Scottish and Southern Energy Power Distribution

Date of Submission

July 2014

Network Innovation Allowance Progress Report

Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form.

Network Licensees must publish the required Project Progress information on the Smarter Networks Portal by 31st July 2014 and each year thereafter. The Network Licensee(s) must publish Project Progress information for each NIA Project that has developed new learning in the preceding relevant year.

Project Progress

Project Title	Project Reference
Magnetically Controlled Shunt Reactor (MCSR)	NIA_SHET_0012

Project Licensee(s)	Project Start Date	Project Duration
Scottish Hydro Electric Transmission	Dec 2013	9 Months

Nominated Project Contact(s)

David MacLeman

Scope

The scope of this project is to institute a study aimed at establishing the feasibility of installing a trial MCSR on the SHE Transmission network.

MCSRs have not been installed in GB and several details about the technology and the commercial and operational aspects of its implementation need to be assessed before developing enough confidence to do a trial installation on the network. The following aspects will form the methodology of the feasibility study:

- Best location to perform trial of the MCSR
- System data such as background harmonic levels and impedances
- Specification of the performance required for the MCSR on the basis of the chosen site and data
- Integration of the specified MCSR with filtering equipment and capacitors to achieve functionality equivalent to that of a standard like for like SVC
- Complete electrical and civil designs
- Complete quality and procurement review of the supplier, ZTR
- Risk analysis of the technology and potential impact on the trial
- Establishment of training, operation and maintenance requirements
- Costing of the trial installation project activities including training and harmonisation of procedures to address any potential incompatibilities between Russian and GB systems

The activities will be broken into distinct work packages and a report produced at the end of each work package.

Objective(s)

- Establish the best location for installing a trial MCSR, its performance specification and the relevant system data for the chosen location
- Utilise results from activities above as input for a detailed design of MCSR with capability to be adapted for the functionality of an SVC and including all associated electrical and civil designs
- Review ZTR's quality and procurement processes
- Perform risk analysis of the technology
- Establish the training, operation and maintenance requirements
- Compile reports with results of the study for use to decide the viability of a trial installation and as the design for the potential trial

Success Criteria

The success of this project is based on completion of the study and reports which can provide a basis for deciding the viability of installing a trial MCSR on SHE Transmission's operational network without compromising safety, health and the environment as enshrined in GB statutes.

Performance Compared to the Original Project Aims, Objectives and Success Criteria

Objective: Establish the best location for installing a trial MCSR, its performance specification and the relevant system data for the chosen location

SHE Transmission's Peterhead and Kintore substations have been identified as potential locations for installation of a trial MSCR. Power system studies and practical assessments are ongoing to establish the most suitable trial site, the appropriate connection voltage (both of the identified sites are 275kV/132kV substations), and the detailed specification of the MCSR that will be trialled. The other objectives of this study are dependent on the completion of this objective.

The potential benefit of an MCSR based SVC is to eliminate the need for step-down transformers and numerous discrete reactors, since the MCSR and associated capacitors and filters are connected directly to EHV busbars, thus decreasing costs for the network.

Required Modifications to the Planned Approach During the Course of the Project

None.

Lessons Learnt for Future Projects

One of the potential risks identified at an early stage of this project concerned the ease of adapting to or harmonising with quality control, procurement and operational processes between different countries, particularly in cases of major network assets being procured from outside GB.

Another pertinent lesson is that where international procurement is expected, contingency planning should consider the possibility of unforeseen political developments which may have a direct impact on the project. Both points above emphasised the importance of risk assessments which place a higher risk rating for projects which involve international procurement since this enables a corresponding level of mitigation to be prepared.