WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

Date of Submission

Feb 2016

NIA Project Registration and PEA Document

Notes on Completion: Please refer to the **NIA Governance Document** to assist in the completion of this form. Please use the default font (Calibri font size 10) in your submission. Please ensure all content is contained within the boundaries of the text areas. The full-completed submission should not exceed 6 pages in total.

Project Registration

Project Title		**Project Reference**
Time Series Data Quality		**WPD_NIA_011**
Funding Licensee(s)	**Project Start Date**	**Project Duration**
Western Power Distribution	Feb 2016	Feb 2017
Nominated Project Contact(s)		**Project Budget**
James Bennett		£163,800

Problem(s)

Distribution Network Operators keep historic time series data from a wide variety of sources across the network within a number of databases which can be interrogated on an 'as needed' basis, generally for planning purposes. Due to the sheer volume of data, errors, omissions and underlying trends are difficult to spot by relying on manual intervention alone. This project seeks to investigate the use of data analytics to understand data quality and identify trends and issues which would not be identifiable to the human observer.

Method(s)

Established 'Big Data' analytics techniques shall be used by a third party to process the huge amounts of time series data held for one licence area in order to identify data quality issues and emerging trends.

The processes and outcomes shall be documented in order to replicate across the other licence areas and to other DNOs.

Scope

Two years' worth of historic time series data for the South-West License are will be taken from the available databases and used for data analysis by a specialist 3rd party contractor. A set of repeatable and scalable processes shall be established to;

- Identify gaps
- Identify suspect/defective data
- Create rules to replace missing/defective data
- Assign directions to power flows
- Identify the causes of suspect data through common patterns

The project will also look at what other information could be incorporated in to the 'Big Data' analytics to further validate data quality.

Objective(s)

- Produce repeatable processes that can accurately identify the conditions set out above
- Produce lists of actions for the appropriate business units regarding any defects found
- Produce recommendations to improve time series data quality based on the outcomes of the project

Success Criteria

- Accurate identification of the conditions set out in the scope
- Successful correction of defects found
- Improvements to business processes based on recommendations from the project

Technology Readiness Level at Start	Technology Readiness Level at Completion
5	7

Project Partners and External Funding

None

Potential for New Learning

The successful conclusion of this project could result in significant new learning associated the use of data analytics to validate and improve data quality which will prove invaluable as the role of the DNO changes

Scale of Project

One license areas worth of data shall be used for the purpose of this trial as performing studies per license area provides the simplest way to undertake data extraction from multiple systems. The outcomes from the project shall be scalable to include data from other areas in the future.

Geographical Area

South-West License Area

Revenue Allowed for in the RIIO Settlement

NIL

Indicative Total NIA Project Expenditure

£147,420

Project Eligibility Assessment

Specific Requirements 1

1a. An NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

A specific piece of new (i.e. unproven in GB, or where a Method has been trialled outside GB the Network Licensee must justify repeating it as part of a Project) equipment (including control and communications systems and software)	☐
A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)	☐
A specific novel operational practice directly related to the operation of the Network Licensees System	☒
A specific novel commercial arrangement	☐

Specific Requirements 2

2a. Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees ☒

Please answer one of the following:

i) Please explain how the learning that will be generated could be used by relevant Network Licenses.

As all UK electricity DNOs collect time series data in some form the learning gained from this project would allow for more efficient working practices to be adopted across the country.

ii) Please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the Project.

Is the default IPR position being applied?

Yes	☒
No	☐

If no, please answer i, ii, iii before continuing:

i) Demonstrate how the learning from the Project can be successfully disseminated to Network Licensees and other interested parties

ii) Describe how any potential constraints or costs caused, or resulting from, the imposed IPR arrangements

iii) Justify why the proposed IPR arrangements provide value for money for customers

2b. Has the Potential to Deliver Net Financial Benefits to Customers ☒

Please provide an estimate of the saving if the Problem is solved.

More accurate time-series data will allow targeted smarter interventions which in turn will enable a reduction in load related reinforcement by 1% over RIIO-ED1

Please provide a calculation of the expected financial benefits of a Development or Demonstration Project (not required for Research Projects). (Base Cost – Method Cost, Against Agreed Baseline).

It is envisaged that once the analytics processes are established they can be within normal business processes. Expected financial benefit = £115,000

Please provide an estimate of how replicable the Method is across GB in terms of the number of sites, the sort of site the Method could be applied to, or the percentage of the Network Licensees system where it could be rolled-out.

The method is easily replicable across the whole of the GB network licensees

Please provide an outline of the costs of rolling out the Method across GB.

Once the principles are established then the actual roll-out cost will vary dependent on each DNOs in house processing capabilities.

2c. Does Not Lead to Unnecessary Duplication ☒

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

Research has shown that no electricity licensees have any projects which may cause duplications

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.