Question No.	From	Proforma section	Criteria	Question	Date question asked	Date response required	Date received	Follow up to Question #	Confidential Y/N
1	JM	9	N/A	Under Project Deliverable 8 you have listed 3% of the NIC funding request against the standard Project Deliverable relating to compliance with the Governance Document. As indicated within the Full Submission Guidance this Project Deliverable should not have any funding allocated against it, as non-compliance would be a licence breach. Please can you provide an amended breakdown of the Funding Allocated against each project deliverable?	22 August 2017	24 August 2017	24 August 2017		
2	NC	n/a	b) Value for money	In our feedback following the ISP stage we said - "In order to provide the best value for money to Network Customers, you may want to investigate the feasibility of combining your project with the two other projects looking at the Distribution Network Operator to DSO transition". Please can you explain what actions you have taken to address this specific piece of feedback.	22 August 2017	24 August 2017	24 August 2017		
3	CO	2	d) Is innovative	Under 2.1.6 the third bullet of the first bullet list appears to describe the WPD EFFS project. How will the activity to "Identify the monitoring solutions and modelling requirements to provide required network data to support the Platform and trials." as found in 2.1.6 and the "DNO Interaction" bullets following it interface with the WPD EFFS project?	22 August 2017	24 August 2017	24 August 2017		
4	CO	n/a	d) Is innovative	There have been a number of attempts to establish markets on a small scale such as the SSE projects on Orkney and the Shetlands and UKPN's TDI. What specific lessons have been learnt from any market failures and how closely will this project team work with the TDI2.0 one?	22 August 2017	24 August 2017	24 August 2017		
5	JM	n/a	Multiple	We note that within the Full Submission Spreadsheet you have amended cell D82. As indicated within the Full Submission Guidance the only entry cell on this tab is D85 thus the amount you have calculated as the NIC Funding Required is not in line with the guidance provided. Please could you provide a corrected version of the spreadsheet which does not contain this amendment.	24 August 2017	29 August 2017	29 August 2017		
6	SS	n/a	d) Is innovative	Given the benefits of having a Neutral Market Facilitator decrease the cost of procuring flexibility, and therefore decrease costs for SEPD, why do you require NIC funding to implement / trial this?	24 August 2017	29 August 2017	29 August 2017		
7	JA	n/a	f) Relevance and timing	Please provide a map of the outputs of the various DSO transition projects that have been funded through LCN Fund and NIC (please also include the ERDF Cornwall project). Within this map please show what is unique about TRANSITION. Please also show where you see there being scope for collaboration with other DSO projects.	24 August 2017	29 August 2017	29 August 2017		
8	NC	n/a	d) Is innovative	Within your submission you do not reference the EVOLUTION proposal that was not awarded funding through the NIC in 2015. SP subsequently registered a NIA project of the same name in December 2015 that looked to undertake similar work. Please explain: a) What the differences are between TRANSITION and the proposal for the EVOLUTION NIC project? b) What learning has been gained from the NIA project which would be further developed in the proposed TRANSITION project? c) What are the differences between the NIA EVOLUTION project and the work you propose to undertake through TRANSITION	31 August 2017	05 September 2017	05 September 2017		
9	EP	n/a	g) Robust methodology/ready to implement	Please explain why you have not partnered with the Network System Operator for the trial? Please provide more information on how you intend to work with the SO during the trial.	05 September 2017	07 September 2017	07 September 2017		
10	EP	n/a	b) Value for money	Please clarify whether each market platform will cost £20m to establish? Will there be one platform per licence area?	05 September 2017	07 September 2017	07 September 2017		
11	EP	n/a	Multiple	Who will own the final software platform being created by the project? How will it interact with existing software/ hardware on the network?	05 September 2017	07 September 2017	07 September 2017		
12	EP	n/a	g) Robust methodology/ready to implement	How much research have you conducted into the appetite for consumers/ industry to provide flexible services to the network. What degree of savings have you assumed would be needed to recruit consumers/ industry to participate within the market?	05 September 2017	07 September 2017	07 September 2017		
13	NC	n/a	g) Robust methodology/ready to implement	Why didn't you wait until the conclusion of the Open Networks Consultation process before developing this submission?	05 September 2017	07 September 2017	07 September 2017		
14	EP	n/a	g) Robust methodology/ready to implement	Please provide information on how you intend to mitigate the risk factors associated with the short time scheduled (60 days) for the data collection and management activities	12 September 2017	14 September 2017	14 September 2017		
15	EP	n/a	b) Value for money	Please confirm how much money from the project budget has been allocated for Customer Engagement activities?	12 September 2017	14 September 2017	14 September 2017		
16	EP	n/a	f) Relevance and timing	Please provide clarification on how customers will ne engaged within the project's governance structure?	14 September 2017	14 September 2017	14 September 2017		
17	EP	n/a	f) Relevance and timing	Please outline how the project's learning will fit into the creation of any possible future industry code?	12 September 2017	14 September 2017	14 September 2017		
18	RH	n/a	c) Generates new knowledge	The project design describes a role for the DSO in approving/rejecting trades, and in providing visibility and clarity of capacity, constraints and charging on the platform. Could you describe in greater detail what is meant by this and what mechanisms would be used?	12 September 2017	14 September 2017	14 September 2017		
19	RH	n/a	c) Generates new knowledge	What type of peer-to-peer trading do you envisage the platform would facilitate and what would drive this trading?	12 September 2017	14 September 2017	14 September 2017		
20	RH	n/a	Mulitple	Does the project envisage the platform will be DSO/SO run, or will it generate learning on the potential role of independent parties here and any implications for DSO actions needed?	12 September 2017	14 September 2017	14 September 2017		
21	RH	n/a	c) Generates new knowledge	What is intended to be traded - are the products energy products or more bespoke flexibility products?	12 September 2017	14 September 2017	14 September 2017		
22	RH	n/a	c) Generates new knowledge	What work is intended to take place on the cyber security considerations associated with the market design?	12 September 2017	14 September 2017	14 September 2017		
23	EP	n/a	a) Enviro+consumer bens	Please confirm the units used to express carbon savings (tCO2e on slide 5 of 1st bilateral presentation and page 19 of proposal cf. ktCO2e on page 45 of the proposal).	21 September 2017	26 September 2017	26 September 2017		
24	EP	n/a	a) Enviro+consumer bens	Please comment on the scale of these savings (expressed as "gross" on page 19) compare with those of the relevant counterfactual(s).	21 September 2017	26 September 2017	26 September 2017		
25	EP	n/a	a) Enviro+consumer bens	Please explain why carbon savings were estimated using the stated assumptions about future generation, rather than by using FES scenarios.	21 September 2017	26 September 2017	26 September 2017		
26	RH	n/a	a) Enviro+consumer bens	Please confirm whether you are planning to submit a bid to the BEIS Flexibility Markets Tender in October?	26 September 2017	28 September 2017	28 September 2017		

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	01
Question date	22/08/17	Answer date	24/08/17
Submission section question relates to	9		
Topic	Project Deliverables		
Question	Under Project Deliverable 8 you have listed 3% of the NIC funding request against the standard Project Deliverable relating to compliance with the Governance Document. As indicated within the Full Submission Guidance this Project Deliverable should not have any funding allocated against it, as non-compliance would be a licence breach. Please can you provide an amended breakdown of the Funding Allocated against each project deliverable?		
Notes on question			
Answer	We have revised the funding allocation as attached in "SSEEN05_220817_Q1_attachment.docx". An additional 2% has been added to Project Deliverable 3 "Stakeholder feedback event (Stage Gate)", and an additional 1% to Project Deliverable 6 "WP8 Trials stage 1 Completion of one stage of trials". This reflects the need to fully disseminate learning if the project does not proceed beyond these deliverables, i.e. some dissemination activities would be moved forward to comply with the licence obligations.		
Attachments	SSEEN05_220817_Q1_attachment.docx		

Section 9: Project Deliverables

Table 1: Project Deliverables

Reference	Project Deliverable	Deadline	Evidence	NIC funding request (%, must add to 100%)
1	WP6 Trial specification Produce and apply the site selection methodology and select the Trial networks.	June 2018	1. Publish on the TRANSITION website a report detailing the site selection methodology, and a map of Trial areas. 2. Selection of networks to install monitoring (if required).	6%
2	WP2 Requirements design development Data exchange requirements and updated data governance processes specified.	August 2018	1. Publish report detailing learning from relevant international DSO experience relating to trial objectives. 2. Functional specification for connectivity model, data exchange and governance requirements.	8%
3	Stakeholder feedback event (Stage Gate)	April 2019	1. Stakeholder feedback event to disseminate and gather feedback on outputs from WP 2-6.	7%
4	WP7 Deployment Develop appropriate commercial arrangements and contract templates for flexibility services. Network adaptation for trial deployment.	August 2019	1. Publish contract templates for flexibility services and commercial arrangements learning 2. Publish equipment specifications and installation reports	35%
5	WP7 Deployment Platform Full Acceptance Testing completed	August 2020	1. Publish interface and configuration specifications and commissioning reports.	17%

Reference	Project Deliverable	Deadline	Evidence	NIC funding request (%, must add to 100%)
6	WP8 Trials stage 1 Completion of one stage of trials	March 2021	1. Publish monitoring and analysis results for Trials on TRANSITION website. 2. Stakeholder dissemination event showcasing learnings.	17%
7	WP8 Trials stage 2 Completion of second stage of trials	December 2021	1. Publish monitoring and analysis results for Trials on TRANSITION website 2. Stakeholder dissemination event showcasing learnings.	10%
8	Comply with knowledge transfer requirements of the Governance Document.	End of project	1. Annual Project Progress Reports which comply with the requirements of the Governance Document. 2. Completed Close Down Report which complies with the requirements of the Governance Document. 3. Evidence of attendance and participation in the Annual Conference as described in the Governance Document.	0%

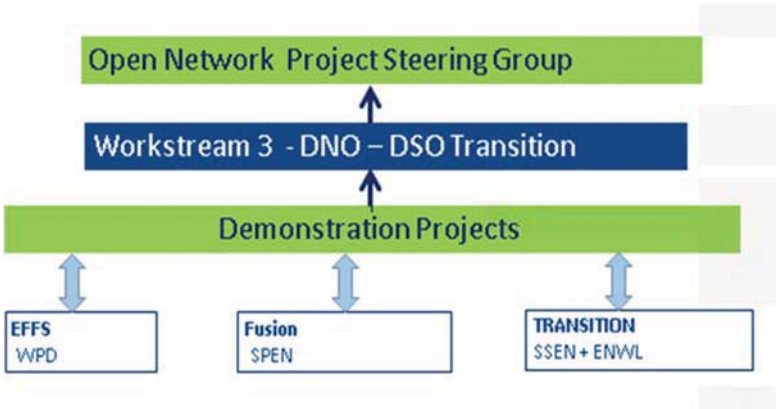
Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: __SSEN – TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	2
Question date	22.8.17	Answer date	24.8.17
Submission section question relates to			
Topic	b) Value for money		
Question	In our feedback following the ISP stage we said - "In order to provide the best value for money to Network Customers, you may want to investigate the feasibility of combining your project with the two other projects looking at the Distribution Network Operator to DSO transition". Please can you explain what actions you have taken to address this specific piece of feedback.		
Notes on question			
Answer	The need for strong collaboration cannot be underestimated and will be vital to achieving the goal of an efficient and effective transition to DSO. That is why the TRANSITION project is fundamentally linked to the ENA Open Networks Project which has been highlighted as a key initiative by BEIS and Ofgem in the recently published 'Smart Systems and Flexibility Plan'. From the very outset of TRANSITION, SSEN were clear that collaboration would be an essential element to the success of the project. As described in our proposal, the project has been jointly developed by ENWL and SSEN, with input from Northern Powergrid. Following receipt of the ISP feedback from Ofgem, SSEN made extensive efforts to more closely link the three projects together through direct engagement (via teleconference) with the NIC development teams of SPEN and WPD. SSEN shared the TRANSITION project scope and also a number of potential collaboration options with the other two DNOs during a series of meeting and telecoms convened by SSEN, in an attempt to ensure alignment of the projects scope and to ensure collaboration. These are identified below: • 9 May, 16 May, 12 June, 14 June, 22 June and 14 July. In addition, the project and potential options for collaboration were also presented to the Open Networks Project Steering Group on 20 June, and the ENA R&D Managers meeting on 8 June (see attached agenda).		

	SSEN and ENWL, in common with SPEN and WPD used a "call for partners/ideas" to identify additional external involvement in this year's NIC. We will continue to work with both SPEN and WPD, and other relevant projects such as TDI 2.0, to collaborate in the delivery of the projects to ensure that they all contribute to an efficient DSO transition. Key areas for collaboration which have already been identified include: 1) **Requirements Definition –** Building on the outputs from the Open Networks project, identify and further develop the functional requirements for DSO. 2) **Consultation –** All of the projects are seeking to undertake stakeholder engagement; it is also clear that the projects will have a large amount of common stakeholders such as National Grid or UK Government. Therefore, the timing and content of these consultations should be aligned with Open Networks and, where possible, undertaken jointly by SPEN, WPD and SSEN. This will ensure that stakeholders receive as "holistic" a view as possible and are not confused by a series of seemingly uncoordinated consultations from multiple projects. 3) **Trials –** Project trials will be coordinated to complement each other, to ensure there is no unnecessary duplication and to test specific elements such as data exchange and interoperability. A specific consideration at the Stage Gate proposed at the end of the first stage of TRANSITION will be to review the scope of the proposed trials. 4) **Knowledge Sharing –** Knowledge dissemination activities will be shared where work has been undertaken collaboratively. Again, this needs to be closely linked with Open Networks to ensure that stakeholders are informed in a coordinated fashion. 5) **Stage Gates –** All of the projects are following a staged approach to their respective projects. Where practicable, it is intended to try and align these various stage gates across the projects to ensure that knowledge can be shared and tested amongst the various project teams. This will allow an opportunity for the scope or programme of the projects to be adjusted to reflect the learning gained across all of the projects. The Open Networks Project is pivotal in the development of DSO within GB and provides a focal point for the industry's activities. Therefore, it is essential that all of the prospective NIC projects are linked to the Open Networks project. This will help ensure that each of the projects is aligned with the wider industry and allows the learning to inform the development of Open Networks. This is the most appropriate forum to engage with each of the projects. 
Attachments	SSEEN05_220817_Q2_attachment.docx

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	03
Question date	22/08/17	Answer date	24/08/17
Submission section question relates to	2		
Topic	d) Is innovative		
Question	Under 2.1.6 the third bullet of the first bullet list appears to describe the WPD EFFS project. How will the activity to "Identify the monitoring solutions and modelling requirements to provide required network data to support the Platform and trials." as found in 2.1.6 and the "DNO Interaction" bullets following it interface with the WPD EFFS project?		
Notes on question			
Answer	Having the appropriate network information available in the right format at the right time will be fundamental to the success of any future DSO. This will require DSOs to have much greater visibility of all parts of the network,in particular, the lower voltage networks. This information will be used to support key DSO competencies such as forecasting, outage planning and network operation. TRANSITION will set out to establish the data requirements for the operation of the Neutral Market Facilitation, and then intends to undertake a gap analysis to identify any additional requirements or areas which need further work. This will be informed by work already completed or in progress, the outputs from Open Networks and also the learning from both FUSION and EFFS. The requirement for network visibility and data may also have variations depending upon the local network constraints, stakeholder requirements and also the existing DNO systems and data sets. As discussed in our proposal and in our response to Question 2, SSEN and WPD have already recognised that they will need to cooperate in this area. This is a specific area where the TRANSITION and EFFS teams will need to liase closely together to share both the requirements and learning for data. Both projects are being developed on a staged basis and we will use this		

	process to ensure that there is no unnecessary duplication, but will also ensure and that the solutions and requirements developed are suitably robust to meet all of the DSO requirements across the full range of network scenarios. If both projects are awarded funding, then SSEN and WPD will more formally engage to ensure alignment of stage gates, ongoing collaboration and knowledge sharing.
Attachments	

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	04
Question date	22/08/17	Answer date	24/08/17
Submission section question relates to	n/a		
Topic	d) Is innovative		
Question	There have been a number of attempts to establish markets on a small scale such as the SSE projects on Orkney and the Shetlands and UKPN's TDI. What specific lessons have been learnt from any market failures and how closely will this project team work with the TDI2.0 one?		
Notes on question			
Answer	It should be noted that TRANSITION is not intending to design a market structure, but will put in place a platform to allow the market structures proposed from Open Networks to be tested. Through the learning gained from our existing innovation portfolio SSEN has delivered both ANM and CMZ into business as usual. Both of these deployments have been founded on the lessons learned from across our portfolio of innovation projects including initial ANM deployments, demonstrations of domestic demand side response and automated demand response, and our commercial innovation projects on Orkney. Key personnel involved in the design and delivery of these projects are retained within the business and have helped shape the scope of the TRANSITION project. Many external factors influence market behaviour, including changes to government policy. Through previous projects we understand that factors influencing markets may not be apparent to the DNO; therefore we have a market participant (Origami Energy Ltd) as a project partner, who can help ensure that TRANSITION considers the needs of stakeholders beyond the traditional DNO boundaries. One of the key lessons from our previous work in this area is the importance of cost effective operation and maintenance. This has become more		

	apparent through our adoption of various innovations into business as usual. The ability for any solution to be scalable will be vital to its success; therefore, TRANSITION will place a strong emphasis on the roll-out O&M costs of the solution. In developing TRANSITION, we have used our experience in progressing innovations to BAU, so are well placed to understand the requirements to achieve long-term viability. Similarly, our experience in the early deployments of ANM on Orkney highlighted the need for effective communication infrastructure. In the early trials of the Orkney ANM project, ANM connected customer communication system failure became one of the biggest causes of curtailment. This was improved by moving to a microwave system, but highlighted the importance of robust service level agreements (SLAs), or consideration of supplying communications infrastructure in-house rather than by a third party. SSEN has experience in actively managing several different types of networks across our existing schemes on Orkney, Shetland, Thames Valley and the Isle of Wight. These include different levels of participation from users, use of different control devices and communications systems, and different commercial arrangements. Similarly, ENWL gained extensive experience in this field during the delivery of the CLASS project. All of this learning will help ensure that the outputs from TRANSITION can be successfully delivered. As described in Section 2.1.7, the TRANSITION team has engaged with National Grid regarding the ongoing TDI 2.0 (now called Power Potential) during development of this project. This engagement spanned several phone and physical meetings, and it was felt by both parties that the ENA Open Networks Project represented the best forum for general alignment of the project learnings, supplemented by specific meetings regarding areas of potential shared learning, or opportunities to enhance outputs of either project. Power Potential is already engaging with ENWL regarding the use of ICCP (Inter-control centre Communications Protocol) links for control functionalities (part of the CLASS project) to inform service procurement. Additionally, our project partner Origami Energy Ltd is on the panel of potential providers of service under Power Potential, with indicative pricing and contract structure expected to be shared later this year, and first service delivery in early 2019. Another partner of TRANSITION, CGI, are also supporting the Power Potential project. "National Grid System Operator's Power Potential project is happy to engage with the TRANSITION team to avoid duplication of effort and that relevant learnings are taken on board. Our ongoing engagement would be primarily via the Power Potential dissemination events and through the Open Networks project, and will not extend beyond the scope of Power Potential's current plan of work." Mark Herring, Senior Manager, Innovation Strategy, National Grid System Operator
Attachments	

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	05
Question date	24/08/17	Answer date	29/08/17
Submission section question relates to	Full Submission Spreadsheet		
Topic	Full Submission Spreadsheet		
Question	We note that within the Full Submission Spreadsheet you have amended cell D82. As indicated within the Full Submission Guidance the only entry cell on this tab is D85 thus the amount you have calculated as the NIC Funding Required is not in line with the guidance provided. Please could you provide a corrected version of the spreadsheet which does not contain this amendment.		
Notes on question			
Answer	The change to the formula in cell D82 reflects the receipt of the NIC funding as twelve monthly instalments; this reduces the interest earned in the first year. The original formula assumes the funding is paid in full in January 2018. This correction to the formula has been made each year in our calculation of the NIC funding request. As requested we have revised the Full Submission Spreadsheet to show the original formula; this is attached as "SSEEN05_240817_Q5_FSS.xlsm". This would reduce the NIC funding request by £43,831.10 to £13,037,873.42.		
Attachments	SSEEN05_240817_Q5_FSS.xlsm		

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	06
Question date	24/08/17	Answer date	29/08/17
Submission section question relates to	n/a		
Topic	d) is innovative		
Question	Given the benefits of having a Neutral Market Facilitator decrease the cost of procuring flexibility, and therefore decrease costs for SEPD, why do you require NIC funding to implement / trial this?		
Notes on question			
Answer	Maximising the potential of the neutral market facilitator requires engagement of market participants and DNOs across the country and we believe that this is best achieved through the NIC. The rigour and transparency of the NIC process will help to engage the wider market as well as other licensees and network users. In addition, there are many additional risks associated with the project, these include: • developing and implementing a software and forecasting platform potentially integrated to the control systems of the partner DNOs systems and some market participants; • procurement of services from market participants for trials; • trials not being successful in terms of market participation, level of procured services, delivery of procured services, and therefore further trials could be required; • general project risks such as time and cost overruns. SSEN has already implemented the use of flexibility services as a key element of our asset management and investment process via our Constraint Managed Zone project. This was developed and implemented as part of our business as usual activities without any innovation funding. However, the NMF is designed to facilitate benefits for customers and network users outwith the traditional DNO boundaries to deliver the best whole system outcome. Adopting a wider, more inclusive approach will		

	produce additional benefits and reduce risks for customers.. Given the wider benefits of the proposal many of which are outwith the traditional DNO boundaries, and the additional risks involved, we believe it is appropriate for the TRANSITION project to be funded through NIC. The need for additional innovation in this area has already been recognised in the Smart systems and flexibility plan, July 2017. "Issue: There is a need to catalyse innovation by trialling ways in which energy markets may evolve. Action: The Government is allocating £0.6 million to local flexibility trading, launching a competition for a feasibility study, with a view to launching an innovation competition to trial such an approach. Ofgem has made changes to Network Innovation Competition (NIC) funding to require network companies to issue calls for ideas from third parties with the view that this will help increase the pool of technologies and ideas." SSEN and ENWL utilised a "call for ideas" to select the project partners and develop the TRANSITION proposal so it was suitable for submission to the NIC.
Attachments	

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	07
Question date	24/08/17	Answer date	29/08/17
Submission section question relates to	n/a		
Topic	f) Relevance and timing		
Question	Please provide a map of the outputs of the various DSO transition projects that have been funded through LCN Fund and NIC (please also include the ERDF Cornwall project). Within this map please show what is unique about TRANSITION. Please also show where you see there being scope for collaboration with other DSO projects.		
Notes on question			
Answer	The attached table maps some of the outputs of DSO transition projects including TRANSITION, Fusion, EFFS, Power Potential, Cornwall Local Energy Market. The unique aspects of TRANSITION include: • Development of a neutral market facilitator platform based on requirements developed specifically for the GB network, informed by the Open Networks project. • Demonstration of the platform interaction and data exchange with two different DNO operating systems, and potential to trial the platform in up to three different network areas including constrained networks or DNO boundaries, in rural or urban regions. TRANSITION has agreed with the FUSION and EFFS projects to coordinate a structured approach to project collaboration, and to coordinate shared activities, with planned delivery of a collaboration structure and approach between Q1 and Q2 of 2018. As outlined in more detail in our response "SSEEN05_220817_Q2", SSEN has made extensive efforts to more closely link the three NIC 2017 projects together through direct engagement with the NIC development teams of SPEN and WPD. SSEN shared the TRANSITION project scope and also a number of potential collaboration options with the other two DNOs during a series of meeting and telecoms convened by SSEN, in an attempt to ensure		

alignment of the projects scope and to ensure collaboration.
Key areas for collaboration which have already been identified include:

1) **Requirements Definition –**Identify and further develop the functional requirements for DSO.
2) **Consultation –** Due to the large amount of common stakeholders the timing and content of the consultations should be aligned with Open Networks and, where possible, undertaken jointly by SPEN, WPD and SSEN so that stakeholders receive as "holistic" a view as possible
3) **Trials –** Project trials will be coordinated to complement each other, to ensure there is no unnecessary duplication and to test specific elements such as data exchange and interoperability. A specific consideration at the Stage Gate proposed at the end of the first stage of TRANSITION will be to review the scope of the proposed trials.
4) **Knowledge Sharing –** Knowledge dissemination activities will be shared where work has been undertaken collaboratively.
5) **Stage Gates –** All of the projects are following a staged approach to their respective projects. Where practicable, it is intended to try and align these various stage gates across the projects to ensure that knowledge can be shared and tested amongst the various project teams

In addition, SSEN has engaged directly with Northern Powergrid, National Grid and Centrica to discuss possible synergies between the projects.

- Northern Powergrid has agreed to sit on the steering group for TRANSITION, and we have discussed collaboration opportunities relating to a project which is currently being developed by NPg. This project would focus on 'demonstration through modelling', and we have discussed combining practical learning from TRANSITION with modelling and simulation in the NPg project to provide insight into a wider set of scenarios. As this project is developed we will continue to discuss the best ways to align the objectives of each to maximise value and minimise cost for customers.

> "We are in a position now to commit to provide expert resource to participate in progress workshops and steering groups. Also, we would like to participate in shared dissemination events that explore the learning from all projects that are active in the DSO area. As our own project develops then we will be seeking to collaborate more.
> We look forward to supporting you with the project."
>
> Jim Cardwell, Head of Trading and Innovation, Northern Powergrid

- National Grid has agreed to engage with TRANSITION, to identify possible synergies. We concluded that the Open Networks project represents the most appropriate forum to coordinate this engagement initially. The Power Potential project already has links to ENWL (who are sharing learning from the CLASS project), and two TRANSITION partners, CGI and Origami Energy are also involved in Power Potential.

	"National Grid System Operator's Power Potential project is happy to engage with the TRANSITION team to avoid duplication of effort and that relevant learnings are taken on board. Our ongoing engagement would be primarily via the Power Potential dissemination events and through the Open Networks project, and will not extend beyond the scope of Power Potential's current plan of work." Mark Herring, Senior Manager, Innovation Strategy, National Grid System Operator • Centrica has agreed to continued engagement with TRANSITION, as outlined in the Letter of Support in the bid document. The Cornwall Local Energy Market project has already developed high-level market designs and engaged with end users. This experience can inform the TRANSITION development of proposals to ensure a good response rate from stakeholders. "Centrica Distributed Energy and Power offers its qualified support for SSEN's NIC bid submission for this year. This support is based on the fact that as we understand the TRANSITION project it offers opportunities for collaborative working and in particular based on some learning opportunities from our Cornwall Local Energy Market project" Extract from Letter of Support, signed Stuart Fowler, DNO Commercial Manager, Centrica Distributed Energy and Power
Attachments	SSEEN05_240817_Q7_DSO project map.docx

TRANSITION - Comparison of NIC and LCN Fund DSO Projects

Method and Solution	Access to Flexibility	Market Rules	Platform	Trial	Comment
TRANSITION					
M – inform the design requirements for the Platform, develop the roles and responsibilities within the marketplace, develop the market rules required for the trials, and implement and test the concept of the Platform. S - develop and deploy key elements of a Neutral Market Facilitator Platform that enables the transition to a DSO.	• Level and type of flexibility dependent upon trial areas • Aggregators (and, possibly, large I&C providers) will identify flexibility and provide to market • Domestic providers of flexibility to be modelled	• Simple rules to be developed in Phase 1 for Phase 2 trials. • Requires input from ENA WS3.	• Key platform components identified, subject to specification and system integration • Data exchange requirements to be developed • Requires input from ENA WS3	• Applied to constrained areas of ENWL and SSEN licenced areas • Potential to apply to a DNO boundary area	TRANSITION's focus is to establish the market dynamics from a whole system perspective and inform the market design, inter market participant communications and associated systems requirements to enable neutral facilitation of a whole system market.
FUSION					
M - implement a local competitive, open, and structured flexibility market. S - develop, implement, and trial the application of one (of 16) of the Universal Smart Energy Framework services.	• Premise is there is no existing flexibility in area • Flexibility to be identified through a market analysis report • Using aggregators to access flexibility and operate with USEF rules, although large I&C could participate directly	• Adapting a set of existing rules from Netherlands market that may or may not be applicable to GB. • Rules are based on flexibility with regular forecasting. • Trials the mechanics of a local market with little or no SO interaction.	• Tendering for platform to operate USEF rules (there is at least one potential provider who was involved in previous trials in Netherlands)	• Applied to a constrained area of the SPEN network	TRANSITION will develop bespoke GB requirements for the platform during Phase 1 based on stakeholder and Open Networks input. TRANSITION will develop, implement and trial the platform under a number of Use Cases. There may be complementary outcomes if the selected trials consider different constraints, flexibility, or network types.

TRANSITION - Comparison of NIC and LCN Fund DSO Projects

Method and Solution	Access to Flexibility	Market Rules	Platform	Trial	Comment
Electricity Flexibility & Forecasting System					
M - Develop forecasting tools to provide for LT and ST flexibility service requirements evaluation, and service triggering. Also, enable data exchange with other participants to reduce 3rd party impacts and for conflict management S - assess the various forecasting options, determine the necessary system requirements to enable DSO operation and deliver replicable functionality and systems to allow for future convergence	• None	• None	• Development of new system with forecasting tools, communicate flexibility services requirements to the market, create commercial agreements for those services, execute flexibility services • Enabling data exchange	• None	TRANSITION will develop requirements for all elements of a Neutral Market Facilitator platform including forecasting, analytics, pricing, data management and exchange, settlements, and contracts for a range of potential market models and market participants. There may be synergies in development of these requirements. TRANSITION will then trial the platform on up to three network locations.
Power Potential					
M – implement a whole system approach to maximise network capacity (connection of more renewable energy and storage technology in SE England) and to provide the SO with access to voltage management (reactive and active power) services from generation S – use visibility, coordination	• Requires active and reactive power flexibility in SE England, primarily from generation • Testing whether DERs can provide the services required, reliably and in real-time	• Develop a market of new services to be provided by DERs that will include local services (pre- and post-fault reactive support) and new balancing products. • Services are	• UKPN tendered for their platform that integrates with power system analysis, models DNO system service needs, and despatches flexibility	• Reactive and active power to be used to provide post-fault voltage management (SO) and to release headroom on transformers (UKPN)	TRANSITION seeks to trial market models developed by Open Networks; one of these models may be similar to the Power Potential model and as such, TRANSITION can learn from the work undertaken to date, and enhance the

TRANSITION - Comparison of NIC and LCN Fund DSO Projects

Method and Solution	Access to Flexibility	Market Rules	Platform	Trial	Comment
and control to ensure increase the exported generation in SE England and use reactive power support to manage voltage levels post-fault		procured by DSO on behalf of SO			outputs of Power Potential by providing trials of other market models and other services.
Cornwall Local Energy Market					
M – implement a virtual marketplace to allow participants to sell their flexible energy capacity to both the grid and the wholesale energy market S – create a virtual marketplace to test the use of flexible electricity demand, generation and storage, rewarding participants for flexibility in energy use	• Investing in the installation of new technology (including battery storage and micro-CHP) in homes and businesses	• Similar in structure to a single neutrally facilitated local energy market within TRANSITION's Local Energy Market model.	• To be developed	• Local Energy Market trial with domestic and business customers.	The TRANSITION approach is substantively different as it looks at the value that can be created to the whole system by making the flexibility within a local energy market available outside that local energy market (as illustrated in Figure A7.1 Local Energy Market arrangements), maximising the potential value to consumers and increasing the size and attractiveness of the market for flexibility services.

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	8
Question date	31/08/17	Answer date	05/09/17
Submission section question relates to	n/a		
Topic	d) Is innovative		
Question	Within your submission you do not reference the EVOLUTION proposal that was not awarded funding through the NIC in 2015. SP subsequently registered a NIA project of the same name in December 2015 that looked to undertake similar work. Please explain: a) What the differences are between TRANSITION and the proposal for the EVOLUTION NIC project? b) What learning has been gained from the NIA project which would be further developed in the proposed TRANSITION project? c) What are the differences between the NIA EVOLUTION project and the work you propose to undertake through TRANSITION		
Notes on question			
Answer	**a) What the differences are between TRANSITION and the proposal for the EVOLUTION NIC project?** SSEN and ENWL considered the EVOLUTION project and considered the reasons for it not being funded during our development of the TRANSITION project. There are several key differences between TRANSITION and the previous EVOLUTION NIC project. 1. Since EVOLUTION was proposed in 2015, the need for DSO and the industry's thinking around how it should be implemented has developed and matured significantly. The publication of the Government's 'Smart Systems and Flexibility Plan' has given clear direction on the need for change. The Open Networks project has been recognised by Government as having a key role in delivering a successful move to DSO. TRANSITION		

has been developed to provide a mechanism for developing, demonstrating and validating key elements of the models being produced by Open Networks. This will provide a robust evidential base to inform the move to DSO, and with the link to Open Networks provides a conduit to allow the outputs from TRANSITION to directly inform the wider move to DSO.

2. In the 2015 NIC Funding Decision document, Ofgem recognised that EVOLUTION was - "an innovative project which would have trialled one model of the role of a distribution system operator (DSO)". The initial outputs from Open Networks include a number of suggested market models which are detailed in a stakeholder engagement consultation produced by the project[1]). EVOLUTION only evaluated a single market model option and did not consider evolving models such as "peer to peer" trading. There is a clear need to further develop and test a wider range of potential market models, rather than narrowing the focus to a single model.
3. The Experts Panel's assessment of EVOLUTION[2] identified a number of fundamental concerns; in our development of TRANSITION we have attempted to address these points:
    a. Market Design - the design of the marketplace, commercial arrangements and the impact on the wider system. The Open Networks project provides a mechanism for these issues to be debated and resolved at an industry-wide level. TRANSITION will focus on demonstrating and testing the outputs from Open Networks.
    b. Trial Location - whilst SSEN and ENWL have identified potential trail locations for TRANSITION, these will be examined in detail during the Phase 1 of the project to ensure that they are appropriate to test the market models being proposed. The final trial locations will be determined as part of the Stage Gate process.
    c. Initial Feasibility Study – since EVOLUTION was proposed there have been several studies published which clearly outline the benefits from DSO – including the joint Ofgem/BEIS 'Smart Systems and Flexibility Plan' published in July 2017, which has estimated that up to £40bn of benefits could be achieved if there is a successful transition to a more flexible energy system. The Open Networks project is looking to address some of the fundamental issues associated with DSO at an industry-wide level and TRANSITION will provide a platform to allow the proposed models to be tested and validated prior to their implementation.
    d. Simulations – we have identified a need for simulation for certain market scenarios and situations. As identified in our submission, Northern Powergrid are committed to working with SSEN and ENWL in the TRANSITION project. Since our initial submission, NPg have registered an NIA project, (Customer-Led Distribution System - NIA_NPG_019), which will focus on a 'demonstration through modelling' approach that could be combined with the practical learning from TRANSITION to provide a more robust insight into a wider set of scenarios.

	b) **What learning has been gained from the NIA project which would be further developed in the proposed TRANSITION project?** In addition to the EVOLUTION NIA project there have been a number of other projects undertaken relating to DSO. We have considered the learning from these in our development of TRANSITION. However, the key conduit for the learning from EVOLUTION has been on how it, and other innovation projects have shaped the ongoing development of the Open Networks project. Open Networks has fully considered the earlier learning from innovation projects, which has been included in a report produced by Workstream 1 of the Open Networks project – "Key learnings from trial projects"[3]. This will help and shape the market model options being developed by Open Networks which will ultimately be demonstrated via TRANSITION. SPEN have used the EVOLUTION project to develop and produce their "DSO Vision", which they have published for consultation. Eighteen responses to their consultation were received in a number of areas including commercial arrangements, trial locations and market models. These responses have helped highlight areas which will need further work including technical requirements and commercial arrangements. **c) What are the differences between the NIA EVOLUTION project and the work you propose to undertake through TRANSITION.** The original EVOLUTION project was based around trialling a single localised market model. The subsequent NIA project currently in progress has started to identify, and is carrying out, the high level design for some of the requirements for DSO. The project will conclude with a consultation and dissemination of the outputs, but does not seem to include any physical trial or test. TRANSITION will build on these outputs and from other work already undertaken, but will also undertake a physical test of the infrastructure to ensure that it is appropriate and that any unintended consequences can be identified. This will provide a robust evidential base on the cost and risks of implementing DSO. It is also worth highlighting that TRANSITION will also look at how local markets can be viewed from a wider and whole system perspective. This will help address previous concerns highlighted by DNOs about the lack of visibility of other market participants' demand side flexibility arrangements on their networks, which could become a barrier to the use of flexibility, as identified in a 2016 report produced by CGI[4]. 1. http://www.energynetworks.org/assets/files/electricity/futures/Open_Networks/ON-WS1-P4%20Commercial%20Paper%20(Final%20Draft)-170816-final.pdf 2. https://www.ofgem.gov.uk/sites/default/files/docs/final_elec_ep_report_2015.pdf) 3. //www.energynetworks.org/assets/files/electricity/futures/Open_Networks/ON-WS1-P1%20Key%20Learnings-170816.pdf) 4. https://www.cgi-group.co.uk/article/energy-flexibility-transforming-the-power-system-by-2030
Attachments	

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	9
Question date	05/09/17	Answer date	07/09/17
Submission section question relates to			
Topic	g) Robust methodology/ready to implement		
Question	Please explain why you have not partnered with the Network System Operator for the trial? Please provide more information on how you intend to work with the SO during the trial.		
Notes on question			
Answer	The TRANSITION team has engaged with National Grid SO during development of this project. This engagement spanned several phone calls and physical meetings, and it was felt by both parties that the ENA Open Networks Project represented the best forum for general alignment of the project learnings, supplemented by specific meetings between the SO and DNO for project specific issues. In a meeting on 23 June, following extensive discussion of the TRANSITION scope, and the ongoing Power Potential project, the SO suggested Open Networks as a mechanism to engage the project and align deliverables. A more detailed meeting with John West of NGETSO was held in Glasgow on 11 July. Discussions included a review of current projects and the TRANSITION scope, system security and protection, outputs from the CLASS project, system operation, and community involvement. During this meeting we discussed the role of NGETSO in TRANSITION, and agreed that the Open Networks project would be the most appropriate way to manage their involvement. This allows the outputs of all DSO projects to be aligned, and will save time as NGETSO can engage all projects together, at least in the early design stages when information requirements are likely to be similar. We have maintained regular contact with National Grid regarding the scope		

	of TRANSITION and the intention to run trials after the stage gate. They remain engaged and willing to work with us, however given the emergence of several DSO projects competing for NIC funding, it was recognised by both parties that it would be inappropriate for NGETSO to partner with any one project at this stage. "National Grid System Operator's Power Potential project is happy to engage with the TRANSITION team to avoid duplication of effort and that relevant learnings are taken on board. Our ongoing engagement would be primarily via the Power Potential dissemination events and through the Open Networks project, and will not extend beyond the scope of Power Potential's current plan of work." Mark Herring, Senior Manager, Innovation Strategy, National Grid System Operator Engagement with the SO will be important to the success of TRANSITION and the other DSO projects seeking funding. As indicated in our response to Question 7, TRANSITION has agreed with the FUSION and EFFS projects to coordinate a structured approach to project collaboration, and to coordinate shared activities, with planned delivery of a collaboration structure and approach between Q1 and Q2 of 2018. Engagement with the SO will a key element of this collaboration structure will ensure the best use of SO resources and avoid duplication of effort.
Attachments	

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	10
Question date	05/09/17	Answer date	07/09/17
Submission section question relates to			
Topic	b) Value for money		
Question	Please clarify whether each market platform will cost £20m to establish? Will there be one platform per licence area?		
Notes on question			
Answer	It is worth noting that TRANSITION is not intending to establish a final market platform, but will develop the requirements against which any future DSOs can run a procurement exercise. TRANSITION will implement a trial platform to gain confidence in the cost and functionality of the developed systems architecture for a number of Use Cases. In the cost benefit analysis we have assumed a platform will cost £20m, which is similar to costs incurred in 2015 establishing a market platform known as MOSL to support the non-domestic water market (See: https://www.cgi-group.co.uk/news/market-operator-services-limited-selects-cgi-central-market-system). The cost benefit analysis considers one of the market arrangements being considered by the TRANSITION project, the "central market facilitator" which would have a single, centralised platform. The final market structure for GB DSOs is as yet uncertain, but will be informed by outputs from the Open Networks project and evidence from practical trials undertaken in TRANSITION. To account for this uncertainty, we tested the sensitivity of the cost of the platform rising to £100m, which could represent multiple platforms; further details are included in Section 3 and Appendix 10 of the full submission document. This has demonstrated that significant benefits can still be realised for customers if multiple market platforms are required.		

Attachments	

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	11
Question date	05/09/17	Answer date	07/09/17
Submission section question relates to			
Topic	Multiple		
Question	Who will own the final software platform being created by the project? How will it interact with existing software/ hardware on the network?		
Notes on question			
Answer	TRANSITION is being developed to be fully compliant with the NIC Governance IPR arrangements. Therefore, any platform developed by the trial will be subject to those provisions. Where possible we will focus on utilising existing products to deliver the platform for the trial. TRANSITION will take the outputs from Open Networks to develop a generic architecture which we will implement to support the trials. This is a market facilitation gateway through which Market Participants will be able to make their services available and other Market Participants will be able to access those flexibility services. TRANSITION is not endorsing any particular software or technology at this stage, rather the requirements of the system will be developed first, before the project seeks solutions from existing or new products. This will be subject to a competitive procurement process prior to implementation on the trial networks. The current DNO systems may not have all the capabilities that we will require for a DSO, including the underlying IT infrastructure to allow the markets proposed by Open Networks to be trialled for real. For the purposes of running the trials, the project will consider commercial off-the-shelf products to support these trials where possible. The architecture will be developed to be compatible with the existing systems in both SSEN and ENWL. It should be noted that SSEN, ENWL and the other DNOs are investing significant sums in updating their existing IT systems. For example, SSEN are implementing a new asset management system and are upgrading their existing GIS system. These new systems should be more "DSO ready" which should ease the integration in the longer term. During the trials we intend to use a 'shadow control room' environment,		

	which allows the software to be trialled in the real environment but reduces the risks associated with integration of new software into a live network. This method was successfully used in the Thames Valley Vision project. A key output of TRANSITION will be a refined set of requirements against which the systems can be procured with more confidence. The systems will be designed to enable the markets defined by the Open Networks project, which will also determine where the DSO roles should be held. These market models will ultimately identify which party is most appropriate to own and operate the market platform. As part of the Stage Gate process we have planned extensive stakeholder engagement with software developers to ensure that the proposed architecture will be procurable.
Attachments	

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	12
Question date	05/09/17	Answer date	07/09/17
Submission section question relates to			
Topic	g) Robust methodology/ready to implement		
Question	How much research have you conducted into the appetite for consumers/ industry to provide flexible services to the network. What degree of savings have you assumed would be needed to recruit consumers/ industry to participate within the market?		
Notes on question			
Answer	There is now overwhelming evidence on the need for flexibility in the network. Most recently, this has been recognised by both Ofgem and BEIS in the 'Smart Systems and Flexibility Plan' which describes potential benefits of upto £40bn for consumers through and more flexible network. This builds on work by the Committee for Climate Change[1]who showed a gross benefit of flexibility up to £8.1bn annually. There has also been strong evidence of customers' willingness to become involved in these markets. The "Power Responsive Annual Report for 2016" (http://powerresponsive.com/wp-content/uploads/2017/01/Power-Responsive-Annual-Report-2016-FINAL.pdf) which included; 300 MW for Demand Turn Up, 201 MW for EFR, 50MW flexibility from water companies alone over next 5 years. In addition Ofgem published a report in 2016 "Industrial & Commercial demand-side response in GB: barriers and potential" (https://www.ofgem.gov.uk/system/files/docs/2016/10/industrial_and_commercial_demand-side_response_in_gb_barriers_and_potential.pdf) which found "over 400 MW of potential additional demand reduction and around 250 MW of additional demand increase being available from respondents" that could translate into "untapped flexibility potential (c.3 GW for reducing demand and c.2 GW for increasing demand as a rough estimate)"		

	However, it should be recognised that the flexibility market is in its infancy, and a recent study by CGI[1] indicated that participants have low confidence that the forthcoming regulatory reforms will address the barriers to demand-side flexibility. This research concluded that communication and cooperation is one of the main challenges the market faces; the development of a neutral market facilitator platform offers a solution to enable more market visibility. A 2016 report[4] concluded that the barriers to increased flexibility provision are all market barriers including lack of a commercial/market framework to optimise, potential for conflict between market participants, and lack of visibility. Both reports showed the views of the industry leaders being that the strategic significance to their businesses of flexibility would increase by 30% between now and 2030. And the 2017 survey showed an overall increase in significance at a UK level of 42% between now and 2030. Therefore, we believe that there is sufficient evidence of potential providers desire to become more involved in providing flexibility services, this is only likely to grow going forward. Based on input from our existing portfolio of DSR projects such as NINES and CMZ plus input from our industry partners, it is difficult to specify the level of saving a particular customer will require to become engaged in a flexibility market. This is influenced by their own business operations or personal circumstances. The development stage of the project will engage with potential providers in order to understand the costs involved. This will form part of the Business Case Review at the Stage Gate. *1. Demand Side Flexibility in UK Utilities: Transforming the Power System by 2030; Utility Week report in association with CGI; 2017* *2. Energy Flexibility, Transforming the Power System by 2030; Utility Week report in association with CGI; 2016*
Attachments	

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	13
Question date	05/09/17	Answer date	07/09/17
Submission section question relates to			
Topic	g) Robust methodology/ready to implement		
Question	Why didn't you wait until the conclusion of the Open Networks Consultation process before developing this submission?		
Notes on question			
Answer	The Open Networks Project is pivotal in the development of DSO within GB and provides a focal point for the industry's activities. However, the recommendations which arise from Open Networks will need to be robustly trialled to give a robust evidential base for future BaU roll out and identify any unforeseen consequences. This will reduce risk of disruption to customers, and to give the industry confidence in the viability of and costs associated with transition to DSO. If we want to realise benefits for customers in ED2, we need to have an evidence based understanding of the operation of DSO before the next regulatory cycle. The outputs from TRANSITION will provide significant contribution to this evidence base. Therefore, it is key that the outputs are delivered on time for ED2. On a wider scale, the need for flexibility will continue to grow with the further increase in renewables and the loss of flexibility through retirement of thermal plant. Independent studies have identified 2024 as being a "tipping point" for demand for flexibility. TRANSITION will build on our current understanding of the requirements which will be further developed and refined as the Open Networks project and industry engagement progress. The learning gained from both the SSEN and other DNOs portfolio plus the early outputs from the Open Network have allowed us to identify many of the requirements for DSO. This allows us to progress the initial phase of the TRANSITION project alongside the Open Network project to ensure that the demonstration phase can begin at the earliest opportunity. This will ensure that the learning is available to inform the preparations for ED2. We fully recognise the need to take time to review progress and ensure that TRANSITION is being developed appropriately. Therefore, we have built a robust Stage Gate after Phase 1 to review the business case for the project		

	and ensure that the scope and the programme for the project are still aligned with the wider industry initiatives.
Attachments	

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	14
Question date	12/09/17	Answer date	14/09/17
Submission section question relates to			
Topic	g) Robust methodology/ready to implement		
Question	Please provide information on how you intend to mitigate the risk factors associated with the short time scheduled (60 days) for the data collection and management activities		
Notes on question	From the bilateral meeting with the Expert Panel, we assume that this question relates to the data collection activities identified in WP2. If you require any additional information we will be pleased to provide it.		
Answer	Regarding activities in WP2 Requirements, design, development, and specifically the Data Model work package, the following tasks have been outlined: i. Data requirement for each DSO function ii. Market participants' data requirements iii. Existing data availability iv. Data exchange requirements v. Stakeholder engagement for data exchange requirements vi. Data protection review vii. System visualisation requirements viii. Loss of connectivity impacts ix. Data architecture and data governance. This body of work has been allocated 139 days within the programme, with items i and ii being completed in the first 60 days. The time allowed for activities has been based on previous experience of the project team and consultation with project managers within SSEN. We recognise the need for TRANSITION to deliver early results to inform industry decisions on DSO, and as such we have developed a programme		

	which reflects that urgency. The project team have significant experience in this area and are confident l that the timeframes allowed are appropriate, this is based upon: 1. The project partners have already established an excellent working relationship and communications, and have experience in the data requirements. • DNO data – existing data requirements and data flows are understood. • Existing Market Participant data – existing data requirements are well understood (Origami collects data to support the provision of services). • DSO function/service data – existing service data requirements are well understood (Origami provides aggregator services). The Open Networks project SGAM modelling of DSO functions will inform the data requirements for TRANSITION services. 2. The project programme includes review periods, which allow time for stakeholder and Open Networks project engagement, and offer an opportunity to further ensure the robustness of the data requirements which have been established. This will provide an early opportunity to identify any significant gaps or omissions in the data available and allow appropriate mitigations to be put in place.
Attachments	

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	15
Question date	12/09/17	Answer date	14/09/17
Submission section question relates to			
Topic	b) Value for money		
Question	Please confirm how much money from the project budget has been allocated for Customer Engagement activities?		
Notes on question			
Answer	TRANSITION will engage a range of stakeholders during the project including customers, supply chain, energy industry and aggregators, etc. Much of this engagement will be specific to the trial locations identified. This engagement will run for the duration of the project, from the early design and development activities in Phase 1 through to the deployment and trials of Phase 2. This will involve engaging with a range of industry and local stakeholders to ensure the project is delivered successfully. Therefore, we have included these activities in WP1 and WP9 which span the entire duration of the project. For example, we have allowed for a stakeholder engagement resource of approximately 0.5 FTE within WP1. Similarly, we have made an allowance for a project website and a presence at relevant industry conferences within WP9. During Phase 1 of the project the majority of customer and stakeholder engagement will be enabled through the Open Networks project (as described in our response to Q16). During Phase 1 we have also scheduled a large stakeholder engagement event to disseminate learning and gather feedback from key stakeholder groups. Phase 2 requires more bespoke engagement based on the market models and additional local engagement in the proposed trial areas. We have also scheduled further stakeholder engagement and dissemination events as part of Phase 2. The total amount budgeted for stakeholder engagement activities (inclusive of inflation) is £[redacted].		
Attachments			

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	16
Question date	12/09/17	Answer date	14/09/17
Submission section question relates to			
Topic	f) Relevance and timing		
Question	Please provide clarification on how customers will be engaged within the project's governance structure?		
Notes on question			
Answer	Customers are a key stakeholder in the TRANSITION project and it is important that they are able to inform the design and development of the various project outputs. The move to DSO has the potential to impact on all stakeholders involved in the electricity supply chain; therefore, a Stakeholder Advisory Group was established as part of the Open Networks project to inform key stakeholders of project progress, and for those stakeholders to contribute to the project. Given the close links between TRANSITION and Open Networks, we are proposing that this is most appropriate route for us to engage with stakeholders during the first stage of the project. This will ensure that the outputs from TRANSITION are presented to the stakeholders alongside the range of other outputs from Open Networks. This will ensure a clearer, more consistent message for stakeholders. The Open Networks Advisory Group is made up of a large range of stakeholders from across the industry including suppliers, generators, aggregators, IDNOs, the gas industry, academia, consumer groups, Government, Ofgem amongst others. A list of the members of the Advisory Group is attached for information; as you will see this includes representation of the full spectrum of network customers by Citizens Advice, Energy Intensive Users Group, and Renewable developers. This group meets bi-monthly, and outputs are published on the Open Networks Project		

	website. Because of the close relationship between the TRANSITION project and the Open Networks project, we intend to use this established group to ensure that the project outputs consider stakeholders from across the industry. This will be especially important during Phase 1 of TRANSITION where we will be using the outputs from Open Networks to inform the design requirements for the Platform, to develop the roles and responsibilities within the marketplace, and develop the market rules required for the trials etc. As identified in our response to Question 2, this is an area where we need to work very closely with the both SPEN and WPD to ensure that stakeholders are presented with as holistic a view as possible and are not confused by a series of seemingly uncoordinated consultations from multiple projects by different DNOs. Again, this will be especially important during the design and development phase of the project. During this first phase of the project we will also identify potential locations for deployment. Part of the location selection process will include customers connected in the area and we would look to involve them in this process. Both SSEN and ENWL have significant experience in involving customers in their innovation projects through projects such as SAVE, CLASS and NINES. We will use the experience gained in these projects to identify and engage with key customers and stakeholders in these local areas. When the project moves into the deployment stage in Phase 2 we will include an appropriate stakeholder/customer representative on the Project Steering Board. This will ensure that the trials undertaken and the results obtained reflect the needs of customers. We consider TRANSITION to be a key step in the move to enabling DSO as business as usual. Therefore, SSEN also intend to utilise our existing Stakeholder Advisory Panel to ensure the TRANSITION project is aligned with our stakeholders' interests. The Stakeholder Advisory Panel influences the strategic direction of SSEN and its Board, and it is made up of six external members, with a variety of experience and from a range of sectors. The panel is chaired by Rachel McEwen, a non-executive member of the SSEN Board. It reviews SSEN's business commitments and the company's performance against them. Finally, the panel is committed to being open and transparent, for the benefit of all stakeholders, of the results of its influence; see http://news.ssen.co.uk/news/all-articles/2017/03/advisory-panel/ for more detail.
Attachments	• SSEEN05_120917_Q16_attachment_1_Open Networks Advisory Panel • SSEEN05_120917_Q16_attachment_2_SSEN Panel

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Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

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Project code	SSEEN05	Question Number	17
Question date	12/09/17	Answer date	14/09/17
Submission section question relates to			
Topic	f) Relevance and timing		
Question	Please outline how the project's learning will fit into the creation of any possible future industry code?		
Notes on question			
Answer	Informing the development of future industry codes will be a key output from both TRANSITION and Open Networks. There are a number of established industry code bodies such as the Grid Code Review Panel and the Distribution Code Panels, which have been established to consult, approve and implement changes to the industry codes. As an example, the recent development work on the implementation of European legislation on industry technical and market codes provides a clear illustration of how fundamental changes to energy markets and technical requirements are managed, so as to ensure stakeholders' interests are appropriately managed. All such changes to technical and commercial operation are governed by the relevant industry body, such as those mentioned above. TRANSITION will raise formal change requests (or support these requests via Open Networks project if appropriate) to these panels to allow formal consultation to take place, and subsequently for the Authority to enact code changes. In this way the outputs of TRANSITION will be incorporated into the GB market.		
Attachments			

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Supplementary Answer Form

Project: TRANSITION

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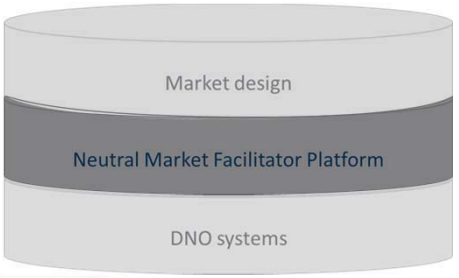
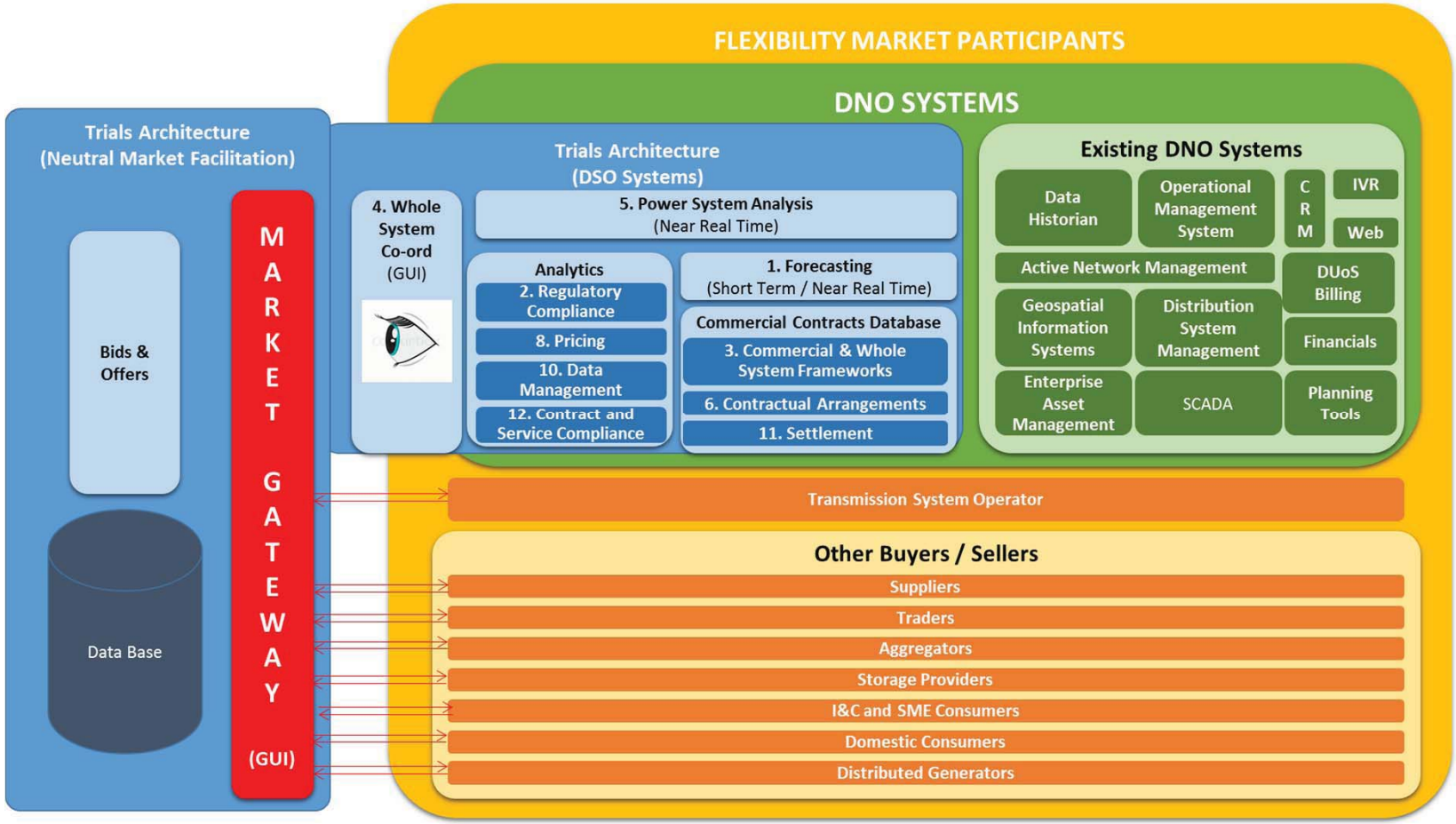
Project code	SSEEN05	Question Number	18
Question date	12/09/17	Answer date	14/09/17
Submission section question relates to			
Topic	c) Generates new knowledge		
Question	The project design describes a role for the DSO in approving/rejecting trades, and in providing visibility and clarity of capacity, constraints and charging on the platform. Could you describe in greater detail what is meant by this and what mechanisms would be used?		
Notes on question			
Answer	In 'Energy Flexibility: Transforming the Power System by 2030' research on stakeholder views conducted by Utility Week in 2016 the greatest barrier to the use of flexibility identified by DNOs was a lack of visibility of other market participants' demand-side flexibility arrangements on their networks. One of the objectives of TRANSITION is to establish how DSOs can most effectively gain visibility of bilateral transactions on their networks to which they (the DSO) are not a counterparty, allow assessment of the impact of these transactions on the network infrastructure and enable the DSO to take action on those actions that could adversely impact on the performance of the networks. In the Expert Panel session, we used the analogy of a traffic lights system with red, amber and green lights to illustrate this. Practically, as described at the Panel session, in terms of the trials approach this will be achieved as follows: • Transactions will be undertaken on the 'Neutral Market Facilitation' component of the trials architecture. • These transactions will be made available to a control room engineer via a web based user interface (4. Whole System Co-ordination on the trials architecture graphic attached, and on p67 of the full submission		

	document). This approach has been taken to minimise impacts on the existing system architecture for ease of adoption and to avoid unnecessary integration costs, whilst enabling TRANSITION to capture the experience of the control engineer. • Combining information from the short/near-real-term Forecasting component (1 on the architecture diagram) with an assessment of the network impact from the Power System Analysis component (5), both made available via the web based user interface, the engineer will be able to block any transactions that could have an adverse impact on the network performance. As an example, it is possible that certain peer-to-peer trades that are acceptable pre-fault could create an issue on the DNO network post-fault. The DNO would want to stop or unwind the trade in such circumstances and TRANSITION would explore the options available to the DNO and the market participants involved in the trade. TRANSITION will explore the role of the DSO in approving/rejecting trades during the project. This will inform whether this is likely to be a long term requirement and, if so, propose options for consideration by the Open Networks project.
Attachments	SSEEN05_120917_Q18_Attachment

TRANSITION will build

NMF Platform trials architecture





electricity north west

Scottish & Southern Electricity Networks

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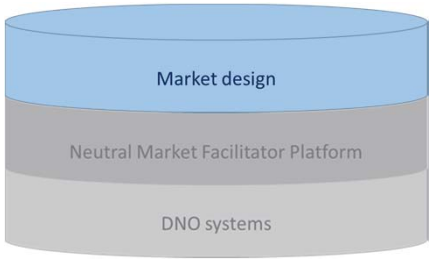
Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	19
Question date	12/09/17	Answer date	14/09/17
Submission section question relates to			
Topic	c) Generates new knowledge		
Question	What type of peer-to-peer trading do you envisage the platform would facilitate and what would drive this trading?		
Notes on question			
Answer	Peer-to-peer trading and transactions is considered in the ENA Open Networks project consultation "Commercial Principles for Contracted Flexibility: Promoting Access to Markets for Distributed Energy Resources", Model 6: Parallel DER Routes to Market, that was issued in August 2017. TRANSITION will be based on the market models proposed by the Open Networks project. Peer-to-peer transactions between market participants could be enabled by market models, initially between non-domestic participants, with domestic involvement possible in the future. Subsequent to the publication of the "Commercial Principles for Contracted Flexibility: Promoting Access to Markets for Distributed Energy Resources" consultation by Open Networks, the significance of bilateral peer-to-peer arrangements has also been recognised. TRANSITION supports these types of peer-to-peer use cases in two crucial respects: 1. TRANSITION will provide a neutral platform through which a market participant (including individual consumers, community energy schemes and/or local energy markets) with a need for energy or flexibility can connect with providers (this is represented by the 'eBay for Energy' analogy presented in our first bilateral meeting, see slide attached). 2. TRANSITION will also provide visibility of these bilateral arrangements to		

	the DSO so that they can proactively operate their networks as part of a system and intervene if such bilateral arrangements could adversely impact on the operation of the physical network infrastructure and affect the service received by other users connected to that network (for more details on this please refer to our answer to Question 18). It is likely that the number of flexible peer-to-peer transactions will increase over time and the transactions will be driven by a number of factors, including: • Capacity - a market participant with an excess of import / export capacity could trade it with another market participant that has a shortage of import / export capacity within the same local market area. Capacity trades could be from very short-term to a long-term transfer. • Flexibility – a market participant with the ability to reduce demand / discharge storage / increase generation could use the flexibility to offset another market participants' demand increase / storage charging / generation reduction. This could result in an increase in the net export within a constrained area or one market participant could offset a service obligation to another market participant. TRANSITION will consider what enhancements or developments will be required to enable peer-to-peer trading if it is appropriate so to do. It should also be noted that this is only one of the market model options being consulted on by the Open Networks project. TRANSITION will only progress this model if it is identified as being worth progressing by the Open Networks project.
Attachments	SSEEN05_120917_Q19 attachment

A Neutral Market Facilitator



Approved Trade
Rejected trade

Peer to Peer
like "EBay"

Long term trades
Short term trades

Price to deliver?
Can you deliver?

Postal Service

Routes
Flows
Charging rules
Losses
Constraints
Current commitments

Single sided platform 1 : Many
Multi sided platform Many : Many

Ultimately a mix of peer to peer and aggregators?

Retail /Trading Platform

DSO Network Operator Platform

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Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	20
Question date	12/09/17	Answer date	14/09/17
Submission section question relates to			
Topic	Multiple		
Question	Does the project envisage the platform will be DSO/SO run, or will it generate learning on the potential role of independent parties here and any implications for DSO actions needed?		
Notes on question			
Answer	Whilst the Open Networks project posits that 'Market Facilitation' is a DSO Function, the intention of TRANSITION is to generate learning about: • how neutral facilitation of the market can most effectively be established; • how DNOs can make use of flexibility in their transition to becoming DSOs; • how DSOs support the use of flexibility by other parties on the DSOs' networks; and • how market facilitation can enable the release of value from flexibility in a whole system context. As such, TRANSITION has been designed to be neutral on which market participant role or roles will provide and operate any neutral market facilitator platform. We expect that the learning from TRANSITION will deliver part of the evidential base on which informed decisions can be made about the market design and the different market participant roles within that.		
Attachments			

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Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	21
Question date	12/09/17	Answer date	14/09/17
Submission section question relates to			
Topic	c) Generates new knowledge		
Question	What is intended to be traded - are the products energy products or more bespoke flexibility products?		
Notes on question			
Answer	The neutral platform will enable the trading of both energy products and flexibility products. Ultimately, the market models proposed by Open Networks will determine the extent to which energy and flexibility will be traded. However, it is anticipated that the additional visibility of available network capacity and the flexibility of an accessible market platform will enable the innovation of new products and solutions, which have the potential to bring benefits to customers. TRANSITION will explore the trading of flexibility to provide services using a combination of one or more of kW, kWh, kVA, and kVArh, to help manage and release network capacity in a constrained network. It is likely that additional flexible products will be traded over time and these will include; • Capacity - a market participant with an excess of import/export capacity could trade it with another market participant that has a shortage of import/export capacity within the same local market area. Capacity trades could be from very short-term to a long-term transfer. • Flexibility – a market participant with the ability to reduce demand/discharge storage/increase generation could use the flexibility to offset another market participant's demand increase/storage charging/generation reduction. This could result in an increase in the net export within a constrained area or one market participant could offset a service obligation to another market participant.		

Attachments	

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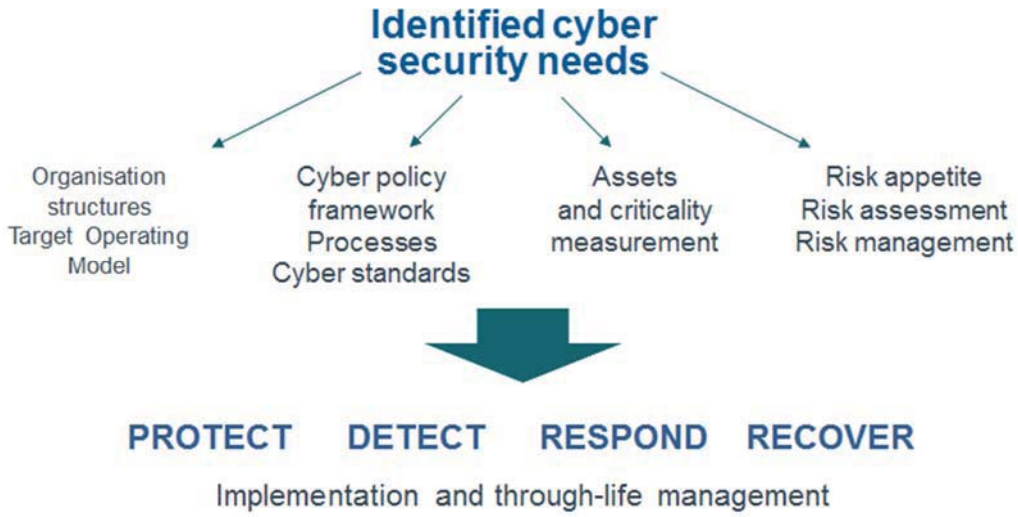
Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	22
Question date	12/09/17	Answer date	14/09/17
Submission section question relates to			
Topic	c) Generates new knowledge		
Question	What work is intended to take place on the cyber security considerations associated with the market design?		
Notes on question			
Answer	The security of the project's assets, systems and data is integral within our approach. The importance of cyber security is consistent with our current internal investment in assuring and strengthening our cyber security practices across all attack vectors. Some of the specific considerations of possible attack vectors for TRANSITION are: • Physical compromise of technology; • Spoofing or interference of dispatch signals; and • Data security in its entirety, and specifically transaction data being lost or compromised. Below we outline an overview of our approach and best practice to security considerations during TRANSITION. Our proposed "Security by Design" approach to the market system design incorporates the five principle functions of the National Institute of Technology (NIST) Cyber Security Framework: **IDENTIFY**, **PROTECT**, **DETECT**, **RESPOND** and **RECOVER**:		

The activities undertaken as part of the **IDENTIFY** function (as illustrated above) establish the baseline business drivers, threats and vulnerabilities associated with the market system which inform the cyber security risk assessment and mitigation plan. The likely outputs ("cyber security needs") from the IDENTIFY phase are illustrated below:



PROTECT is a key component of "security by design" and covers the range of technical, process and people controls that will be incorporated to ensure that market system assets and operational/consumption data are protected. Areas such as the following will be covered:

- Access Control - including physical/logical/remote access to assets, network integrity;
- Data security (data at rest, data in transit, asset management, software, firmware & information integrity);
- Configuration and change control;
- Vulnerability management;
- Physical operating environment policies and procedures; and
- Awareness and training.

	DETECT, **RESPOND** and **RECOVER** are essentially the post-implementation/operational functions that will need to be built into the design to ensure that it continues to be secure through life. **DETECT** phase activities will cover definition and specification of the range of technologies and processes that need to be in place to detect the occurrence of a cyber security event. Areas such as the following will be covered: • Identification of network activity and data flow baselines to help identify anomalies and potential cybersecurity events; • Establishment of incident alert thresholds; • Establishment of event analysis capability which determines the impact and responds accordingly; • Network and physical environment monitoring; • Monitoring for unauthorized personnel, connections, devices and software; and • Vulnerability scanning. **RESPOND** and **RECOVER** phase activities will cover the people, policies, processes and procedures that need to be in place to respond to a cybersecurity event and ensure that sufficient resilience is established to recover from it. Areas such as the following will be covered: • Cybersecurity Incident Response Plan development; • Identification of Incident Response Plan stakeholders and development of roles and responsibilities; • Testing and refinement of the Incident Response Plan; • Recovery Plan development; and • Public relations and reputation management. All of the five functions should be viewed as continuous (and parallel) activities that are monitored and continuously improved throughout the life of the market system.
Attachments	

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

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Project code	SSEEN05	Question Number	23
Question date	21/09/17	Answer date	26/09/17
Submission section question relates to	Section 4: Benefits, timeliness, and partners		
Topic	Enviro+consumer bens		
Question	Please confirm the units used to express carbon savings (tCO2e on slide 5 of 1st bilateral presentation and page 19 of proposal cf. ktCO2e on page 45 of the proposal).		
Notes on question			
Answer	We apologise for the misprint on page 19 and the bilateral presentation slide. The correct units in all cases are **k**tCO2e.		
Attachments			

Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	24
Question date	21/09/17	Answer date	26/09/17
Submission section question relates to	Section 4: Benefits, timeliness, and partners		
Topic	Enviro+consumer bens		
Question	Please comment on the scale of these savings (expressed as "gross" on page 19) compare with those of the relevant counterfactual(s).		
Notes on question			
Answer	The carbon emission savings were presented in the Full Submission as gross emissions and reflect the expected emissions savings from deploying flexible capacity using a Neutral Market Facilitator platform as opposed to a 'do nothing' scenario. As noted in the proposal, our key source text was a study by Frontier Economics, modelling the value of flexibility using three different market models including those without such a platform. As we stated on page 14 of our submission, we have designed our Base Case presented in Appendix 1 of the submission as "the next smartest option" rather than a 'do nothing' option; it will require considerable industry effort to achieve the carbon savings associated with the Base Case (which includes DNO and SO cooperation, and bilateral flexibility trading). TRANSITION enables these benefits to be realised in a more cost efficient manner. We based our gross carbon savings on the proposition that the Neutral Market Facilitator platform could use flexibility to relieve constraints on the distribution network, and enable managed connection of additional renewable generation. To account for variations across GB we modelled that 50% of capacity released is for variable renewable resources. These renewable generators would have a beneficial effect in offsetting other, more carbon-intensive sources of electricity generation. The gross avoided carbon emissions to 2050 of 5,818ktCO2e is equivalent to the annual electricity use of 5,338,418 domestic homes in GB[1,2]. 1.https://www.gov.uk/government/publications/greenhouse-gas-reporting-		

	conversion-factors-2017 2.https://www.ofgem.gov.uk/gas/retail-market/monitoring-data-and-statistics/typical-domestic-consumption-values
Attachments	

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Supplementary Answer Form

Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	25
Question date	21/09/17	Answer date	26/09/17
Submission section question relates to	A10.4 Capacity and Carbon		
Topic	Enviro+consumer bens		
Question	Please explain why carbon savings were estimated using the stated assumptions about future generation, rather than by using FES scenarios.		
Notes on question			
Answer	We estimate carbon emissions savings due to the capacity released by providing additional flexibility to the system. Our figures relate to the impact of extra flexibility, allowing renewables which join the distribution network to displace fossil fuel generation as demonstrated in the NINES project. We use the FES carbon intensity of the grid under a slow growth scenario in our carbon calculation, and we also use the FES to estimate the trajectory of capacity released from year 2030 onwards. For our calculation we assumed 4GW of flexibility capacity by 2030, which is the low end of the range projected by Carbon Trust and Imperial College London[1]. We made the assumption that flexible capacity provided by consumers will be driven by, or encouraged by, the continued growth in intermittent renewable generation. We therefore derived a growth rate for both flexible capacity and financial benefits beyond 2030 which matched the growth in installed capacity of intermittent generation predicted under the FES slow growth scenario. This growth rate was calculated to be 1.5%. 1. "An analysis of electricity system flexibility for Great Britain", Carbon Trust and Imperial College London, December 2016		
Attachments			

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Project: TRANSITION

Tick if this answer has been provided verbally: ☐

Project code	SSEEN05	Question Number	26
Question date	26/09/17	Answer date	28/09/17
Submission section question relates to			
Topic	a) Enviro+consumer bens		
Question	Please could you confirm whether you are planning to submit a bid to the BEIS Flexibility Markets Tender in October?		
Notes on question			
Answer	At this time neither SSEN or ENWL has plans to submit a bid to the BEIS Flexibility Markets Tender in October. TRANSITION focusses on the regulated elements of the DSO transition and the project, by its nature, will be well placed to enable a number of new disruptive models for deploying flexibility. We anticipate others to bid for the BEIS call and expect the resulting projects to have a pre-requisite to access the types of data provided by the network visibility that this project provides. Furthermore , SSEN investigated a number of potential external funding opportunities from both Scottish and UK Governments, but none were appropriate. There were a number of factors which prevented us from pursuing these further which included the funding package being aimed at a particular technology such as energy storage or vehicle-to-grid, and the timeframes being incompatible with that of the NIC process. The overriding objective of TRANSITION is to inform the long term BAU deployment of a Neutral Market Facilitator platform; therefore, it is essential that the project remains technology neutral and provides evidence in a manner which supports a robust procurement process for the long term solution. This will ensure best value for customers in the long term.		
Attachments			

Intervention	After Diversity Peak reduction (kW)	Gross Peak Reduction (kW)	Assumed running hours/year	kWh/year reduction	£/kWh benefit (retail electricity price if we are considering the reduction on customer energy bills)	£/ year benefit (on customer energy bills)	£/kWh benefit (40% of retail electricity price [i.e. the cost of generating electricity] if we are considering the avoided cost of generation)	£/ year benefit (avoided cost of generation)	Life of measure years (appliance life)	£ benefit over life of measure (on customer energy bills)	£ benefit over life of measure (avoided cost of generaiton)	Cost of measure (Appliance cost)(£)	£/year saving in distribution UoS costs	£/year savings in DNO's network reinforcement costs (from deployment of EE measure)	£/year savings in DNO's network reinforcement costs (over lifetime of EE measure)
Appliances	0.14	0.212	627	133	£ 0.14	£ 19.11	£ 0.057	£ 7.64	10	£ 191.12	£ 76.45	£ 345.00	£ 1.91	£ 1,858.00	£ 186.00
Heating	0.385	0.453	542	983	£ 0.14	£ 141.26	£ 0.057	£ 56.50	20	£ 2,825.14	£ 1,130.06	£ 750.00	£ 14.13	£ 5,110.00	£ 255.00
Lighting	0.27	0.54	185	100	£ 0.14	£ 14.37	£ 0.057	£ 5.75	30	£ 431.10	£ 172.44	£ 50.00	£ 1.44	£ 3,583.00	£ 119.00
Behaviour	0.072	0.085	N/A	50	£ 0.14	£ 7.19	£ 0.057	£ 2.87	5	£ 35.93	£ 14.37	£ 70.00	£ 0.72	£ 956.00	£ 191.00
Solar PV	18.75	37.5	425	15938	£ 0.14	£ 2,290.22	£ 0.057	£ 916.09	30	£ -	£ 27,482.63	£ 23,756.25	£ 229.02	£ 610,000.00	£ 20,333.33
Combined Measures	0.357	0.51	549	280	£ 0.14	£ 40.24	£ 0.057	£ 16.09	10	£ 402.36	£ 160.94	£ 425.00	£ 4.02	£ 4,738.00	£ 474.00