

First Tier LCN Project Registration

DNO(s)
Central Networks

Registration date

Project description	
Project title	PV impact on Suburban networks
Project background	<p>The introduction of feed in tariffs within the UK has shown an increase of micro generation connected to the low voltage distribution network. This is becoming increasingly evident from the range of companies offering free PV installations in exchange for the revenue from the tariffs. If a high penetration of micro generation is installed in a compact suburban environment, the cumulative effect is expected to have a substantial impact on the existing distribution network.</p> <p>Nottingham is one location where a significant number of PV panels have already been installed in dense locations; further dense areas are also due to be developed.</p> <p>106 kW of PV Panels have been installed and up to 1235kW are scheduled to be installed in Aspley and the Meadows by the Meadows Partnership Trust, Nottingham City Council and Blueprint.</p>
Scope and objectives	<p>The project will monitor the profile of eight selected substations or individual feeders in areas where PV panels have already been installed or are expected to be installed.</p> <p>Through this project, CN will explore the following aspects:</p> <ul style="list-style-type: none"> • How to measure and capture voltage, current, harmonic, real and reactive power data on a range of distribution assets in suburban areas. • How to install equipment safely with minimal or no interruption of supply • How often the network characteristics need to be monitored (for example 1min, 5min, 15min) • How we can interrogate the large amounts of data generated to highlight significant network issues created by the installation of PV panels • What the effect is of installing large numbers of PV panels on the LV network <p>We aim to share our learning with other DNOs in November 2012.</p>
Success criteria	<ul style="list-style-type: none"> • Select a range of sensors to be developed and tested by April 2011 • Install the substation monitoring equipment by May 2011 • Determine the frequency of monitoring each characteristic by July 2011 • Analysis 12 months data, highlighting the measured impact of PV on the distribution network by September 2012 • Write a close out report around the key objectives and the lessons learnt by November 2012.
TRL(s)	TRL 7-8
Predicted end date	Nov-2012
External Collaborators and external funding	<p>Central Networks will be working with the MOZES group, Haysys Ltd and Nottingham City Council.</p> <p>Central Networks will not be funding the installation of any PV panels.</p>
Solutions	The solution consists of using industrial meters with GSM/GPRS capability, a number of voltage and current sensors.

Potential for new learning	<p>The expected learning from this project include:</p> <ul style="list-style-type: none"> • An assessment of the impact of PV panels on the LV network and which network factors could limit the further installation of more PV panels. • An assessment of the effectiveness of the range of sensors selected • The feasibility of installing monitoring equipment • An assessment of any incurred CML's or CI's and any safety concerns • An outline of the key constraints of installing high levels of PV panels in Suburban areas (Voltage, Current, Harmonics, 2 – 50th, real and reactive power flows) • A definition of an optimal interval of data capture and recovery • An assessment of how many panels can be installed before network reinforcement is required.
Risks	<p>To comply with CN's safety rules, there is a risk that during installation of the sensing equipment, we may have to enforce an outage, which would have an impact on CML's or CI's</p> <p>There is a risk that PV panels may not be visible at the substation, which means other LV locations need to be monitored to gather the required data, therefore incurring additional cost and increased timescales.</p> <p>There is a risk that installations of further PV panels may be delayed; this may impact on the timescale of the project.</p>
Scale of Project	<p>The project incorporates monitoring eight distribution substations in the Meadows and Aspley area.</p> <p>These substations have been selected because they have the greatest theoretical effect from PV panels or can be used as a direct comparison to the other sites.</p> <p>Monitoring eight different sites across two different areas should be sufficient to detect any anomalous results. This low voltage network will allow ample opportunities for further projects to install new technology or carry out operational network changes to reduce the apparent effects of micro generation.</p>
Geographic area	The Meadows and Aspley, Nottingham
Does the Project involve customer engagement?	Yes

Funding	
Revenue allowed for within the DPCR5 settlement (£)	£0
Indication of the total Allowable First Tier Project Expenditure (£)	£100,000

Publication	
Does the DNO provide Ofgem with consent to publish its First Tier LCN Project Registration Pro-forma in full?	Yes
If not, please justify which parts the DNO considers to be confidential	N/A

Related Undertakings	
Payments to Related Undertakings (£)	0
If a payment is to be made to any Related Undertaking that is a Distribution System User, have the same terms been offered to similar Distribution System Users of the part of the network that is within the project boundary?	
Has the DNO used reasonable endeavours to make the opportunity available to similar Distribution System Users of the part of the network that is within the project boundary?	

IPR arrangements

If IPRs are generated, will they conform to the default IPR arrangements set out in the LCN Fund Governance Document?	Yes
If no, then please provide a compelling justification for the project being approved	N/A