

Stability Pathfinder Webinar

6th August 2019

To allow everybody to sign in the webinar will start at 13:05

The audio for this webinar via telephone
+44(0)-20-7108-6317
Access code: 255 471 618

After the presentation we will be doing Q&A. Questions can be submitted any time via WebEx chat.



Timescales for RFI

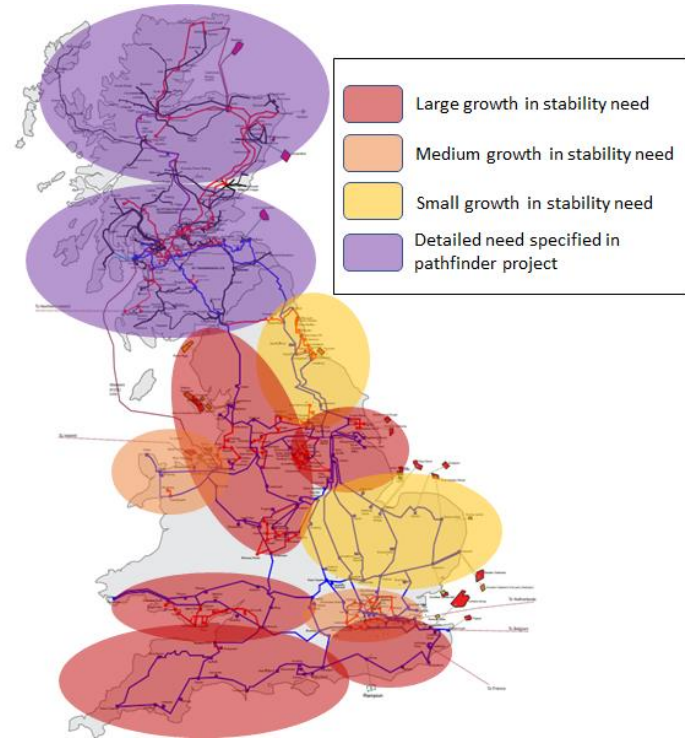


Contents

1	Stability Pathfinder Overview	(15 mins)
2	How to respond to the RFI	(5 mins)
3	Q&A	(40+ mins)

GB Areas of Stability Focus

- Our assessment shows that our need for stability products is different across the country.
- High-Voltage pathfinders in Mersey and Pennine are addressing static high voltage requirement which is separate to our stability needs in these areas.
- For Stability Pathfinder, we have carried out detailed assessment of Scotland and high-level assessment of England & Wales (E&W)
 - Scotland solutions are our priority and we set out timeline proposals for these later in this pack.
 - For E&W, we will set out priority areas for solutions based on RFI responses and our needs for stability growth. We will set out next steps for E&W post RFI feedback.



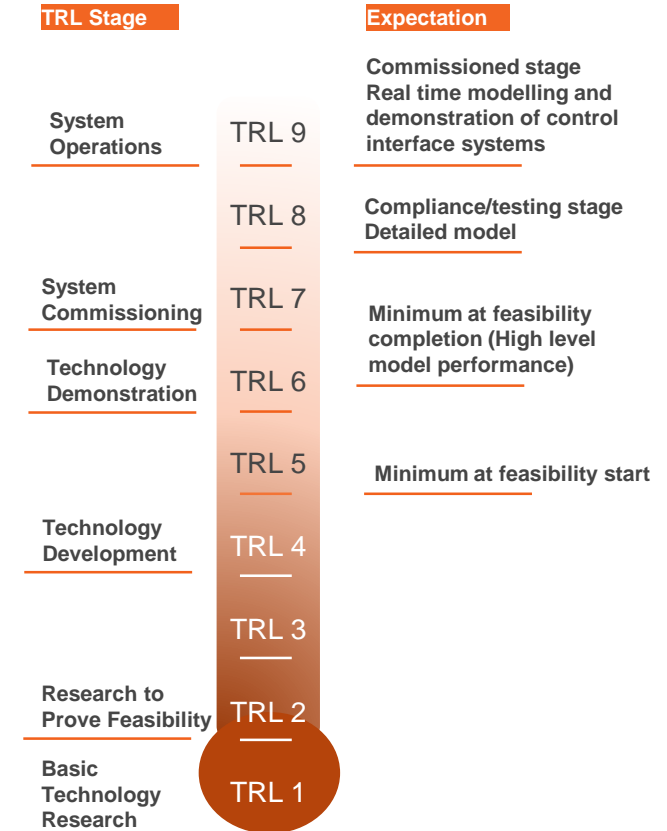
What are we looking for across GB in this RFI

	E&W short term	E&W long term	Scotland short term	Scotland long term
Technology Readiness Level (TRL)	7-9	≥5	7-9	≥5
Solution years	2020-2022	2023-2030	2020 - 2022	2023 - 2030
Next steps	Tender for 2020*	Prioritisation based on RFI feedback	Tender for 2020*	Timeline proposed

*Based on RFI feedback, we will publish next steps

Technology Readiness Level (TRL)

Relative Level of Technology Development	TRL	TRL Definition	Description
System Operations	9	Actual system operated over the full range of conditions	Actual operation of the technology in its final form, under the full range of operating conditions. Integrated into operational system and processes.
System Commissioning	8	Actual system completed and qualified through test and demonstration	Technology has been proven to work in its final form under expected conditions. Examples include developmental testing and the evaluation of the system in an operational environment.
	7	Full-scale, similar (prototypical) system demonstrated in a relevant environment	Prototype full scale system. Represents a major step up from TRL 6, requiring demonstration of an actual system prototype in a relevant environment. Examples include testing the prototype using real system inputs.
Technology Demonstration	6	Engineering/pilot-scale, similar (prototypical) system validation in a relevant environment	Representative engineering scale model or prototype system, which is well beyond the lab scale tested for TRL 5, is tested in a relevant environment.
Technology Development	5	Laboratory scale, similar system validation in a relevant environment	Integration and testing of basic technology components in a lab scale environment.

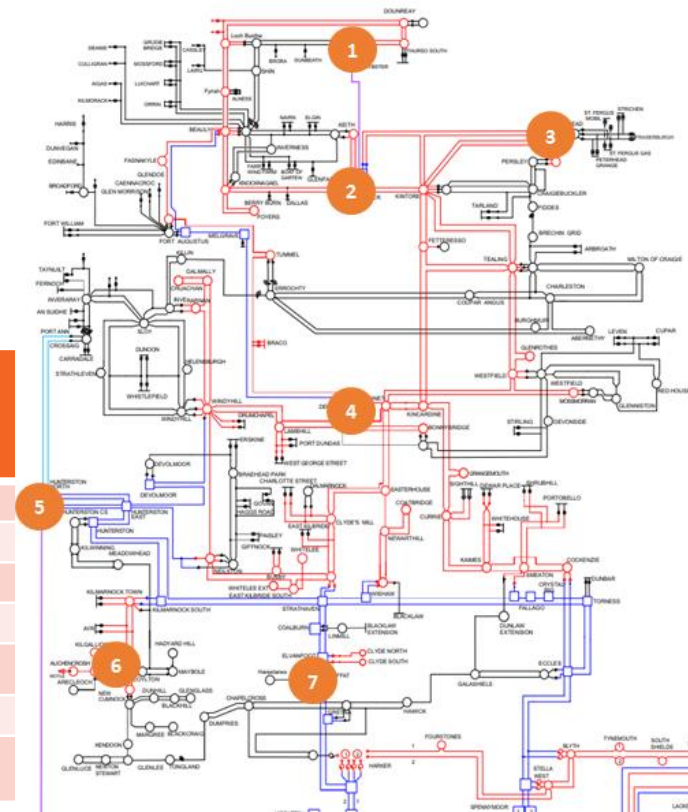


Scotland Locations

- The total requirement across these 7 sites we want to procure for is 6000 MVA (at 1.5 p.u.).
- Each MVA of the potential solution is expected to meet and demonstrate technical performance criteria in Attachment 1.
- Solutions at sites other than listed will be assessed individually for their effectiveness.

Numbers are indicative of the scale of potential solutions and will be reviewed as the pathfinder progresses.

Ref	Location of 100% effectiveness	Requirement (MVA at 1.5 p.u.)
1	Spital	1000
2	Blackhillock	1000
3	Peterhead	300
4	Longannet	800
5	Hunterston	1500
6/7	Mark Hill / Moffat	1400
	Total	6000



New Stability Support Product

Stability support product description

Transient voltage dip, short circuit level and inertial support.

Immediate post fault response to limit voltage deviation, and contain voltage angle movement.

We are holding a separate webinar on 14th August to go through technical specification criteria in detail.

Please sign up using the [link](#).

To help facilitate this session, we would welcome any questions submitted in advance.

Potential providers are expected to meet the technical specification criteria specified in the Attachment 1 of the stability pathfinder RFI.

Some performance criteria are:

- Short circuit level contribution (MVA) ≥ 1.5 p.u. of MVA available in steady state operation
- Inertia (MVA.s) ≥ 1.5 p.u. of MVA available in steady state operation
- Transient voltage stabilisation and support capability
- Fast fault current injection
- Performance across range of minimum Short Circuit Levels

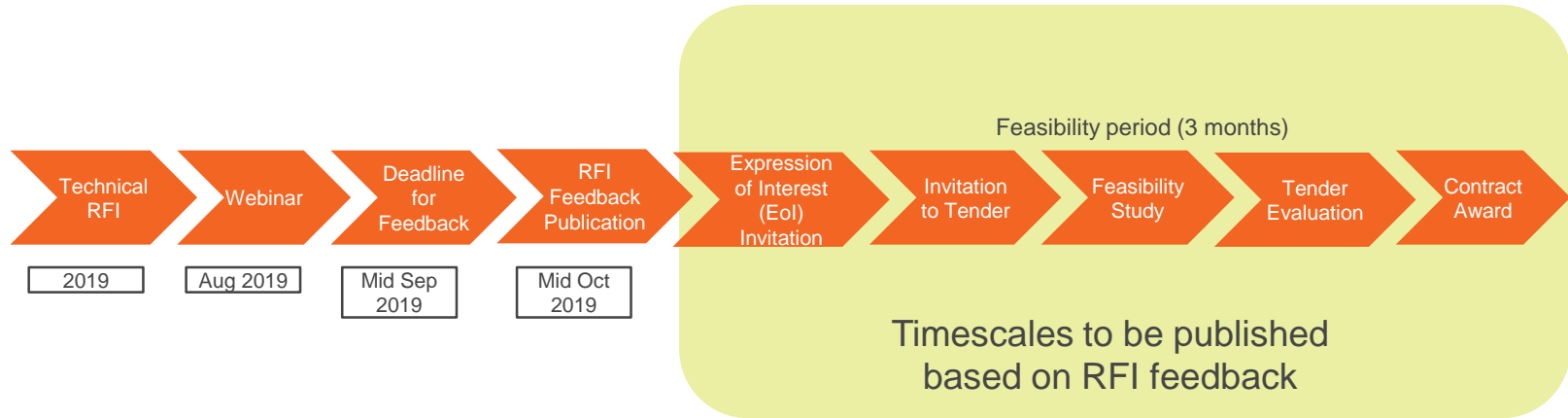
Assessment Criteria

Refer to Attachment 1 of the RFI pack for details.

Pass/Fail	Minimum technical criteria
Commercial 100%	Cost Benefit Analysis (CBA) <i>Considering cost, effectiveness of solutions and the ability to provide support without impacting the energy market (MW)</i>
Technical additional consideration between otherwise equivalent value commercial solutions	Connection diversity
	Resilience of support
	Enhanced capability for stability support

Timescales Proposal for Scotland

This proposal is for Scotland solutions for 2023 onwards



Next Steps

Subject to RFI feedback

- Expression of Interest publication for Scotland
- Publication of short term tender steps for GB
- Prioritise other GB areas for long term stability tenders

How to respond to this RFI?

RFI Aims

We would like to understand through this RFI:

- The ability of all interested parties to provide solutions to meet the identified stability needs
- Level of interest to provide a stability product to meet the identified needs
- Delivery timescale of options
- Potential framework restrictions

We would also like to seek feedback on:

- Assessment principles
- Preferred contract structure

RFI Feedback Questions

1. What is the current status of your solution(s)? (built, concept, in delivery, other)
2. What is the Technology Readiness Level of your solution(s)?
3. How long will it reach to get to TRL 9?
4. What location(s) are you interested in? Give indications of substation site/ voltage level
5. What is the earliest in service date possible for your proposed solution(s)?
6. What is the minimum contract length you are looking for and why?
7. What indicative prices per year are you expecting (£/year)?
8. What key milestones/ steps would need to be addressed to achieve your solution? (flag dependencies)
9. When the proposed solution(s) will be available for connection?

RFI Feedback Questions

10. Appendix A of attachment 1 describes our proposed modelling and compliance expectations,
 - a. What other requirements do you suggest?
 - b. What format of model (EMT/RMS) could you provide, on what basis and timeframes?
 - c. What information could you provide that would allow models to be validated?

RFI Feedback Questions

11. Any comments on the proposed timelines?
12. Any comments on technical performance specification?
13. Any comments on assessment criteria?
14. How long or short you expect feasibility stage to be and why?
15. What contract structures/terms would be important to you?
16. Are there any other code/ frameworks/ other clarifications important to progressing these solutions?
17. What is the proposed solution, please give an indication of technology?
18. Any other comments or feedback

Responding to the RFI

- RFI pack can be downloaded:
<https://www.nationalgrideso.com/document/148341/download>
- We welcome your feedback or comments that will help us shape our next steps.
- We provided a proforma (Attachment 2) for responses which will help you give us the relevant information and help us process it so that your views are taken into account.
- Please send all responses to:
box.networkdevelopment.roadmap@nationalgrideso.com

Questions & Answers

Please submit any questions via WebEx chat.

- We will answer as many as we can in the time we have.
- We will publish written responses to all question submitted on our website as soon as we can.
- If your question contains confidential material mark it as such and tell us why is it confidential, and we will respond to you directly.
- We have published first set of Q&A on our Network Development Roadmap website.

Send any additional questions to:

box.networkdevelopment.roadmap@nationalgrideso.com

Selected Published Q&A

Q&A

Does this RFI act as a pre-assessment for the tender?

No, this RFI does not act as a pre-assessment for the tender process. We are seeking views that will help us shape the tender process.

Q&A

How does my provision of stability pathfinder services impact my normal operation in the energy market?

Our minimum requirements are not specific to any one form of technology, nor do they specify any form of energy market operation. It will be for individual intended providers to take account of any impacts to broader operation that may arise from meeting the provisions of stability product.

We also note in our CBA methodology that consideration will be given to the market displacement impact of any solution. Such as where a minimum level of active power is required from a solution provider, which would not otherwise be operating, the associated costs of rebalancing will be factored into the provider's assessment.

Q&A

Slide 12 in the RFI pack mentions TRL - who determines the TRL and on what basis?

We would expect a potential provider, using the reference to the definitions of TRL to both identify their current level and provide evidence to support that assessment. We will, based on the supplied evidence, confirm whether that TRL can be supported. Providers should note that the TRL is a minimum requirement which if not met would preclude consideration for the applicable tender process.

Q&A

Can I stack services?

To participate in the stability pathfinder, you will be required to meet the minimum requirements (including availability requirements) set out in the RFI pack, any other services you contract for should in no way compromise your ability to meet these minimum requirements. If you wish to stack services, you would need to consider whether in doing so you can meet all the requirements of the stability pathfinder whilst also meeting the requirements for other products. Note the stability pathfinder expects to include penalty clauses for failure to deliver which should be considered when ensuring that service stacking is suitable for your product.

Q&A

Will you be buying all 6000 MVA in Scotland you mentioned in the RFI pack?

6000MVA is our initial indicative requirement, but it represents neither a threshold nor limit to our tendering. We will review the offers and where it is more economic to procure less or more of this requirement we will determine this in response to that data, which would be compared against other market intervention and/or network development options available as part of our CBA process. The CBA outcome should tell us if there are sufficient competitive offers to meet the requirement and it is efficient to do so. However, we reserve the right to buy less (or even nothing) if the prices are not competitive. We may also repeat the tender process in subsequent years as our requirements and the clarity surrounding the various options for meeting them evolve.

Q&A

Why are the locations specified in Scotland?

Stability needs are locational specific. i.e. to solve an operability constraint the solution need to be at or near to the constraint. The location published in the RFI are where solutions will be most effective. Other locations are acceptable but the effectiveness of the solution will potentially decline as you move further electrically and is highly dependent on the nature of the dynamic performance of a given proposed solution whose response will depend upon its specific parameters. This will be further explored during feasibility stage of the tender process.

Q&A

Slide 24 in the RFI pack quotes requirement as “requirement (MVA at 1.5p.u.)” what is meant by this?

The levels of requirement quoted in the table each assume that the service provider is meeting the minimum requirement of the service of a 1.5p.u. (150%) inclusive of overload capability. In other words, the scale of the requirement would be 9000MVA in absolute terms if no overload capability was provided. The specifics surrounding how this overload capability is required is contained within the more detailed technical specification document.

Q&A

I have a new technology, can I participate?

Provided the technology meets our minimum technical criteria and represents a level of technical readiness that allows the technology to be delivered in time to meet the proposed contract period, there is no reason why that technology cannot participate. Where a new technology is proposed, we would welcome as much information as can be supplied as early as possible to inform the modelling and operation of that technology. This can inform an efficient programme of subsequent feasibility stage work, should that solution ultimately prove successful in going forward.

Timescales for RFI



RFI pack can be downloaded:

<https://www.nationalgrideso.com/document/148341/download>

Please send all responses to:

box.networkdevelopment.roadmap@nationalgrideso.com

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