

Electricity/Gas Network Innovation Competition Screening Submission Pro forma

Notes on completion			
<p>Before completing this form, please refer to the relevant Network Innovation Competition (NIC) Governance Document(s).</p> <p>Please use the default font (Verdana size 10) in your submission. We will only accept the text visible in the text entry areas. The text entry areas are predetermined and should not be changed. The full-completed submission should not exceed 10 pages in total.</p> <p>Ofgem will publish all the information contained within this Screening Submission.</p>			
Is the application for the Gas or Electricity NIC?	Gas NIC <input type="checkbox"/>	Electricity NIC <input checked="" type="checkbox"/>	
Cross Industry Project	YES <input type="checkbox"/> <i>If yes, please fill out Cross Industry Projects section</i>	NO <input checked="" type="checkbox"/>	
Funding Licensee(s)			
Southern Electric Power Distribution			
Network Licensee Project Partners			
UK Power Networks, Western Power Distribution, Electricity North West, SHE Transmission			
Funding Licensee area(s)			
Southern Electric Power Distribution			
Project Title			
CONNECTION			
Project Summary			
<i>The Licensee(s) must provide an approximate Project start and end date.</i>			
<p>DNOs will need to change their approach to connections as we move from the current well established business model toward a more flexible Distribution System Operator (DSO) based model. In future, the DSO will be responsible for managing a customer's connection request to produce the best whole system outcome. CONNECTION aims to develop and demonstrate an innovative analytical engine to liberate the electricity network's connection process and improve the connections customers' experience by creating a 'one-stop-shop' for all types of customer. CONNECTION will harness innovation for the electricity industry by:</p> <ul style="list-style-type: none"> • Improving visibility of connections requests to aid DSO investment planning; • Improving accessibility of competitive connection options for customers; and • Improving availability of flexibility options for flexibility/whole system optimisation. <p>The project will look to leverage the use of new datasets such as smart metering data, secondary substation monitoring and LiDAR to improve the connections process; this could include the use of new analytical techniques such as machine learning and intelligent design. The CONNECTION project will align with the Open Networks project and will build on the TRANSITION, EFFS and FUSION projects previously funded by NIC.</p> <p>Start date January 2019 End date March 2022</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	£9.5m	NIC funding requested	£8.55m
Is the TRL of the Project at start date between 4 and 8?	YES <input checked="" type="checkbox"/>		NO <input type="checkbox"/>

What is the Problem?
<p><i>The Licensee must provide a narrative that explains the Problem(s) that the Project is seeking to address.</i></p> <p>A key objective of the transition to DSO is to ensure the best whole system outcome for customers. Significant progress in this area is being led by the Open Networks project, driving this change toward a more flexible and efficient network and processes. Existing NIC projects such as FUSION, EFFS and TRANSITION will develop and demonstrate solutions which will help to inform the move to DSO. However, a key issue which has not yet been addressed is that of connections, either for new customers wishing to connect to the network or for existing customers looking to alter the way in which they utilise their current connection.</p> <p>In future, the DSO will be best placed to manage a customer's connection request to produce the best whole system outcome. The DSO will have visibility of asset loading information, as well as new information sources such as smart meter data and increased monitoring data from the network. The DSO will also have visibility of any flexibility contracts already in place on the network and will be able to see the interaction between multiple connections applications. There is a recognition that the existing DNO and TO connection process may not be appropriate for DSO, as it may lead to sub-optimal whole-system solutions being proposed for connection enquires. The Open Networks project has a dedicated workstream on the Customer Experience (WS2) to investigate this issue, which CONNECTION will align with.</p> <p>Within the last few years a much wider range of flexible connection options have been made available to customers and this is likely to increase in future. There is a need to make these options more transparent and accessible for customers in a manner that promotes competition both in terms of cost and solution. The current process produces a significant number of quotations which never proceed, as customers make multiple applications for the same site to assess the cost of various combinations of either demand or generation. The cost of producing these connections offers is ultimately borne by customers, whilst the rigid and burdensome nature of the current process leads to dissatisfaction amongst connection customers.</p> <p>The analytical engine, and customer 'one-stop-shop' being proposed by the CONNECTION project will help to address many of these issues, and will provide a step change in the way connection offers are prepared. This platform will help increase visibility of flexible options for customers and will also help signpost competitive connections options, possibly including "islanded" or non-grid connection options. With involvement from four DNOs, TO, SO and IDNOs, the project can draw on a wide range of skills and knowledge from across the industry to drive the development of an effective and efficient solution.</p>
What Method(s) will be used?
<p><i>The Licensee must describe the Method(s) that 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>All industries have seen an increase in the use of data analytics to improve systems and processes, and to drive value. In networks there are a growing number of new data sources which can be drawn upon to improve whole system investment planning; visibility of CONNECTIONS requests has the potential to be a valuable addition to this dataset. CONNECTION will develop an analytical engine which aims to:</p> <ul style="list-style-type: none"> - leverage connections request data and other data sets to inform investment decisions; - provide faster quotes which include competitive options alongside the minimum scheme; and - signpost options for flexible or alternative connections. <p>The use of an analytical engine enables easier integration with existing Licensed Network Operator (LNO) systems as the data flows can be defined. Within the engine, several new innovative elements could be developed including domestic customer 'apps', social impact calculators, capacity modelling, alternative option generator (based on slightly altered connection requirements), and whole system modelling; these will be described in further detail in the full submission.</p> <p>In January 2018 SSEN and ENWL received 15 applications in response to a 'Call for Innovation' in the category 'Connection planning'. We are now drafting a tender which will be open to all suppliers and includes several 'lots', designed to enable participation by innovative suppliers regardless of their size.</p>

Method(s) continued

The method outlined in the Stages below enables integration of multiple beneficial innovations under a single analytical engine, with data flows which are compatible with the systems of the LNO partners. This approach accelerates the adoption of these innovations by ensuring roll-out across GB will be kick-started by the BAU adoption of the four partners. The improved signposting of flexible connections and alternative connection options may enable more renewables or other LCTs to connect faster, resulting in reduced CO₂ emissions.

The CONNECTION project is proposed to run in four stages:

Stage 1: Engagement requirements definition.

Development of the technical, data and stakeholder requirements of the platform/engine, building on engagement with LNOs (including DNOs, TOs, LNOs and IDNOs) and customers as well as outputs from the Open Networks project and the Targeted Charging Review.

Stage 2: Beta building phase.

Development of each element of the CONNECTION analytical engine including data input/output flows, analytics, visual representations, user-interfaces and apps. Integration of all functional aspects of the platform within the analytical engine.

This stage will include design and development of new business functions and processes required to operate in the new framework (if required).

Stage 3: Parallel/shadow testing of beta-platform.

Demonstration of the beta-platform in a trial with selected stakeholders to demonstrate functionality over a range of test-cases, and limited integration with existing LNO systems.

Stage Gate

To review results of shadow-testing and feedback from test users.

Stage 4: Live operation of beta-platform.

Rollout of the beta-platform to a defined area or user group, to demonstrate real-world operation, record customer experience, and identify any unforeseen risks or unintended consequences.

Learning and dissemination activities will be structured throughout the project with a robust stakeholder engagement plan which is, where valuable, aligned to the engagements of the Open Networks project, and includes resources for various stakeholder types.

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

CONNECTION has been divided into four Stages, with a Stage Gate before the live deployment stage. The project has several Work Packages which are briefly described below;

WP1	Project management	£1.1m
WP2	Requirements definition and use case development	£0.7m
WP3	Stakeholder Engagement	£0.7m
WP4	Technology Development	£1.8m
WP5	User Testing and design refinement	£0.9m
WP6	Shadow Implementation alongside BAU connection process	£1.3m
WP7	Deployment and Evaluation	£1.9m
WP8	Commercial and Compliance Review	£0.5m
WP9	Dissemination	£0.5m

The total cost has been estimated at approximately £9.5m.

This is an early estimate based on actual costs from a number of previous innovation projects which have included similar elements.

Further details will be included in the Full Submission. The project budget and work packages are subject to confirmation and will be further refined as the project develops prior to full submission. We will also continue to endeavour to identify further sources of external funding to try and reduce the total funding requirement from NIC.

Which Specific Requirements do the Project fulfil?(Please tick which of the Specific Requirements this Project fulfils)

	Electricity	Gas
A specific piece of new (ie unproven in GB) equipment (including control and/or communications systems and/or software)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
A specific novel arrangement or application of existing electricity/gas transmission and/or distribution equipment (including control and communications systems software)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
A specific novel operational practice directly related to the operation of the electricity/gas transmission and/or distribution systems	<input checked="" type="checkbox"/>	<input type="checkbox"/>
A specific novel commercial arrangement	<input type="checkbox"/>	<input type="checkbox"/>

How does the Project accelerate the development of a low carbon energy sector & have 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.

CONNECTION will accelerate connection of new low carbon generation and energy storage developments by clearly signposting potential for flexible, cheaper or faster connection options on each application. This helps unlock some of the benefits outlined in the National Infrastructure Commission report on Smart Power in March 2016, which stated that a smarter more flexible system could provide gross benefits to consumers of £3-8bn a year in 2030. Similar work undertaken by the Carbon Trust found broadly similar benefits, with a combination of flexible solutions in a whole system approach saving GB consumers £17-40bn cumulative to 2050. Existing industry work and projects will develop and test the system in which flexibility would operate, while CONNECTION proposes to focus on the flexibility providers themselves and how to facilitate connections in the DSO environment.

A more flexible electricity system with a central role for DSO will enable the network to be a facilitator of the move to a low carbon economy, and ensure it avoids becoming a barrier to the deployment of low carbon technologies such as EVs and renewables. Signposting potential for flexibility also facilitates innovative commercial models which can enable peer to peer energy trading, demand side management, vehicle to grid, etc. ensuring they can be facilitated without negatively impacting the network. A transition to DSO will support further investment in renewable generation, and facilitates the ongoing adoption of electric heating and transport. All of these measures will help to ensure that GB is able to achieve its carbon reduction targets as outlined in the Carbon Plan which requires emissions from the power sector to be "close to zero" by 2050..

CONNECTION will include a variety of customer bases (demand, generation and storage), supporting the connection of anything from a dedicated EHV-connected energy storage system, to a domestic customer's new EV charging point or DER. We aim to create a 'one-stop-shop' for all customers providing answers to connection queries specific to their connection type, willingness to consider alternative options, and location. Such an approach may increase customer confidence to investigate new connections, and encourage early investment in EV, DER, and renewable generation.

The project may enable LCT uptake to be predicted more accurately, improving the evidence base on which investment decisions are made in the future. The project specifically aims to achieve whole system optimisation, leading to a lower cost, lower carbon solution which best meets customer's and energy system's needs at the same time.

Efficiencies could also be achieved through the reduced overhead burden of speculative applications which is currently passed through to all customers. Introduction of Assessment and Design fees is expected to reduce the scale of speculation from our larger connection customers, yet with focus on our low voltage network anticipated to rise, we believe there is a need to innovate in this area, assisting our customer management and engineering teams to derive the best whole system solutions accurately and in a timely manner.

The early stage deliverables from CONNECTION will also provide learning which will help inform the progress of the ENA Open Networks Project. CONNECTION will help ensure that the benefits from a move to DSO can be achieved whilst preserving network integrity and improving customer experience.

How will the Project deliver value for money for electricity/gas customers?		
<i>The Licensee must demonstrate that the Method(s) being used can derive benefits and resulting learning that can be attributed to or are applicable to the electricity/gas transmission and/or distribution systems.</i>		
<p>The DSO model will require a more proactive approach to management of the network by DNOs, and greater interaction with the transmission network and with the customers connected to the network (demand, generation, storage). In future, the DSO will be best placed to manage a customer's connection request to produce the best whole system outcome.</p> <ol style="list-style-type: none"> 1. To deliver lowest overall system cost, LNOs require greater insight into future demand and generation. 2. To understand the lowest cost and/or best whole-system connection option, customers require greater visibility of the connection options available to them. <p>The CONNECTION analytics engine will reduce the electricity LNO burden of processing connection applications, and use advanced analytical methods to increase visibility of alternative connection options which offer a better whole-system outcome, improve transparency of costs to customers, signpost flexibility or joint-venture opportunities, and improve network asset investment forecasts.</p> <p>Optimised design and increased visibility of connection options can drive faster delivery of renewable projects as developers can more easily pinpoint locations with capacity to connect, and better understand how flexibility on their side of the meter can reduce the cost or increase the value of their connection.</p> <p>Improved incorporation of connections request data into local demand forecasts can improve investment forecasting and signpost areas with potential for flexible demand management to reduce localised constraints.</p> <p>The method proposed for the CONNECTION project uses an open tender to ensure project suppliers represent the best value for money. Additionally, the delivery of the project with four LNO partners ensures the outcomes will be suitable for BAU adoption across the electricity network, and ensure all customers benefit from a standardised approach.</p>		
How will the Project generate knowledge that can be shared amongst all relevant Network Licensees?		
<i>The Licensee must explain the learning that it expects the Method(s) to deliver, and how it will be shared. The Licensee must demonstrate that it has a robust methodology in place to capture the learning and how the learning is disseminated.</i>		
<p>This Project will assess and demonstrate new analysis, design and visualisation methods for connections which will be directly replicable by the other Network Licensees. Learning will be identified in many areas, including:</p> <ul style="list-style-type: none"> • a validated platform for connection applications across a range of different use cases; • analysis of new data sources and their potential to improve whole system planning; • informing the progress of the Open Networks project and particularly Workstream 2; • learning which may develop future change requests to industry codes; and • further learning on the benefits, costs and risks associated with the transition to DSO. <p>The Project will document learning at the end of each Stage, and will publish an overall Project Closedown Report. These will be shared with other LNOs and published on the ENA Smarter Networks Learning Portal. A key strength of the project is the range of collaborating licensees, which ensures that learning can be effectively shared throughout the project life.</p> <p>Knowledge will be disseminated through the following activities (although this is not an exhaustive list):</p> <ul style="list-style-type: none"> • Reports and presentations hosted on the ENA Learning Portal and DNO website; • Regular workshop updates at the Open Networks Working groups; • Regular press releases published as appropriate; and • Hosted workshops, webinars and dissemination events. <p>A full description of our knowledge and dissemination programme will be included in the Full Submission.</p>		
Does the Project conform to the default IPR arrangements set out in	YES	NO

the NIC Governance Document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p><i>By selecting NO, the Licensee wishes to deviate from the default requirements for IPR. If this is the case, it must demonstrate how the learning will be disseminated to other relevant 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>		
<p>It is our intention that the project will be developed in accordance with the default IPR arrangements.</p>		
<p>How does the project demonstrate it is innovative (ie not business as usual) and has an unproven business case, that the innovation risk warrants a limited Development or Demonstration Project to demonstrate its effectiveness?</p>		
<p><i>Demonstrate why the Licensee has not previously used this Method (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 Project as part of its business as usual and why the Solution is not Research.</i></p>		
<p>Connections & Connection Rights is a DSO function identified by the Open Networks project, and that project proposes to clarify the connection process and present potential developments needed to facilitate transition to a DSO environment. These developments should be tested against use cases for a variety of customer types on a range of networks, which is not part of the Open Networks plan.</p> <p>The CONNECTION proposal draws together numerous datasets, including from recent innovative developments. To our knowledge, no other project is proposing to use this full suite of datasets, combined with further analysis and simulation, to directly improve connections processes and inform whole system network investment. This is due to the relatively recent availability of some new datasets, and the lack of a viable LNO business case to support such a development as many of the benefits do not accrue to the LNO but are beneficial to customers and the wider GB whole system and carbon reduction plan. However, it may prove to offer the best whole system solution and facilitate a new connection framework which works in a DSO environment.</p> <p>The use of connection request data in combination with other datasets may enable LNOs to improve prediction of the uptake and impact of future technologies. Improving the evidence base on which investment decisions are made in the future could help keep costs down, delivering the best whole system solution and value for our customer's money.</p> <p>The development of a new connections platform is an industry-wide issue and it is essential that licensees work collaboratively to build the best whole system solution that supports a variety of customer types and requirements. This is not something that a single LNO can achieve in isolation. To be successful will require significant engagement across the sector including, but not limited to, partner and non-partner LNOs, SO, ICPs and IDNOs.</p>		
<p>How were project Partners, external resourcing/funding identified, and what are</p>		

<p>their roles?</p>
<p><i>The Licensee must provide evidence of how Project Partners were identified and selected, including details of the process that has been followed, and the rationale for selecting partners and ideas for the Project.</i></p> <p><i>The Licensee should provide details of any Project Partners 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.</i></p>
<p>SSEN is seeking a wide stakeholder base to support and inform CONNECTION, to embed learning from previous innovation projects and working groups, and to ensure the outputs are relevant and implementable across GB.</p> <p>SSEN introduced the CONNECTION project at several industry forums including the Open Networks project, and the R&D Managers Meeting. From this engagement the following project partners requested to join the project: UKPN, ENWL, and WPD. Each of these partners has committed time resource and funding to the project, with details to be developed during bid submission.</p> <p>SSEN contacted the Competitive Networks Association (CNA) via their Open Networks representative. Following a positive response, the CONNECTION project will present to the CNA on 12 April 2018 and invite members to be involved; current CNA membership includes all established GB IDNOs.</p> <p>SSEN has contacted the ICP GTC (PowerOn Connections) via Open Networks to invite them to engage with CONNECTION.</p> <p>SSEN has engaged with the SO to discuss the challenges related to managing connections from a whole system perspective and received a positive response; the SO has committed to engage with the project throughout bid development.</p> <p>It is our intention to use competitive procurement processes to engage further parties and suppliers to the project, to ensure best value for money and a robust, procurable solution at the conclusion of the project.</p>
<p>Will the Project require any derogations or exemptions?</p>
<p><i>The Licensee should outline if it considers that the Project will require any derogations, exemptions, or changes to the regulatory arrangements.</i></p>
<p>As identified earlier in the document, the project will be developed in stages, with a Stage Gate prior to deployment in Stage 4. Prior to this we will operate the platform in parallel with the BAU connections process to gain a better understanding of user acceptance of the platform and integration with the LNOs' internal systems. We do not believe that any derogations or exemptions will be required prior to the Stage Gate.</p> <p>At this stage, we envisage that the live deployment in Stage 4 will see a rollout of the platform in a limited trial. We believe that this "live rollout" is essential to ensure that the platform meets the needs of the user, that there are no unintended consequences of live operation, and that the platform performs consistently and reliably. Testing the platform in as realistic a scenario as possible will help to accelerate the transition to Business as Usual.</p> <p>The project will only progress past the Stage Gate if we are satisfied that there is still benefit for customers in proceeding to the deployment stage. This will include a re-evaluation of the business case, review of the project risks, review of stakeholder feedback, and alignment with wider industry policy. This will also include consideration of the process contingency requirements for the deployment stage to ensure that we comply with our regulatory requirements. This evaluation will include identifying any derogations we may require in order to run a successful trial deployment. This is an area we will consider further as the project develops, and we will provide further information in the full submission document.</p>
<p>How will the Project activities impact customers?</p>

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

SSEN and our partner licensees do not anticipate any interruptions to customers import or export capability as part of this project.

The initial stages of the project will not see any changes to the current customer journey or experience and shall only involve customers via workshops and feedback gathering media to help inform the detailed specification of the solution to be trialled.

When the project moves into Stage 3, a beta-version of the connections platform will need to be tested and involve willing participants. However, to ensure no customer is negatively impacted, the trial of the beta-version shall run in parallel to the applicable traditional process following receipt of their application.

Following the Stage Gate, Stage 4 would involve live deployment of the analytical engine and user platform. This proposal is subject to a derogation which is detailed in the previous section. Stage four would be confined to a defined trial zone or customer group, with customers given the opportunity to opt-out of the trial. Appropriate contingencies would be put in place including, but not limited to, regular predefined feedback channels and appropriate contact details to raise awareness of faults or difficulties in using the platform.

As the team further develop the scope, any additional potential impact on customers through the project will be captured and detailed in the Full Submission as appropriate.

What funding is being requested from each NIC? (Cross Industry Projects only)

The Licensee must outline funding that is being requested from the Electricity and the Gas NICs and include a justification for the funding split.

Click or tap here to enter text.

Are there any further details the Licensee feel may support its submission?

All of the Electricity Networks have met via the ENA to discuss the 2018 NIC submissions. The Networks presented their proposed projects and discussed the scopes of the projects to ensure that there was no duplication. In terms of collaboration, where appropriate networks have partnered on certain projects, and have agreed to input and share the learning throughout the course of the projects. These projects will help deliver outputs in some of the key areas for innovation that were identified in the Electricity Network Innovation Strategy. This strategy is due to be released on 29th March and will be available on the ENA website here: <http://www.energynetworks.org/electricity/futures/network-innovation/electricity-networks-innovation-strategy.html>

The CONNECTION project also aligns with SSEN's published Innovation Strategy and with our principles for transition to a DSO, which are described in our document "Supporting a Smarter Electricity System" published in 2017 and available here: <https://www.ssen.co.uk/SmarterElectricity/Report/>

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