planning Support Statement and product details can be found at Enclosure 8.

**ACCESS**

The Solar PV system will be positioned on the roof and does not require access by the general public. A meter will be suitably located in one of the private staff rooms or the electrical room in the library and will be accessible to those requiring to read the meter. A public display will be located in or near the foyer of the library and will allow the public to read more about the installation and its current generating output.
Photographs

Street View of Rothwell Library - 'Before'

Indicative Street View of Rothwell Library - 'After'
Aerial View of Rothwell Library - 'Before'

Indicative Aerial View of Rothwell Library - 'After'
Enclosure 3 to Planning Support Statement

Renewable Energy and Climate Change Impact Statement

The installation of 2.1kW of Solar PV at Rothwell Library will contribute directly to reduce the Region’s carbon footprint. Using the government recommended SAP calculations, it is estimated that the installation will reduce carbon emissions by 0.85t per year.

Enclosure 4 to Planning Support Statement

Utilities Statement

The installation will require a G83 certificate to allow it to be connected to the National Grid. This permits the export of excess energy to the National Grid on, for example, Library closure days.
Planning Support Statement

Project: Rothwell Library PV Installation
Project Reference: PV012b
Site Address: Rothwell Library, Market Hill, Rothwell, NN14 6EP
Type of Application: Full Planning
Date: 11 January 2011
Applicant: Rothwell Library
Market Hill, Rothwell, NN14 6EP
Agent: Prescient Power
98 Market Street, Ashby de la Zouch, Leicestershire, LE65 1AP

CONTEXT AND NEED FOR DEVELOPMENT

The proposed Rothwell Library Solar Photovoltaic (PV) installation is a small scale PV installation designed to provide the maximum amount of the library’s energy needs from renewable sources within the available budget. The project is part of Northamptonshire County Council’s (NCC) Sustainable Energy Demonstration in order to determine the future viability of Solar PV in Northamptonshire. The PV project satisfies a number of planning policies from the national to local level as outlined below.

NATIONAL PLANNING POLICIES

PPS1: Delivering Sustainable Development. (January 2005)
http://www.communities.gov.uk/publications/planningandbuilding/planningpolicystatement1

- Para 13(ii) - Regional planning bodies and local planning authorities should ensure that development plans contribute to global sustainability by addressing the causes and potential impacts of climate change – through policies which reduce energy use, reduce emissions..., promote the development of renewable energy resources, and take climate change impacts into account in the location and design of development.

Solar PV installations produce energy from the sun and are an entirely renewable source of energy. Their use reduces our reliance on energy from the National Grid which is largely generated from fossil fuels. The installation of Solar PV on a NCC building helps to promoted the development of renewable energy resources.
• **Para 20** - Development plan policies should take account of environmental issues such as: mitigation of the effects of, and adaptation to, climate change through the reduction of greenhouse gas emissions and the use of renewable energy...

The increased use of Solar PV helps to reduce greenhouse gas emissions as they reduce the reliance on energy from the National Grid which is largely generated through the use of fossil fuels.

• **Para 22** - Regional planning authorities and local authorities should promote small scale renewable and low carbon energy schemes in developments

The Rothwell Library PV project is a small scale renewable energy scheme, with zero carbon emissions.


• **Para 1(vi)** - Small scale projects can provide a valuable contribution to overall outputs of renewable energy and to meet energy needs both locally and nationally.

Rothwell Library will provide a significant amount of the library's daily electricity demand thereby providing a small step towards reducing both local and national energy needs.

• **Para 1(vii)** - Local planning authorities should seek to promote the knowledge of and greater acceptance by the public of renewable energy developments.

Rothwell Library is located in the centre of Rothwell and the Solar PV project will serve to promote NCC's commitment to a sustainable future.

• **Para 18** - Small scale renewable energy schemes utilising technologies such as solar panels... can be incorporated into new developments and some existing buildings. Local planning authorities should specifically encourage such schemes through positively expressed policies in local development documents.

The Solar PV installation on the Rothwell library roof is an example of the use of renewable energy on an existing building. Encouragement of similar schemes in local development policies can be supported by using the Rothwell Library as an exampler.

REGIONAL PLANNING POLICIES

East Midlands Regional Plan (March 2009) [http://www.gos.gov.uk/497296/docs/229865/East_Midlands_Regional_Plan2](http://www.gos.gov.uk/497296/docs/229865/East_Midlands_Regional_Plan2)

• **Policy 39: Regional Priorities for Energy Reduction and Efficiency** Para 3.3.78 states that a reduction in electricity consumption of around 1.5% per year in the East Midlands [is required]. Para 3.3.79 promotes the use of small scale renewable electricity generation, such as Photovoltaics to reduce energy demand from the grid and carbon emissions.

The use of energy generated by solar PV on the Rothwell library roof will contribute to the reduction of energy demand from the national grid.

• **Policy 40: Regional Priorities for Low Carbon Energy Generation** Para 3.3.84 states that renewable energy makes a minor contribution to the Region's capacity (approximately 2%) and the East Midlands lags behind the other English regions.

The Rothwell Library PV project will generate a significant proportion of the library's energy requirements and will contribute to increasing the proportion of renewable energy generated in the region.


• **Policy ENG10B**: To ensure that an increasing amount of the electricity used is generated from renewable sources.
The use of Solar PV on the Rothwell Library roof will increase the amount of energy generated from renewable sources.

- **Policy ENG11**: To promote and support a growing market in renewable energy electricity generation.

By supporting the Rothwell PV project, NCC will promote and support renewable energy electricity generation. The use of East Midlands based Prescient Power Ltd to carry out the installation directly supports a regional renewable energy business.

- **Policy ENG13**: To encourage the uptake of domestic and small scale community owned or run renewable energy schemes.

Rothwell Library will have an information board in the foyer of the building, showing photographs of the installation and how much energy is currently being generated. This is an example of renewable energy working for and within the community. The information board will educate and may encourage local home owners to install renewable energy in their homes.

**LOCAL POLICIES**

**North Northamptonshire Core Spatial Strategy (June 2008)**


- **Policy 13**: Distribution of Retail Development

  Larger towns in the area will be strengthened and regenerated as the focus of sustainable communities in North Northamptonshire... The remaining smaller towns and rural service Centres will consolidate their roles in providing mainly convenience shopping and local services.

  The overall aim of Policy 13 in respect of Rothwell is to "Maintain pleasant Town Centre" and maintain local services. Rothwell library is situated in the heart of Rothwell town centre and serves a vital role in this aim and is therefore unlikely to be closed or moved. The installation of PV on the roof will therefore be a secure investment for NCC and allows the library to move towards self-sufficiency.

- **Policy 14**: Energy Efficiency and Sustainable Construction.

  Development should demonstrate that...the demand for power, heat and any air cooling is met by at least 30% being obtained from on-site and/or off-site local decentralised renewable non-fossil fuel sources;

  Although Policy 14 applies to new developments only, the principle that a percentage of energy needs is produced on-site is in line with the Rothwell Library PV project which ensures that a significant proportion of the library’s energy needs a provided by renewable sources.

The design and appearance of the installation will not impact on the amenity of the locality in anyway as it is mounted on an existing roof and not on land that could otherwise be used. It is noiseless and does not affect the profile or skyline of the library building. It will slightly alter the appearance of the building but will be designed and installed in such a way as to minimise any impact on character. The Solar PV panels have a similar appearance to skylights that are commonly installed on roofs to allow more light into a building and indeed are present on the rear roof of the library.

**DESCRIPTION OF DEVELOPMENT**

The Rothwell PV project involves the installation of a 2.1kWp photovoltaic system on the south facing roof of Rothwell Library. The system will comprise of 10 solar modules mounted on a metal framework which will be fixed flush to the roof using brackets. The modules will installed on the upper part of the roof to avoid shading from the trees in front of the library, thereby maximising energy output and carbon savings. It is estimated that the installation will generate 1614 kWh/year with an annual CO2 emission saving of 0.85t.
The surrounding area has been considered when designing and siting this installation; in particular the status of Rothwell town centre as a conservation area.

No trees will need to be felled or pruned for this installation.

**SUPPORTING DOCUMENTS**

Enclosures:

1. Regulation 3 Local List 5: Design and Access Statement
2. Regulation 3 Local List 22: Photographs
3. Regulation 3 Local List 26: Renewable Energy and Climate Change Impact Statement
4. Regulation 3 Local List 32: Utilities Statement
5. Site Location
6. Existing Roof and Elevation Plans
7. Proposed Roof and Elevation Plans
8. Product Details
ABOUT YINGLI SOLAR

Yingli Solar is a vertically integrated manufacturer of solar photovoltaic modules. Under one roof we manufacture our ingots, wafers, cells and modules. This ensures that we can tightly control our material and production quality, offering our customers leading product durability and sustainable performance backed by our 25 year limited power warranty*.

PERFORMANCE

>> High efficiency, polycrystalline solar cells with high transmission and textured glass delivering a module series efficiency of up to 14.2%, minimising installation costs and maximising the kWh output of your system per unit area.

>> Power tolerance of +/-3% minimising PV system mismatch losses.

QUALITY & RELIABILITY

>> Robust, corrosion resistant aluminium frame independently tested to withstand wind loads of 2.4KPa and snow loads of 5.4KPa ensuring a stable mechanical life for your modules.

>> Take confidence in our modules with a 5 year limited product warranty and a 25 year limited power warranty*.

>> Modules protected by box during transportation and with 20 modules in a box on-site waste is minimised.

>> Modules independently tested to ensure conformance with certification and regulatory standards.

>> Manufacturing facility certified to ISO 9001 Quality Management System standards.

WARRANTIES

5-year limited product warranty*
Limited power warranty*: 10 years at 90% of the minimal rated power output, 25 years at 80% of the minimal rated power output

QUALIFICATIONS AND CERTIFICATES

IEC 61215 Edition 2, IEC 61730 Class A, CE, ISO 9001

* In compliance with our Warranty Terms and Conditions

www.yinglisolar.com
**ELECTRICAL PARAMETERS**

Electrical parameters at STC (1,000 W/m², 25°C, AM 1.5 according to EN 60904-3)

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**MECHANICAL PARAMETERS**

Dimensions (length [mm] / width [mm] / thickness [mm])

1,495 / 990 / 50

Thickness with junction box [mm]

50

Weight [kg]

18.0

Junction box (manufacturer / protection degree / number of diodes)

CIXI / IP65 / 6

Junction box dimensions (length / width / thickness [mm])

151 / 122 / 25

Positive cable & negative cable (manufacturer / length [mm] / cable cross-section [mm²])

CIXI / 1,200 (900) / 4.0

Plug connector (manufacturer / type / protection degree)

MC4 / UV resistance and self-locking / IP67

Front cover (material / thickness [mm])

Tempered Glass, 3.6mm

Cell type (quantity / technology)

54 / polycrystalline / 156 x 156

Encapsulation materials

Ethylene Vinyl Acetate (EVA)

Rear cover (material / thickness [mm])

Le – PET – PVDF / 0.287

Frame (material)

robust anodized aluminum alloy

**OPERATING CONDITIONS**

Operating temperature [°C]

-40 to +85

Max. wind load / Max. snow load [Pa]

2.4K / 5.4K

**PACKAGING**

Number of modules per box

20

Box size (length [mm] / width [mm] / depth [mm])

1,570 / 1,340 / 1,165

Box Gross weight in kg

420

Boxes per pallet

1

*The data does not refer to a single module and they are not part of the offer; they serve for comparison only to different module types.*

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