

Electricity Network Innovation Competition

Screening Submission Pro-forma

Notes on completion			
<p>Before completing this form, please refer to the Electricity Network Innovation Competition (NIC) Governance Document, which details all of the information that you are required to provide.</p> <p>Please use Verdana size 10 font in your submission. The text entry areas are suggestions and the size of each text area can be altered if you need to provide more information in one section and less in another. In all cases the full-completed submission should not exceed 11 pages in total.</p> <p>Ofgem will publish all the information contained within the Screening submission.</p>			
Funding Licensee			
SP Distribution			
Network Licence Project Partners			
TBC – Will be identified through open tender process as part of FSP preparation			
Funding Licensee area <i>(or where the licensee does not operate in a specific area the geographic location(s) of the Project)</i>			
SP Distribution			
Project title			
EVOLUTION			
Project Summary			
<i>The Licensee must provide an approximate Project start and end date.</i>			
<p>Project EVOLUTION will create and demonstrate primary elements of a Distribution System Operator (DSO) model.</p> <p>Project EVOLUTION will implement local system balancing through innovative commercial and technical mechanisms under a Grid Supply Point (GSP). EVOLUTION will explore the wider issues around market coordination, and the affect, upon national system balancing and settlements.</p> <p>The key objectives of EVOLUTION are to:</p> <ul style="list-style-type: none"> Using an inclusive market under a Grid Supply Point, link local renewable generation & demand to national balancing and settlement. Demonstrate how the existing distribution network can be used to facilitate growth in demand side response services and flexible generation using market forces. Establish mechanisms to ensure the TSO receives greater visibility of balancing actions taken by a DSO whilst still meeting their national balancing obligations <p>The Project will start in January 2016 and finish December 2019 (4 Years).</p>			
Estimated Project funding			
<i>The Licensee must provide an approximate figure of the total cost of the project and the NIC funding it is applying for.</i>			
Total cost of Project	£6,840k	NIC funding requested	£6,156k
Cross Sector Projects only: requested funding from Gas NIC or NIA?	<i>If yes, please specify</i>		
	No		

Problem(s)
<p><i>The Licensee must provide a narrative which explains the Problem(s) which the Project is seeking to address.</i></p> <p>Levels of curtailment will increase as the UK connects more DG into actively managed (ANM) networks, therefore not realising the full benefit of renewable generation. This dilemma presents a new challenge: how to connect more DG and allow it to fully operate without the need for significant investment in new infrastructure.</p> <p>The shift towards greater renewable generation, coupled with the drive towards greater electrification of the UK's Heat and Transport sectors, means networks of today must be able to accommodate greater oscillation between peak demand and peak generation. The network design mentality of today of simply sizing the network for both conditions is expensive, inefficient and does not represent value for money to GB consumers. Despite significant focus in recent years around technology innovation, no commercial model exists to fully maximise network utilisation. EVOLUTION will demonstrate a sustainable model for balancing services to; provide a market for greater energy storage & demand side response services under a Grid Supply Point as well as minimising the curtailment of renewable generation.</p> <p>Active Network Management (ANM) is being rolled out across GB to manage physical network constraints. Actions taken by distributed ANM schemes are not visible to the TSO who has national responsibility for system balancing and will lead to the TSO taking unnecessary curtailment actions and paying for that service. In parallel actions taken by the TSO with distributed generators managed by Bi-lateral agreements (BEGA & BELLAs) are equally unsighted by distribution ANM schemes. However, ANM will be the enabling technology to manage distributed energy systems and therefore become the backbone of the DSO model.</p> <p>Finally EVOLUTION will build on the learning from other LCNF projects such as CLASS, FALCON, Low Carbon London & CNLR. Project EVOLUTION will start where other LCNF projects have finished and will extrapolate and link commercial learning up to national balancing obligations.</p>
Method(s)
<p><i>The Licensee must describe the Method(s) which are being demonstrated or developed. It must also outline how the Method(s) could solve the Problem. The type of Method should be identified where possible eg technical, commercial etc.</i></p> <p>The objective of project EVOLUTION will be the coordination, development, implementation & evaluation of the Distribution System Operator Model. This will be developed through collaborative working with stakeholders to design a new process with the complementary commercial arrangements and technology. To realise this a number of key phases have been identified:</p> <p>Stakeholder Engagement & Dissemination – EVOLUTION understands that all markets are underpinned by confidence, therefore communications are critical. EVOLUTION will develop the basis for new industry processes and markets which can be replicated throughout GB. This will result in the advancement of regulatory mechanisms to facilitate the acceleration of the DSO model throughout GB.</p> <p>Commercial Arrangements – Through collaboration with stakeholders, EVOLUTION will identify new contractual mechanisms for both generation & demand side response providers to operate within a local balancing and settlements market that in turn can provide the necessary services to the TSO to manage national balancing & enable outage planning</p>

Method(s) continued

Technology Tools – Technology will be a vital component in facilitating the development of the DSO model to enable the interoperability & visibility of DSO actions between DSO, generation units, demand side response providers and the TSO. Building upon the rollout of Active Network Management (as a business as usual technology, developed under SPEN's ARC project) minimal additional technology will be required at various levels of the network. This will manage the overall operation of the DSO, real-time control functionality in dynamic circumstances to minimise network constraints and provide network solutions for localised and national balancing.

Implement & Optimise Solutions – New commercial & technology arrangements will be optimised to ensure that they operate as intended for the benefit of all stakeholders operating under the trial Grid Supply Point. This will be an ongoing process throughout the lifetime of the project and open forums will be created to allow customers and stakeholders to influence the process.

SPD will run an open process in advance of the FSP to invite suitable parties to provide proposals for this project. Using an open process will ensure a wide variety of parties can be considered and that value for money is achieved.

Funding commentary

The Licensee must provide a commentary on the accuracy of its funding estimate. If the Project has phases, the Licensee must identify the approximate cost of each phase. OFTOs should indicate potential bid costs expenses.

The cost of each phase is forecast to be:

Phase 1 (£0.4M) Assess Market Size – Assessment of the regulatory framework & supporting industry codes; Understand & review the size of market potential through analysis of the presence of flexible demand resources, volumes of generation connected and contracted; requirement for additional demand side response services. Review of existing commercial agreements under GSP in place with TSO to assess impact of and ability to share resource generation & demand side resources.

Phase 2 (£0.9M) Plan – Develop the market architecture that will maximise the utilisation of the existing network under the GSP through the use of flexible resources (demand & generation); Develop an appropriate reward scheme for the use of flexible network resources; develop the information, communication & technology platform required for the exchange of market and dispatch coordination between market actors including the physical exchange of information between system operators (DSO & TSO)

Phase 3 (£5.2M) Implement – Enable the Grid Supply Point & establish DSO trading platform; Create and deploy commercial agreements; Implement the platform for financial settlement; Roll out of enabling technology & communication infrastructure.

Phase 4 (£0.3M) Evaluation – Detail and publish learning outcomes, potential size of DSO market in GB, ability to share and sell balancing services with and to the TSO, assessment of the ability of the DSO model to stimulate new market entrants and competition for demand response services, how the DSO model can save costs for DNOs and how the DSO model adds value to GB consumers through deferred reinforcement and reducing national TSO constraint payments & support LCT rollout.

Specific Requirements (please tick which of the specific requirements this project fulfils)	
A specific piece of new (ie unproven in GB) equipment (including control and/or communications systems and/or software)	✓
A specific novel arrangement or application of existing electricity transmission and/or distribution equipment (including control and communications systems software)	✓
A specific novel operational practice directly related to the operation of the electricity transmission and/or distribution system	✓
A specific novel commercial arrangement	✓

Accelerates the development of a low carbon energy sector & has the potential to deliver net financial benefits to existing and/or future Customers

The Licensee must demonstrate that the Solution has the potential to accelerate the development of the low carbon energy sector in GB and/or deliver wider environmental benefits to GB Customers. The Licensee must demonstrate the potential to deliver net financial benefits to existing and/or future Customers.

As stated in the Electricity NIC Governance Document, the Network Licensee must provide the following to demonstrate compliance with this criterion:

- i. *How the proposed Project will make a contribution to the Carbon Plan. In particular the Network Licensee should outline:*
 - *What aspects of the Carbon Plan the Solution facilitates*
 - *The contribution of the rollout of the Method across GB can have in facilitating these aspects of the Carbon Plan*
 - *How the rollout of the proposed Method across GB will deliver the Solution more quickly than the current most efficient method in GB; and/or*
- ii. *How the proposed Project could deliver environmental benefits to Customers; and*
- iii. *The expected financial benefits the Project could deliver to Customers.*

EVOLUTION will facilitate further growth in the connection of renewable generation and create an economic led market for energy storage and demand side response services as part of the UK's long term commitment to reducing the emission of greenhouse gas and meeting EU 2020 renewables directive. The carbon plan highlights electricity as a critical component in facilitating the decarbonisation of both heat and transport networks, suggesting that peak demand for electrical energy could more than double by 2050.

National rollout of the Distribution System Operator (DSO) model across GB is expected to reap substantial environmental & financial benefits to GB customers through the avoidance/deferment of network reinforcement and reduce system losses. Greater balancing of local systems using innovative commercial techniques will minimise the need for unnecessary network reinforcement and lead to more targeted DNO & TO investment.

A DSO led local balancing mechanism will further reduce connection costs in areas of intermittent network constraint, typically caused by correlated DG. Applying local balancing between generation, demand and energy storage under a Grid Supply Point will prove a cost effective solution to maintaining a fit for purpose electrical system without the need for significant investment in new infrastructure.

Delivers value for money for electricity Customers

The Licensee must demonstrate that the Method(s) being trialled can derive benefits and resulting learning that can be attributed to or are applicable to the electricity transmission system/ to the electricity Distribution System.

As stated in the Electricity NIC Governance Document, the Network Licensee must provide the following to demonstrate compliance with this criterion:

- i. What is the potential Direct Impact of the Project on a Network Licensee's electricity network or on the operations of the GB System Operator;*
- ii. Justification that the scale/ cost of the Project is appropriate in relation to the learning that is expected to be captured;*
- iii. The processes that will be employed to ensure that the Project is delivered at a competitive cost; and*
- iv. The expected proportion of the benefits which will accrue to the electricity Transmission System/to the electricity Distribution System as opposed to other parts of the energy supply chain.*

Sub-criterion v (the internal systems, procedures and processes used by the Network Licensee to identify Project Participants and Project ideas) should be covered in the 'Project Partners and external resourcing/funding' section below.

Development of a DSO model will not detract from the Distribution Network Operators network licence obligations of focussing on maintaining a safe, reliable and resilient network.

Currently the TSO has a direct contractual relationship with large embedded generation connected to the distribution network through BEGA & BELLA contractual arrangements governed by the CUSC. EVOLUTION requires that such contracts are better managed by the DSO provider. Part of the learning & requirements from EVOLUTION will be to ensure that those contractual requirements can be executed to the benefit of all market stakeholders (including the TSO) in a future local balancing market arrangement. A future benefit will be that the TSO will contract with a limited number of DSOs for those services currently received and lead to new entrants entering the market such as local and community energy providers.

Annual local balancing actions are forecast to reach 1TWh by 2023¹, all of which will be invisible to the TSO. The rules based approach (LIFO/Pro-Rata) currently used by DNOs to manage ANM balancing actions will result in higher network saturation, limiting the opportunity for new connections without costly network reinforcement. Local Balancing markets integrated with national system balancing could deliver an estimated reduction in constraint payments issued by NGET seen today by between 5% - 45%¹.

Procurement of services under the project will be carried out in accordance with our IBERDROLA Group procurement model and within licence obligations. Where applicable competitive tendering will be used to maximise customer value.

EVOLUTION will demonstrate: the collective benefits that local and coordinated wider system balancing will deliver to GB plc; quantify the market size for local balancing & network services; align with SP Energy Networks RIIO-ED1 business plan and longer term strategy, facilitate market penetration of energy storage and Demand Side Response inclusive of community owned energy systems.

¹Ellexon Actively Managed Distributed Generation and BCS Quantitative Modelling

Demonstrates the Project generates knowledge that can be shared amongst all Network Licensees

The Licensee must explain the learning which it expects the Method(s) it is trialling to deliver. The Licensee must demonstrate that it has a robust methodology in place to capture the learning from the Trial(s).

As stated in the Electricity NIC Governance Document, the Network Licensee must provide the following to demonstrate compliance with this criterion:

- i. What new knowledge is intended to be generated from completing the Project;*
- ii. What methodology will be used to capture results from the Project and how the Project's results will be disseminated to other Network Licensees; and*
- iii. Whether the Network Licensee wishes to conform to the default IPR arrangements as set out in Section B: Chapter 9. If the Network Licensee wishes to deviate from the default IPR arrangements it must outline the proposed arrangements, justify why the arrangements are more suitable than the default arrangements and justify how the new arrangements will deliver value for money for Customers.*

Using knowledge gathered and disseminated from previous LCNI projects around ANM technology, this project will seek to demonstrate the application of new commercial mechanisms needed to release maximum benefit to customers, whilst using both established & new innovative control & system coordination technology.

- i. The key learning outcomes will include:
 - a) Risks and rewards associated with local system balancing, and whether a sustainable mutually beneficial mechanism can be demonstrated without need for wide scale industry reform.
 - b) Evidence based learning to inform creation/amendments of industry Codes of Practices.
 - c) Demonstration of closer TSO to DNO/DSO system interoperability around balancing actions.
 - d) Expanded investigation into impact on National Balance and Settlements Codes².
 - e) Greater understanding around network investment signals (Capex) vs. balancing services (Opex).
 - f) Performance criteria for monitoring and control technology to perform fail safe localised system balancing.
 - g) Commercial and technical aspects of creating a singular DSO BM unit at TSO/TO interface.
 - h) Knowledge of local DSO settlement processes.
- ii. A shared knowledge hub and dissemination strategy will be developed at the beginning of the project, built upon the success of our ARC project, to set governance around knowledge capture, stakeholder engagement, advisory working groups and dissemination events. A clear communication strategy will be used to deliver knowledge via events, news letters, blogs, emails and reports. Knowledge captured will be shared through internal project share points, partners meetings and both local & industry wide workshops.
- iii. SPD wish to use default IPR arrangements.

² Elxon, *Actively Managed Distributed Generation and the BSC – Final Report 11/06/2014*

Please tick if the project conforms to the default IPR arrangements set out in the NIC Governance Document?	√
<i>If the Licensee wishes to deviate from the default requirement for IPR then it must demonstrate how the learning will be disseminated to other Licensees and how value for money will be ensured. The Licensee must also outline the proposed alternative arrangements and justify why the arrangements are more suitable than the default arrangements.</i>	
<p>Project EVOLUTION will conform to the default IPR arrangements set out in the NIC Governance Documentation. Should the project deviate from these arrangements at the FSP stage, the project will demonstrate how the learning and benefits will be disseminated.</p>	
How is the project innovative and with an unproven business case where the innovation risk warrants a limited Development or Demonstration Project to demonstrate its effectiveness?	
<i>Demonstrate why the Licensee has not previously used this Solution (including where the Solution involves commercial arrangements) and why NIC funding is required to undertake it. This must include why the Licensee would not run the trial as part of its normal course of business and why the Solution is not Research.</i>	
<i>As stated in the Electricity NIC Governance Document, the Network Licensee must provide the following to demonstrate compliance with this criterion:</i>	
<ul style="list-style-type: none"> i. <i>Why the Project is innovative and has not been tried before;</i> ii. <i>Why the Network Licensee will not fund such a Project as part of their business as usual activities;</i> iii. <i>Why the Project can only be undertaken with the support of the NIC, including reference to the specific risks (e.g. commercial, technical, operational or regulatory) associated with the Project.</i> 	
<p>EVOLUTION will investigate and demonstrate new innovative commercial mechanisms required to maximise greater value from the existing network infrastructure for all market participants and GB consumers. Project EVOLUTION builds on the success of the ARC project and the recent implementation of Active Network Management whilst recognising the limitations of Active Network Management in its current form over the longer term.</p>	
<p>The project team will investigate the requirement for a derogation to the Distribution Network license or network codes to facilitate the existing TSO BEGA and BELLA commercial agreements to the DSO within the trial area. Therefore, this project cannot be undertaken as business as usual.</p>	
<p>We believe that the successful delivery of project EVOLUTION aligns closely with the ethos of the Network Innovation Competition and to the benefit GB consumers and will inform on the necessary regulatory governance arrangements that will support the development and rollout of the Distribution System Operator model throughout GB.</p>	

How is the project innovative and with an unproven business case where the innovation risk warrants a limited Development or Demonstration Project to demonstrate its effectiveness? (Continued)

EVOLUTION will create an inclusive market under a nominated Grid Supply Point accessible to all participants from large generators connected to the distribution system to locally owned community energy schemes and agricultural and small to medium enterprises looking to diversify their business. EVOLUTION will harness the cumulative affect of small scale domestic generation and penetration of low carbon technologies connected to the distribution network to deliver social, environmental and economic benefits at the local level whilst supporting the TSO in its national balancing & outage planning obligations.

This can only be facilitated through a coordinated Distribution System Operator model who have sole responsibility for maximising the benefits of the existing network infrastructure and those assets connected to it.

GB has the opportunity, through EVOLUTION, to lead the thinking and explore the options as well as articulate the value of a DSO that will benefit both UK plc and inform our peer groups in Europe where there is active discussion on the future role of DSOs.

Project Partners and external resourcing/funding

The Funding Licensee should provide a description of the internal systems, procedures and processes used by the Funding Licensee to identify Project Participants and Project ideas.

The Licensee should provide details of any Project Partners, External Funders or Non-Network Licensees who will be actively involved in the Project and are prepared to devote time, resources and/or funding to the Project. If the Licensee has not identified any specific Project Partners, it should provide details of the type of Project Partners it wishes to attract to the Project.

Building upon the success of the ARC project and strength of our ability to engage industry stakeholders such as GB System Operator National Grid, we have engaged both NGET and ELEXON to introduce the project and concept of the Distribution System Operator model.

In addition we have also actively engaged a number of SME's and industry experts in balancing and settlement arrangements, in the development of project EVOLUTION and who have intimated their support for the objectives of the project. Furthermore a number of those engaged have expressed their desire to actively participate in the project. This will be further developed through completion of the FSP.

As we develop our full submission we will identify and select those partners who we believe will add value to project EVOLUTION through their involvement and deliver best learning for the GB energy sector. The open approach which is being applied to selecting technology providers may also identify further partners and sources of funding.

Formation of project partners will be developed in line with the full submission.

Derogations or exemptions

The Licensee should outline if it considers that the Project will require any derogations, exemptions or changes to the regulatory arrangements.

We believe that the project may require derogations to current regulatory arrangements. The extent of any amendments would be defined within the full project submission along with a detailed explanation of proposed changes, supporting documentation including quantitative analysis and stakeholder feedback.

Customer impact

The Licensee should outline any planned interaction with Customers or Customers' premises as part of the Project, and any other impacts (such as amended contractual or charging arrangements, or supply interruptions).

Successful completion of the project will require participation from a range of customers; including Generators, Community groups, Aggregators, Demand side response providers. Participation in the project will be governed by a set of transparent commercial mechanisms that will provide market participants with the same opportunities to engage in wider electrical markets that currently exist.

EVOLUTION will also install clear safe guards to mitigate financial risk to all participants. The project has been designed to develop market mechanisms that creates a level playing field for all market participants (regardless of scale) who can realise greater value and provide commercial services for the benefit of both networks and GB consumers. Currently a large proportion of customers are excluded from those opportunities as a consequence of no commercial mechanisms being in place due only to their scale.

DUoS charges will not be impacted throughout the course of the project.

No supply interruptions are anticipated throughout the project for network outages.

Details of cross sector aspects

The Licensee should complete this box only if this Project forms part of a larger cross sector Project that is seeking funding from multiple competitions (Electricity NIC and Gas NIC). The Licensee must explain about the Project it will be collaborating with, how it all fits together, and must also add a justification for the funding split.

Not applicable to submission.

Any further detail the Licensee feels may support its submission
<p>The advent of Project EVOLUTION aligns with our Innovation and Smart Grid Strategy included as part of our RIIO-ED1 Business Plan submission, whereby we state that we will trial the development of the Distribution System Operator (DSO) model.</p> <p>We will launch an open innovation tender to identify solution providers for the problems identified. The intent is to maximise the opportunity for a wide range of potential suppliers, of all sizes, to demonstrate how their solutions can make a material difference in the way networks are operated in future and extract the greatest value for GB consumers.</p> <p>EVOLUTION will take a holistic view to national balancing obligations through greater utilisation of local community led generation and demand side response services facilitated through market led principles.</p> <p>EVOLUTION will support the existing role of the TSO and enable a greater transparency and interoperability of balancing actions. EVOLUTION is not seeking to challenge the role of the TSO but allow it to maximise its ability to deliver its obligations and maintain its responsibility for national system balancing and system outage planning.</p> <p>EVOLUTION will seek to deliver a market based platform for new entrants and provide stimulus for growth in demand side response services and flexible generation responding to real-time system and market conditions.</p>
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