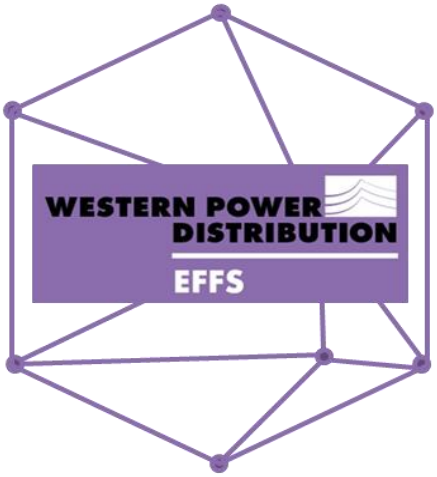
WESTERN POWER DISTRIBUTION
August 2018

Western Power Distribution

EFFS Project: RFFI Response

Responses to Ofgem's Request For Further Information



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1. Introduction

This document is Western Power Distribution's (WPD) response to Ofgem's Request For Further Information (RFFI) issued on 13th August 2018.

We understand that Ofgem are requesting further detail to help justify the proposed budget and to articulate how the outputs from the Electricity Flexibility and Forecasting System (EFFS) will be applicable to the other licensees. While we have made our best endeavours to answer the questions, the level of detail to which responses can be provided is naturally limited by the project not yet having delivered the results of the investigative work in the early phases. While the process to define the roles and responsibilities of a DSO has started, there is still considerable work to be done to understand the detail of the functions a DSO will perform and the tasks and processes required to support those functions. As the projects work together and obtain a more detailed view of any overlap between the systems implemented under EFFS, Fusion and Transition, further savings may be available. At this stage we have highlighted potential synergies where savings might be anticipated.

The stage-gate assessment, mandated by the project direction, seemed to recognise that opportunities for collaboration and cost reduction would be better assessed after the design phase is complete. It is still our belief that the stage-gate assessment, combined with routine regular collaboration between the three projects before and after the stage-gate, provides a pragmatic solution to the problem of having insufficient information now to manage the potential for overlaps. That said, we can see that the reluctance of a DNO with potential to make savings to change their budget after engaging with other DNOs would suggest a risk of non-cooperative behaviour during the project lifetimes. WPD remains committed to delivering the project in an open and transparent manner. We propose to provide regular updates on further collaboration potential and savings identified. We are willing for these assessments to be independently verified or audited by Ofgem.

We hope that the following answers are sufficient to demonstrate the points, relating to justified budgets and adoptable outputs, below.

1) WPD designed EFFS to be cost effective from the start

EFFS was designed to exploit synergies with other projects, i.e. keeping costs low by using existing market platforms and their customers for the trial. Costs are minimised by adopting a short, focussed trial phase and the project benefits from a very significant contribution to the funding by AMT-Sybex such that the funding request represents only 68% of the project costs.

2) WPD is committed to generating benefits from collaboration where these can be achieved

As a result of EFFS leveraging existing software, the timescales for EFFS will be shorter than those for projects that are looking to develop software from scratch and include the development of market platforms that are not required by EFFS. With EFFS providing outputs earlier than other projects, such as for the forecasting work, the opportunities for EFFS to benefit from the outputs of Fusion and Transition are limited as they arrive too late for EFFS. However, we have been able to commit to savings from a joint approach to stakeholder engagement and a co-ordinated approach

with the ENA Open Networks (ON) Project, National Grid etc. Similarly we are committed to assessing further opportunities for savings both as part of the stage-gate process and also as a routine element of the engagement and coordination between the projects.

2. WPD Responses

Question 1 – Whole Project Costs commentary

"Please provide a detailed commentary against each work package/line item in the 'whole project costs' tab of the full submission spreadsheet you submitted in July. Within this commentary please describe:
a) The internal processes you put in place to understand where there may be areas of unnecessary duplication before engaging with other licensees.
b) The processes you implemented within your business after engaging with the other licensees to remove areas of un-necessary duplication or reduce cost?
c) The areas of potential future savings relative to the proposed budget which are attributable to the processes for avoiding unnecessary duplication which you have implemented – please include the scale of potential future savings.
d) The approach you will take to achieve these future savings"

Answers for the rows of the whole cost summary spreadsheet are given in the following tables which give the answers for parts a, b, c and d. Rows have been grouped to avoid repetition where the answers are the same.

Rows 7- 8	**WPD Programme Governance & AMT-Sybex Project Management** Strong programme governance and project management will be essential for successful EFFS project delivery. Activities include: EFFS project management and governance, stakeholder management, production of project deliverables such as the Mobilisation Exit Report and the Project Progress Reports
a)	Following review with AMT-Sybex, it was concluded that the WPD Programme Governance & AMT-Sybex Project Management would not be an area of unnecessary duplication.
b)	Workshops, conference call discussions and reviews were organised to better understand the SSEN Transition and SPEN Fusion projects. As we understand that the Expert Panel has assessed this criterion for each of the DSO proposals and is comfortable with the proposed project outputs and accept that the development of three complementary, smaller projects may offer added learning sooner and with potentially less delivery risk. An approach where all three DSO projects would be managed as part of a single programme was not deemed feasible. In addition, a 6 month increase over the original time scale proposed (in order to better fit with the other DSO projects) was incurred. This increase in project timescale increased project costs, which have been absorbed.
c)	The project savings were assessed to be negative, as significant additional effort was identified to support the additional governance collaboration with the SSEN Transition and SPEN Fusion projects. Due to the nature of the activities, it is not expected that there will be project management savings that are enabled directly by collaboration. However if collaboration allows for the projects to conclude earlier than planned by reducing the combined workload, then this may reduce project management costs.
d)	WPD and AMT-Sybex agreed to collaborate with the SSEN Transition and SPEN Fusion projects, and coordinate with the ENA ON project, absorbing the additional costs associated with increased collaboration. Where input from other projects requires

	alteration / extension to the scope of EFFS in order to deliver future savings to their projects, this would be achieved by agreement between the parties at that time.

Rows 9-12	**Mobilisation by AMT-Sybex, WPD, Academic partner for Forecasting** Activities include preparation of contracts with key project stakeholders, procurement and mobilisation of the forecasting academic partner, Affinity Suite license, further refinement of the project plans, initiating risk mitigation actions, establishing co-ordinated plans with Cornwall Local Energy Market and Entire etc.
a)	Similar to the necessity for the WPD Programme Governance and AMT-SYBEX Project Management, these costs are an unavoidable and project specific element that does not lend itself to cost reduction via collaboration. Duplication of effort is, however, reduced by adopting the standard project management processes, templates, contract terms etc. rather than recreating these for each project.
b)	The workshops, conference call discussions and reviews with the Transition and Fusion teams did not identify the potential for collaborative cost savings for these activities. However, the process to procure an academic partner for the forecasting work was changed to become more collaborative to include input to the scope from Fusion, Transition and the ENA ON Project and to involve Fusion and Transition in the assessment process of the respondents. The option of creating a jointly funded, jointly managed forecasting project was considered but the additional complexities were assessed to outweigh the potential benefits.
c)	As for project management activities, these costs are unlikely to reduce due to future collaboration. These activities will be completed before the combined stage-gate.
d)	Due to greater collaboration, costs for these activities are expected to increase slightly but these additional costs will be absorbed.

Rows 13-14	**Requirements specification** Holistic analysis and documentation for the high-level design for EFFS. These costs relate to the collaborative work to understand the DSO functionality to support production of the EFFS project requirements and specification documentation.
a)	The EFFS bid recognised the potential for duplication of the specification work being carried out by the ENA ON Project. Collaboration with the ON project was therefore anticipated in the initial bid, rather than carrying out a separate exercise to determine the requirements.
b)	The engagement with SSEN and SPEN recognised that all three projects wanted to work collaboratively with ON. While engagement with ON is streamlined, this does not necessarily reduce the work required. Ultimately all three projects need to have the understanding of the ON output and to contribute to it. Savings can't be made by one DNO doing this on behalf of another. However a joint requirements review has been added to the planned collaboration activities where the DNOs can jointly confirm their understanding. Where there is overlap in the requirements there is the potential for shared solutions to provide those requirements as outlined in the response for the design activities.
c)	We expect to minimise duplication and costs by working effectively with ON and the other DNOs. The existing budget reflects this and for the reasons given above no further savings are expected in this area. However, there may be opportunity for additional savings by SPEN and SSEN once EFFS has completed its design phase.
d)	The design documentation will be shared.

Row 15	**Forecasting work by academic partner** These costs relate to the work carried out by the academic partner for specifying and developing forecasting algorithms that can be incorporated into, or executed on, third-party software.
a)	Avoidance of duplication for the forecasting work started at the bid phase, which involved a review of the forecasting work of existing projects to ensure that approach did not duplicate existing work. This shifted the focus towards more innovative approaches such as machine learning rather than simple regression modelling as regression based models had been found not to be sufficient on their own.
b)	Significant efforts made during collaboration process to ensure that the forecasting outputs would be suitable for use by SPEN and SSEN as outlined in the collaboration report. i.e. their inclusion in defining the scope, reviewing the responses to the procurement process, potential to include their date in the modelling work and close co-ordination and continual dissemination during the project. The outputs of the forecasting work are not tied to any WPD specific software and adoption by any other DNO should be the same as for WPD.
c)	As WPD is carrying out the forecasting work, there is no scope for reduction of WPDs budget. Since submission, other cost comparisons have suggested that these costs are, in line with or lower than estimates for similar work for other projects.
d)	Where input from other projects requires alteration / extension to the scope of EFFS in order to deliver future savings to their projects this would be achieved by agreement between the parties at that time.

Rows 16-19	**Design & Configuration** The design activities relate to providing a system design to fulfil the requirements specification, which will involve mapping out the required functions to understand: 1) how best to configure the product. 2) the interfacing requirements for WPD and other third-party systems. 3) which design elements are common to the various market models and how the design can be modularised to reduce the additional work in the future if flexibility services are operated on a different market model to that used for the initial design. The activities relate to 3rd party products, IT infrastructure, deployment and configuration of the Affinity Networkflow on to the WPD test environment.
a)	Unnecessary duplication was avoided at EFFS bid stage by excluding the development of market platforms for trading flexibility services from the scope. Such platforms are already under development as part of the Cornwall Local Energy Market and Entire projects. The process to avoid unnecessary duplication also involved the call for DSO bids which confirmed that no existing software system would meet the DNO requirements but did allow an evaluation of the stage of development of related software. WPD selected AMT-Sybex on the basis that the product platform used to support UK Power Networks Smarter Network Storage Project could be used rather than developing a solution from scratch. In addition, AMT-Sybex was willing to make a very generous contribution towards the EFFS project, by excluding the costs of enhancing their Affinity Networkflow product from the NIC funding request.
b)	The workshops, conference call discussions and reviews with the Transition and Fusion teams identified that there are likely to be common requirements that can be satisfied by reuse of the output of one project. Detailed system designs are one of the items to be delivered at the stage-gate, which will be an opportunity for the Transition and Fusion projects to reassess their deliverables in the light of these designs.

c)	Due to the relative timings, EFFS may be able to assist the other DSO Projects in creating future savings for their projects but as EFFS is proposed to complete activities well in advance of the other projects, it is unlikely that any saving can be achieved in EFFS from Fusion or Transition in terms of Design and Development of a Forecasting and Flexibility System.
d)	EFFS will share both high-level and detailed design specifications with Fusion and Transition as they become available i.e. ahead of the stage-gate and as a project we will also undertake to hold specific design meetings to discuss these. Where the DSO Project designs have common modules, or can be reasonably adjusted to have common modules, this opens up the potential for sharing. The meetings will start by assessing whether the greatest degree of sharing is possible and then progressively lighter options where maximum sharing is not possible. E.g. can DNOs share the same system, if not then can they share modules, if not then can they share elements of a module etc. Items such as detailed design work, documentation, algorithms, unit testing procedures etc. will be considered. To maximise the chances of re-use we will adopt common definitions of items and processes from the ON SGAM models.

Rows 20-24	**Trials** This phase is workstream 3 and includes the project testing and trials. Activities in this workstream include the integration and performance testing, user acceptance testing, product support and maintenance, execution of the trials test schedules and trials exit documentation. The trial phase also includes testing the software with a simulation of a fully developed flexibility market, which cannot currently be trialled using real customers as the market is insufficiently mature.
a)	The EFFS trial phase was designed to avoid overlaps in scope with the Cornwall Local Energy Market and Entire. Thus, it is not attempting to determine the impact of different purchasing methods (long term contracts vs spot markets) or how market platforms can simplify customer recruitment and service provision. Rather it is focussed on demonstrating that the software provides the functions specified in a production environment and that these functions work as intended in the real world. The trial is deliberately short and not trying to provide services in real time for seasonal constraints as we believe this learning will already be provided by Entire and Cornwall Local Energy Market. We also believe that, given that practical experience is likely to result in changes in flexibility market operations whichever market model is selected, that ensuring systems are adaptable and rolling these out to BAU as soon as possible is a preferable option to conducting lengthy trials.
b)	The design of the trials will reflect the functionality of the software, which is not yet known and so this is another area where the information required for co-ordination is not yet available. The projects will meet regularly to discuss learning outcomes and consider areas for shared or enhanced learning outcomes through aligning deliverables, and furthermore the Stage Gate criteria will require that trial plans: • are well documented; • do not cause unnecessary duplication; • have assessed opportunities to improve learning by collaboration; • are an efficient means to achieve the learning outcomes.
c)	The potential for savings from the trials phase for EFFS are limited by: 1) EFFS starting trials ahead of the other DSO projects 2) The existing trials phase having been limited to demonstrate the correct functioning of the software and market model (The funding requested for the EFFS trial phase is £750,370. The duration of the EFFS trials phase is 6 months compared

	to 24 and 14 months for the Transition and Fusion projects respectively).
d)	The process to ensure any future savings are captured is as outlined in the collaboration document and summarised in the answer to part b above.

Rows 25-28	**Dissemination & Collaboration** Activities in this workstream include the dissemination of the forecasting work by the appointed academic partner, production of dissemination materials, dissemination of the EFFS outputs as per the EFFS deliverables, WPD input review and approval. This workstream includes the additional activities required to support the stage-gate analysis and reporting.
a)	The original bid included the use of existing channels for dissemination to avoid duplication such as the LCNI conference and WPD's regular Balancing Act events.
b)	The engagement with Fusion and Transition resulted in reduction of duplication and costs for dissemination as a joint programme of events was determined. This is reflected in the revised version of the budget submitted in July this year, which incorporates a saving of £10,000.
c)	Given that a joint programme of events has already been drawn up which has reduced WPDs costs, we are not expecting further reductions to this activity but would check with Transition and Fusion whether the joint programme was still valid during the project. The funding request for stakeholder engagement is less than £40,000, therefore any future savings are expected to be minimal.
d)	As above.

Rows 29	**Audit Fees** The £73,760 funding request for audit fees covers the third-party review and validation of project deliverables.
a)	The audit fee costs are specific to the deliverables of the EFFS project and it was considered unlikely that there would be any duplication.
b)	The DSO projects would operate as separate projects, albeit projects of a collaborative nature, therefore there are no savings to be made.
c)	There is potential for future saving if the auditor appointed were to be the same for all three DSO projects.
d)	Given the timing of completion of the EFFS project relative to Transition and Fusion i.e. 2 years prior, there is in reality unlikely to be any savings.

Question 2 – Complementary learning and market models

"How have you ensured that the definitions and requirements of Electricity Flexibility and Forecasting System (EFFS) trials and your use of market models within the project will deliver learnings that are complementary (rather than duplicative) of those that will be delivered by the other two licensees?
a. Have the definitions and requirements of your trial and market model changed since your Full Submission?
i. If so, how and why?
ii. If not, why?"

In the original FSP we did not propose that we focus attention on a specific market model (with reference to ENA Open Networks Projects Future Worlds models) but that our trials would underpin and provide learnings to the industry on elements that could be shared across the models.

This approach was chosen in recognition of the fact that the transition to DSO is still undergoing significant evolution while recognising there are still definitive technical capabilities that would be utilised by all market models that could still benefit from focused innovation.

Core capabilities within the scope of EFFS that span several of the models include:

- Development of forecasting methodology specifically suited to the procurement of flexibility services
- Integrating existing DNO capabilities such as ANM and Control Systems with new forecasting and scheduling capabilities to deliver DSO function
- Integration to third parties and existing market platforms to provide flexibility services
- The dissemination of forecasting methodology, learnings against the various market models, the contractual arrangements for procuring flexibility and the various levels of integration needed between software solutions and their market actors to deliver a DSO capability.

In conjunction with the other two licensees' SSEN and SPEN, WPD prepared a compliance report for Ofgem. This detailed how we would work together to deliver complementary learnings to the industry and ensure that duplication of work did not occur.

As part of the collaboration discussions, Transition's initial plan to trial up to three market models in their project was reduced to reflect the likelihood that either EFFS or Fusion would likely sufficiently demonstrate at least one market model.

Since the joint submission of the compliance document by the three projects, the Future Worlds consultation has been launched including the definitions of the different market models. While the EFFS Project includes elements that span the models, it will focus on the market model World B as this is the model which has the best fit with the proposed project scope and best alignment with other WPD projects.

The most relevant market model for Transition appears to be World A, due to the focus on the role of the neutral market facilitator.

The framework that supports the Fusion project is not based on the SGAM model proposed in the Future Worlds documentation but on USEF. Until the design phase it is difficult to understand which market model the USEF framework will be compatible with. The Fusion team have however previously stated that they believe the USEF framework could be adapted to suit any market model, therefore it seems highly likely that duplication of trials for the same market model can be avoided. We look forward to the workshops and webinars for the Future Worlds to confirm this position.

After reviewing the ENA Future Worlds market models we have concluded that much of the activity mapped is business process driven rather than mapping the technical processes used to enable these. Since EFFS is proposing to trial technical functions we still see learning being delivered across the Future Worlds.

The selection of Future World B will allow the simplest co-ordination with ENTIRE, which allows for parallel activities of procurement and despatch by DSO and ESO. This is also the case for third-party suppliers of flexibility services. The Cornwall Local Energy Market/Visibility Plugs and Socket project will support separate procurement and despatch but with data exchanges to support co-ordination in its earlier trials is looking to develop a combined market where ESO and DSO procurement is concurrent and takes network congestion into account.

When assessing the fit of scope across the various Future World models, we have concentrated on the following areas which fall within the scope of the proposed trials for EFFS:

Capability required	Use Case
System Coordination	Coordination with GB System Operator
	Coordination with local energy systems including industrial networks, community schemes, smart cities, etc.
	Coordination of local network services
Service/Market Facilitation	Define distribution network service requirements including scope, timescale and locational aspects
	Assess value and facilitate services to utilise flexibility sources to support distribution network operation
	Facilitate the operation of Distributed Energy Resource Management Systems (DERMs) and Local Energy Markets (LEMs) that are transparent
	Interaction with aggregators and other non-traditional actors
	Support the implementation of non-traditional market models for local energy supply
	T-D coordination for transparent and consistent whole system outcomes
Network Operation	Operate network within thermal ratings
	Operate network within voltage limits
	Operate network to maintain dynamic stability
	Operate network within fault level limits
Service Optimisation	Smart grid network flexibility
	Principles of access / access rights
	T-D coordination
	Network contingency planning for High Impact Low Probability (HILP) Events

In these areas our assessment is that the project and the trials will have a high degree of functional alignment with World B (80%+).

As we have reviewed the Future World models and performed our alignment exercise we have noticed significant overlaps in the functions of the various worlds regardless of the arrangement of market actors.

While we have adopted a specific Future Worlds market model for reference, our trials have not fundamentally changed in structure since the FSP submission. The reason for this is because they were already in alignment with much of the future worlds documentation, as we analysed and studied the work of the Open Networks WS3 Product 3 in the areas we are trialling to understand the requirements of the industry. We have reduced project risk by ensuring that many of the functions that we are trialling are market model independent, the forecasting work itself is intended to be carried out early in the project and results disseminated as forecasting would be required by various market actors in any of the future worlds models. Similarly we expect to focus the other development work on market model agnostic elements first giving time for the details of market specific elements to be developed.

There must be a recognition that our trials occur on a much earlier timescale to that of the other two licensees, we are unable to reuse any of their output as it will have not occurred. The other two projects however will be able to use the outputs from the EFFS project trials to inform their decisions around procurement of software solutions, forecasting methodologies, contractual arrangements, coordination methodology and integration both internally of software solutions and externally to third party markets.

In conclusion we have ensured non-duplicative output by planning our project timeline delivers many of the learnings before the other two project's design phases. Any learnings that are disseminated to the industry would aid in the delivery of their DSO transition innovation projects and while most of the functions that are trialled are model independent and would be required by a market actor in any of the future worlds market models. we have also specifically called out the areas of overlap with the Future World market model B as this model which has the greatest functional alignment with the EFFS project and fit with the other WPD projects Cornwall Local Energy Market/Visibility Plugs and Socket project and project Entire. Our relationship with a major provider of flexibility in our geographical footprint also provides further opportunities to support learnings on future worlds models.