

Pre-Tender Queries FAQ v2

NOA Pathfinder Stability Phase 3
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The section headings above are for guidance only, many of the questions span multiple areas.

General Queries

1. Is it an absolute requirement to register on SAP Ariba to participate in the tender?

Response: SAP Ariba is the chosen tendering platform for this tender, so an account will be required. This system is free to register for a standard account. At this stage you will only need to register for an account and confirm back the AN ID reference number associated with the account. More guidance is available here <https://help.sap.com/viewer/687d1f7adb11409695eac66269165762/cloud/en-US/ddfed524f0181014a02fe1046362ff9c.html>

2. How do I register for a SAP Ariba account?

Response: The pre-tender information documents published on the ESO website include an [ARIBA guidance document](#), which provides information on how to register for an Ariba account. If required, further guidance is also available here: <https://help.sap.com/viewer/687d1f7adb11409695eac66269165762/cloud/en-US/ddfed524f0181014a02fe1046362ff9c.html>

3. Can you define the word 'provider' in relation to its use on page 6 of the Tender Overview document? Are two sync comps on the same site a single 'provider'?

Response: In this case the word 'provider' on page 6 of the Tender Overview pack is synonymous with 'solution'. Two sync comps connected to the same substation bay will be classed as one solution for the purpose of achieving redundancy. However, if these sync comps were connecting to different bays at the same site, they could be classed as two separate solutions and the redundancy requirement would be based on the unavailability of the largest solution. Please be aware however that across other tender documents the word provider may be used synonymously with 'bidder' or 'tenderer' - i.e. the company who would put forward potential solutions.

4. With regards to company name information provided during the EOI period, will it be possible to make amendments to this after October 22nd?

Response: The details provided now during the 'expression of interest' will be used to ensure that all those who register are invited to the Stability Phase 3 tender on the SAP Ariba system. This relies on company name and individual contact details, such as email. This information shouldn't change, which is to ensure that we invite the correct companies/ people on Ariba. We will also use the contact details provided now as the main contact for your company in relation to Stability Phase 3.

In the tender submissions, companies will be asked to confirm the exact details of the bidding entity that would be entering the contract if they were successful with the solutions provided. As such this means you can confirm the details of the bidding and contracting entity in your tender submission. NGESO acknowledge that these details may vary slightly from the company details provided at the expression of interest stage.

NGESO reserve the right to confirm that there is a relation between the company details registered at EOI and the company details provided at tender submission.

For example. you might register now as "Energy Limited" with your Ariba account set up as "Energy Limited" but in your submission you would state the bidding and contracting entity as "Energy A Limited". In this scenario you may be asked to confirm the relationship between Energy Limited and Energy A Limited.

5. Where can I find the recordings of the webinars?

Response: The webinars are now available on the [Stability Phase 3 webpage](#).

6. **Can you point me in the direction for information on classifying the regions listed in tender information? Is there a map or list of substations you can provide? (Added 19/11/21)**

Response: For the time being please refer to the high-level description of the regions of need on slide 6 of the [Tender Overview document](#). The substations with bays reserved, as seen on page 5 of the [Connections Approach document](#), may provide a further indication. Further detail about which substations fall within each region will be published with the one-stage invitation to tender.

7. **With regards to the substation locations, are you able to confirm whether the Voltage Pennine Pathfinder locations are also included in this Tender? There doesn't appear to be much information to explain how the seemingly separate tenders interact with one another. (Added 19/11/21)**

Response: The [Voltage Pennines Pathfinder](#) is a separate project with a separate requirement from Stability Phase 3 Pathfinder. Voltage Pennine is aiming to increase reactive power absorption capability in North East of England and West Yorkshire. Some of the substations in the North East England area show some level of effectiveness for both Stability Phase 3 and Pennines. However, the most effective sites for the two projects are different. Furthermore, the service start date is also different. As such, the projects are running independently from each other. Although, as you would expect, the teams running Pathfinder projects maintain awareness of the other Pathfinder projects.

8. **Can I submit different proposals for one site but with the eventuality only one of these could be selected and delivered? (Added 19/11/21)**

Response: Within submissions Tenderers will be able to submit a number of solutions. Similar to Stability Phase 2, tenderers will have the opportunity to confirm if these solutions are mutually exclusive, i.e. only one could be delivered. The details of this will be further explained with the invitation to tender, following the completion of the pre-tender consultation. Please note there will be a cap on how many solutions can be provided, what this cap is will also be confirmed with the invitation to tender.

9. **Can you explain how the process to determine security of these services.**

Specifically:

- **Is this going to be a straight calculation e.g. if the requirement is for 500MVA and the largest economic solution is 200MVA, will NGENSO be purchasing 700MVA?**
- **Will NGENSO be taking typical levels of unavailability into account and using the BM as an alternative. E.G if the larger unit technology used in the above example was only unavailable typically 1-week a year, might NGENSO decide to cover the 200MVA partially or fully in the BM?**

NGESO state- "The SCL size of solutions procured will depend on the number of connection points available. At the invitation to tender later this year NGENSO will confirm the final number of connection points that have been reserved in each region and reflect the impact on the SCL size."

Does this mean that NGENSO are going to decide the size of SCL solution for each site as is implied by this statement? (Added 19/11/21)

Response: With regards to the security of the services, the aim of the Stability Phase 3 is to ensure that the SCL requirement in a region can still be met in the event of a planned or unplanned outage of the largest single solution within the same region.

In the first example you provided, if the requirement is 500MVA and the largest solution is 200MVA, we will need to ensure that for the outage of this solution, the requirement of 500MVA can still be met. What we end up procuring will depend on a number of factors e.g. the sizes of solutions that are put forward by tender participants, the prices of solutions, the number of bays reserved in each region

and the effectiveness of the substations at which the solutions are intending to connect. It is therefore not always the case that we may procure 700MVA.

For example: assuming that 4 bays were reserved in a region, and that each substation within the region had an effectiveness factor of 100%; if three solutions put forward were sized at 200MVA and we also had one solution sized at 100MVA, we may need to procure 700 MVA (3x200 + 1x100) if it is economic and efficient to do so. However, if only 200MVA solutions were put forward, we may need to procure 800MVA (4x200) if it is economic and efficient to do so.

With regards to the second question, at this point in time, we are only stipulating that the availability needs to be a minimum of 90%. Having higher availabilities will not necessarily provide security against unplanned outages e.g. equipment faults which we would still need to cater for. The intention is that, where applicable, we will consider the BM costs as counterfactual as part of the economic assessment, details of which will be provided at tender launch.

In relation to the last query, NGENSO is considering providing sizing guidance for the reserved bays, such that market participants are aware of the assumptions NGENSO has made for the bays that are reserved. This is to encourage efficient overall portfolios of solutions that avoid the need for NGENSO to buy significantly more than the MVA requirement to meet the largest loss requirement described in the prior paragraphs. For example, assuming 100% effectiveness, a 4x200MVA portfolio and 3x250MVA portfolio both meet the 500MVA and largest loss requirement, but the second portfolio requires less MVA to do so. There will be no 'rules' on solution sizes, enabling the market to innovate with their solutions. However, please note that in the connection approach adopted for Phase 3, positions have been held back for the Pathfinder and added to the contracted background. As noted in the connections approach document, any substantial deviations from what has been assumed in the TO feasibility studies may impact on the cost of connection and delivery timescales of the solutions at the reserved bays.

10. When do the providers need to submit the feasibility reports and when will NGENSO give feedback? (Added 19/11/21)

Response: Providers will need to submit feasibility reports as part of their tender submission no later than the tender submission deadline. NGENSO will give feedback following the completion of the tender assessments, following the tender window. More information on the exact details of what will need to be submitted when will be confirmed with the invitation to tender.

11. As a general comment, NGENSO should be looking at solutions that will not restrict substations for future services e.g. Constraint management. Will NGENSO consider any "future proofing" criteria for the chosen technology? For example, if, in addition to proving SCL and inertia, a technology can also provide a constraint solution, will the latter be considered? This will provide a degree of future proofing the transmission system. (Added 19/11/21)

Response: Thank you for this suggestion - you may have noticed that under the contract terms for Stability Phase 3, tenderers are able to stack other services alongside their Stability contract. A list of what services can be stacked is available in the [tender overview pack](#) also. NGENSO are not at this time placing any value on the ability to stack services beyond this, however NGENSO may consider looking into this for future tenders.

12. In relation to page 6 the Tender Overview document - Can other solutions (outside the reserved substations) be considered for contributing on SCL and Inertia, if no tenders are won at the reserved substations or not enough SCL & Inertia is offered? (Added 19/11/21)

Response: So long as solutions are at substations that are listed within the regions of need these will be considered in the Stability Phase 3 tender. The reserved bays at the listed substations in the [Connection Approach document](#) are purely to share the substations within the regions of need where bays are reserved. Details of all the substations within each region will be shared with the invitation to tender later this year.

13. TNO's are allowed to compete in the tender process - how will impartiality be maintained especially in areas of land at chosen substations (Added 19/11/21)

Response: Please be aware that land has not been reserved in anyway at the substations where bays are reserved. Land remains the responsibility of the Tenderers to source as part of their solutions. NGENSO are not responsible for the TO's non-operational land process as the TO and NGENSO are legally separate entities. Tenderers who are interested in TO non-operational land will need to follow the TO non-operational land process. NGENSO intend to provide guidance with the invitation to tender for Tenderers who wish to use TO non-operational land, as discussions have been held with the TO.

14. At this time with the limited amount of information available (i.e. no contract length, no certainty on substation selection, draft contractual terms) there will be considerable doubt as to whether to tender. You are asking market participants to lock in to providing a tender response too early in the process. (Added 19/11/21)

Response: Thank you for this feedback, please be aware that by expressing interest during the expression of interest window, Tenderers are not 'locked in' to provide a response. Tenderers will still have the choice to withdraw from the tender process up until the tender submission deadline. The registration of interest stage that is currently open is to ensure that those who are interested in partaking receive an invite to the tender on Ariba, and gain access to the invitation to tender pack, and have the opportunity to submit. **Those who do not express an interest will not have the opportunity to submit.**

15. As submissions from outside the SCL locations of need are not being considered what is the timescale for other areas to be included in Pathfinders? This limitation on submissions automatically raises questions on when and what will be in the next Pathfinder (Added 19/11/21)

Response: We have an expectation that NGENSO will be looking to procure more stability capacity going forward. We are still working out if this will be tied to specific locations to allow combined resolution of SCL, voltage, etc, or whether it will be a simple non locational inertia requirement. We are currently undertaking our assessment of need and reviewing our thinking on procurement approach. We will start to signal future requirements as we reach a conclusion on these points. We will do so as soon as possible.

16. Why isn't North West a region of need? (Added 19/11/21)

Response: Our assessment indicates that the North West region does not currently require SCL support. However, as the generation backgrounds continues to evolve, we will continue to review the need across all regions and may seek to launch additional tenders in regions where SCL and/or other services may be required.

17. Please could you confirm the maximum number of solutions that will be permitted per entrant, with respect to Stability Pathfinder Phase 3? This information is key and influential to the development process. (Added 19/11/21)

Response: All that we have disclosed thus far is that there will be a cap, and that it may be by region of need, in accordance with how many connection points have been secured. This information will be confirmed within the invitation to tender documents.

Technical Queries

18. Is there a network diagram map showing where the different regions are and showing the substations in each region?

Response: The details of which substations fall into each region of need, with a network map, will be available with the invitation to tender launch later this year. For the time being, please refer to the Stability Phase 3 [Connections Approach document](#).

19. Please can you explain the N-1 requirement for Stability Phase 3? Is the philosophy the same as prior Pathfinders?

Response: N-1 criterion aims to guarantee redundancy for SCL provision and covers for the largest solution within a region. For Stability Phase 3 this will be confirmed when the assessment methodology is published later this year with the invitation to tender.

20. Will your N-1 approach effectively discriminate against larger solutions?

Response: This is required to safely operate the system in each region if any solution within the region becomes unavailable. You may see in the [Connections Approach document](#) that we are looking at different SCL sizes to meet the required need.

21. Can batteries or interconnectors participate in Stability Pathfinder 3?

Response: Please refer to the technical specification or send an email to box.ESO.StabilityP3@nationalgrideso.com for any specific technology type questions you may have.

22. Please could you clarify - what is GFC storage?

Response: GFC storage in the contracts webinar slide 22 is referring to any electricity storage module which is of non-synchronous type. Please see definitions of GBGF-I in the Technical Specification.

23. The Stability Phase 3 Additionality Criteria is again drawing a line in the sand to disallow assets on the TEC register prior to 10th September 2021, because these are considered 'existing'. How does the ESO know if these assets will 'exist' in the next few years, given how many synchronous generators are closing? Also, is this a risk as it means ESO's calculation of need will be incorrect as the baseline will change?

Response: We are looking for additional capability to what the current and future BM outlook is expected to provide. Existing assets are welcome to participate in the tender but must demonstrate that they satisfy Additionality Criteria (on page 7 of [Tender Overview document](#)) and meet the technical specification. Generation that exists or is planning to exist irrespective of the Pathfinder project will not be offering additional support. The reason for using the TEC register to give this view of what is existing is to provide transparency as the TEC register is a public document. The 10th September 2021 is when we published pre-tender information on the NOA Stability Pathfinder Phase 3.

We have decided to maintain our focus on new capability within all phases of the NOA Stability Pathfinder. The main driver for this is our ability to demonstrate clear value for money by being able to weigh the cost of the service against the value of the new capability provided. The ESO has the ability to access stability support from existing generation through the BM and this will be considered in the Pathfinder as the counterfactual against which we will buy (or not buy) any solution. In future years, we expect there to be insufficient stability support from generation to meet the stability need and there therefore may be a case for existing capability to be included in a future close to real-time markets for

stability. We have launched an innovation project looking at the development of Stability Market. Please see ENA website for more details on this project.

24. Will an existing unit that fits equipment to allow sync comp without active generation be allowed to participate as this is a new capability (e.g. a gas asset fitting a clutch)?

Response: As per Additionality Criteria, this is the case of “the new capability to operate at or below 0MW” so it would be eligible to tender (assuming we have understood your point correctly). Clearly the new capability needs to meet the technical specification.

25. Can you confirm that submissions will only be accepted for joint inertia/SCL in the ‘locations of need’ listed in slide 6 of the Tender Overview document?

Response: Stability Phase 3 is seeking submissions for SCL and inertia that fall within the regions of need.

26. The technical specification appears to primarily focus on synthetic means of inertia provision. It is important to also have specifications for synchronous machines. Will these be updated or is the current specification providing a steer as to how ESO expect solutions to be delivered?

Response: The technical specification focuses on all grid forming technologies, i.e., synchronous technology (GBGF-S) and inverter-based technology (GBGF-I).

27. Does an existing sync-comp redesigned to increase its inertia meet the additionality criteria? Is there an absolute or % increase in inertia required to meet the ‘new capability’ gate listed on slide 7 of the Tender Overview document?

Response: Existing assets must demonstrate that they are increasing their capability above what is currently provided by implementing new capability such as change in design/ include new assets or operate at or below 0MW. Any type of solution can participate, but they must fall within the area of SCL need and meet the requirements set out in the technical specification. Please refer to slide 21-22 of the [contract terms webinar](#) for further details on the Additionality Criteria.

28. From my understanding of the webinar, there are no specific reactive power requirements at the point of coupling. Is over-excited operation (QMAX) during over-voltage (1.1p.u.) required? Would you have an example where this operating point would be needed in grid operation?

Response: The reactive power capabilities are specified in Part B of the technical specification. We do not expect solutions to be dispatched to inject reactive power when the voltage on the system is high and conversely to absorb reactive power when the voltage on the system is low.

29. Can a plant with only Synchronous Condenser (SC) be accepted as a GBGF-S? or will be a GBGF-I, as it is defined as Dynamic Reactive Compensation Equipment? For this last case, the plant cannot have Active Control Based Power, as the SC do not have Active Power capability - please clarify.

Response: A plant with only synchronous condenser is classified as a GBGF-S and it is not expected to have active control-based power.

30. Regarding those substations listed in Table 1 of the Connections Approach document with bays being reserved and studied: 1) are they the Point of Stability and do they have the 100% effectiveness factor? 2) Do you foresee any difference or changes in Stability Phase 3 feasibility study requirements as compared to Stability Phase 2?

Response: 1) The bays in Table 1 are based on overall consideration of effectiveness and available bays and capacity in that region for connection.

2) We will publish feasibility simulation guidance, which will provide more details.

31. Has there been a recognition in the technical spec of the recent faults on the system and how the system has behaved? Further, does this signal a move back towards sync machines?

Response: We recognise that with the move to net zero, there is a need to enhance stabilising properties. We believe that this can be provided from any grid forming technology, such as synchronous machines and grid forming converters.

32. How is a battery classified in this Stability Pathfinder 3 - I or S?

Response: Battery connected via grid forming inverters are considered as GBGF-I.

33. The tender document states NGENSO are looking to procure solutions that provide both SCL and inertia and not only one of these services. Is this the same for existing assets that are increasing capability? Do they need to increase capability to provide both services?

Response: All solutions need to provide both SCL and inertia. Regarding the final part of your question, the relevant colleague is on holiday this week. We will update this response in the next updated release of the FAQ. Apologies for the delay.

34. Fault current injection from the technology: will this be absolute current or incremental current injection from the technology? Further, based on Stability Phase 2 experience, would there be well-defined criteria defined for the simulations?

Response: Information will be provided in the simulation guidance note to be published soon.

35. For the SCL contribution, is the pre-fault voltage specified? Or has the operating point and grid voltage selected that leads to the lowest SLC?

Response: All specifications for simulations will be provided in the simulation guidance note to be published soon.

36. Follow up question to reactive power capability declaration: Will NGENSO be assessing based on declared the reactive power min and max capable of an asset?

Response: All specifications for simulations will be provided in the simulation guidance note to be published soon.

37. In the presentation you mentioned SCL contribution for 100ms but verbally you spoke about fault clearing times of 140ms. What is valid?

Response: The fault current contribution should be considered at 100 ms. The fault clearing time should be at 140 ms. Detailed information will be provided in the simulation guidance note to be published soon.

38. In Part B - Continuous Voltage Requirements, of the Technical Spec V1, the table which sets out the range of reactive power minimum and maximum is empty. When will this data be provided?

Response: The provider is expected to fill this table for each solution in the service contract.

39. Would you be willing to accept multiple tenders for several different potential schemes on inertia/SCL projects from one asset?

Response: One value will be accepted per asset. We may not be interpreting your question correctly, if so, please clarify this question by emailing box.ESO.StabilityP3@nationalgrideso.com

40. Is the SCL of synchronous machines also assessed with equation 1 in 2 Part A?

Response: Yes, Equation 1 should be considered for both GBGF-S and GBGF-I solutions.

41. I would like to raise attention on the reactive power capability with the comments in Part B 1 in the technical specification. The reactive power capability has impact on the SCL level (e.g. under-excited & under-voltage) and therefore the minimum SCL, that can be provided by solutions. (Added 19/11/21)

Response: In part B of the technical specification, Tenderers are asked to declare the reactive capability of their solutions at different terminal voltages and power output. We appreciate that the existing wording could be made clearer especially with regards to the difference between the reactive capability that providers need to meet versus the reactive capability that we are only seeking for information purposes. We will clarify the voltage range where we expect the reactive capability to be provided as well as the voltage range where we are only seeking information regarding the reactive capability of solutions. We will update the technical specification to make this clearer and issue an updated version at the time of tender launch.

42. At what voltage levels can solutions be offered? (Added 19/11/21)

Response: For the Stability Phase 3 tender, NGENSO are seeking solutions whose direct electrical point of connection, otherwise known as the Grid Entry Point (see the Technical Specification and the Technical Feasibility Guidance documents) is at the transmission level i.e. 275kV and above.

43. Concerning inertia support from converter-based solution. What time frame is considered for active power support (inertia)? (Added 19/11/21)

Response: As highlighted in the [Technical Specification](#) (Active Inertia Power definition): Active Inertia Power should be an inherent capability of a Grid Forming Plant to respond naturally, within less than 5ms, to changes in the System Frequency. The tenderers are required to demonstrate this capability at tender stage through Test 2 (Step S5 or I7), described in the Technical Feasibility Study Guidance document. Furthermore the Active Inertia Power should be based on the average Power over the duration of the ramp events (i.e. 1s) as described through Test 2(Steps S1-S4 or Steps I1-I6) in the Technical Feasibility Study Guidance document.

44. Are the SCL values stated in the tender overview document instantaneous values or after a certain decay time? (Added 19/11/21)

Response: SCL values will be assessed at 100ms after fault initiation as highlighted in Section 2.1 of the technical specifications.

45. In relation to Tech spec 1.4 “When subject to a fault or disturbance, or System Frequency change, each Grid Forming Plant shall be capable of supplying Active Inertia Power, Active Phase Jump Power, Active Damping Power, Active Control Based Power, Control Based Reactive Power, Voltage Jump Reactive Power and Fast Fault Current Injection.” It is understood that depending on the fault or disturbance one or more of the defined capabilities shall be enforced, not necessarily all the defined capabilities. However, the grid forming plant in total shall be capable of each defined capability. (Added 19/11/21)

Response: The stated understanding is correct. The grid forming plant should be capable of meeting each defined capability.

46. In relation to Tech spec 1.8.2 “providing the values set out in in Part A 2.1 and Part A 2.2 and other Grid Forming Capabilities at a minimum short circuit level of zero MVA at the Grid Entry Point.” It is understood that “zero MVA at the Grid Entry Points” stands for “an island grid characteristic”? (Added 19/11/21)

Response: The aim of this clause was to ensure that solutions need to be able to still provide the Grid Forming capabilities irrespective of the short circuit level (SCL) at the Grid Entry Point. As the short circuit level of the system continues to decline, we want to ensure that solutions are still able to operate stably and still provide us with stabilising properties even when the SCL at the Grid Entry Point is close to zero.

47. In relation to Tech spec 1.9.2 “For the avoidance of doubt, each Grid Forming Plant (and any constituent element thereof), shall be required to inject a reactive current which shall be not less than its pre-fault reactive current and which shall as a minimum, increase each time the voltage at the Grid Entry Point falls below 0.9pu whilst ensuring the overall rating of the Grid Forming Plant (or constituent element thereof) shall not be exceeded.” Synchronous condensers generally provide reactive currents during faults up to 5 times the rated current! Is this acceptable or should be controlled to a maximum of 1.5 pu? (Added 19/11/21)

Response: Figure 5 shows the minimum reactive current injection from the solution under various retained voltages. Solutions are supposed to inject reactive current above the relevant line shown in Figure 5. Therefore, 5 p.u. is acceptable and no control is required to limit that value to 1.5 pu.

48. In relation to Tech spec 1.9.3 “In addition to the requirements of 1.9.1 and 1.9.2, each Grid Forming Plant shall be required to inject reactive current above the shaded area shown in Figure 6 when the retained voltage at the Grid Entry Point falls to 0pu.” Is the understanding correct that Figure 6 is applicable when the voltage falls to 0pu; which means that in case the voltage falls to 0.001pu, Figure 5 is applicable? (Added 19/11/21)

Response: Figure 6 is meant to represent the response required during a balanced short circuit fault resulting in the retained voltage at the Grid Entry Point to fall to 0pu (e.g. a close-up solid three phase short circuit fault at the Grid Entry Point). From a practical point of view a retained voltage of 0.001 pu would be equivalent to 0pu.

49. In relation to Tech spec 1.9.4 “The injected current shall be above the shaded area shown in Figure 6 for the duration of the fault clearance time which for faults on the Transmission System cleared in Main Protection operating times shall be up to 140ms.” Is the current injection of 1pu or above the shaded region at the PCC or the HV terminal or at the LV terminals? Is this also the 'positive sequence component of the reactive current'? (Added 19/11/21)

Response: The current injection is measured at HV terminal of Grid Entry Point of the solution, which for this tender is 275kV or above. The reactive current is the positive sequence component of reactive current.

50. In relation to Tech spec 1.9.7 “Each Grid Forming Plant shall be designed to ensure a smooth transition between voltage control mode and Fault Ride Through mode in order to prevent the risk of instability which could arise in the transition between the steady state voltage operating range as defined under CC.6.1.4 or ECC.6.1.4 (as applicable) and abnormal conditions where the retained voltage falls below 90% of nominal voltage.” What is the definition of 'Fault Ride Through mode'? Is this figure 5 or Figure 6? (Added 19/11/21)

Response: Fault Ride Through mode is the control mode that is applicable during system faults where the voltage at the connection point is likely to drop below the normal operating values (please see the values stated in ECC.6.1.4 of the Grid Code). The fault ride mode will be applicable for operating in the region below the green shaded area i.e. under 0.9pu in Figure 5. Figure 6 represents the characteristic of the reactive current injection when the retained voltage at the Grid Entry Point falls to 0pu which is also when the Fault Ride Through mode will be applicable.

- 51. In relation to Tech spec Part B.1 “The values of reactive power injection and absorption should be no less than 31% of the rating of the Facility (Srating) up to a value of ±100MVAR, reflecting the capacity stated in the connections approach document.”**

Does it mean that anything higher than S = 100MVAR, this requirement is no longer valid correct, or does this mean the maximum reactive power absorption/injection is limited to 100MVAR.

Can it be understood that e.g.:

1. S = 323 MVA -> Q = +-100 Mvar

2. S = 400 MVA -> Q = +-100 Mvar

(Added 19/11/21)

Response: This means that maximum reactive power absorption/injection should not be less than 31% of the facility's MVA rating (S rating) but limited to a value of 100Mvar. Both the given examples are correct.

- 52. In relation to Tech spec part B 4.2.6 “For a step change in the System voltage, the change in sustained reactive current will be achieved as follows;” Is this also the 'positive sequence component of the reactive current'? (Added 19/11/21)**

Response: Yes, it is the positive sequence component of the reactive current.

- 53. The SCL requirements by region in the Tender Overview document are not in line with assumed SCL by region in Table 1 of the "Connections Approach" document. For example, the South Wales region requires 2,500MVA in "Tender Overview" documents, however, the substations in these regions indicate medium size of SCL in table 1 of the "Connections Approach" document. Which number is likely assumed in the Tender stage? (Added 19/11/21)**

Response: Please be aware that the details included in the Tender Overview document represents the requirement per region (in reference to the most effective substations within the region) without taking into account the requirement of securing for the largest solution.

The SCL details in the Connections Approach document are the assumed levels of SCL for each reserved bay. These assumptions were made by considering the size a solution would have to be at each reserved bay, to help achieve the SCL requirement in each region, after considering the effectiveness of each substation. The exact details of SCL MVA sizes assumed against each reserved bay will be confirmed with the invitation to tender, following the completion of the ongoing TO feasibility studies.

- 54. To support our early assessment, would it be possible to provide early indications on the parameters such as network short circuit power and X/R ratio value, please? In addition, a typical fault impedance would also be useful. This can be generic, early estimated values and will be used only to increase our understanding and prepare models and studies. (Added 19/11/21)**

Response: The team is currently putting together all the relevant information that will enable tender participants to undertake the necessary simulations and this will be shared with all the tender participants at invitation to tender in November.

However, you may be able to find some indicative information in the appendices of the Electricity Ten Year Statement (ETYS) which is published on our website (<https://www.nationalgrideso.com/research-publications/etys-2020/etys-archive>)

Connections Queries

- 55. When the connection feasibility study report is released, will the non-operational land outlined in the document have already been through NGET's internal land clearance process, or is this an additional step that would need to be completed?**

Response: The Stability Phase 3 Connections Approach document NGESO released touches on what is and is not being done regarding the NGET non-operational land (see page 10 onwards). NGESO have commissioned NGET to conduct high-level Estate Reviews of the NGET non-operational land surrounding the substations noted in Table 1 of the Connections Approach document, which will be released to tenderers within the Connection Feasibility Report being produced by NGET. NGESO also plan to organise site walks of NGET non-operational land. However, NGESO has not and will not be reserving any land for tender participants.

- 56. Please could you clarify how connections that are already in progress will be treated?**

Response: Should bidders wish to utilise an existing connection or in-process connection application, rather than use one of the connection points reserved by NGESO (as described within the Connection Approach document), then assuming that those connections fall within an area of need, a connection offer or modification offer would need to be demonstrated as part of a bidders tender submission. Please see pages 6-9 of the Connections Approach document.

- 57. Will the capacity be reserved other than the bay? What happens if we want to connect more than +/-100MW?**

Response: We are accounting for a +/-100MW and +/- 100MVAR per bay reserved. If providers wish to connect more capacity, we would advise waiting for the feasibility report from the TO, which should give an insight on whether the capacity of 100MW and 100MVAR can be accommodated on the network.

- 58. You mentioned lessons learnt from previous Pathfinders, could these be shared?**

Response: Lessons learnt from previous Pathfinders have informed our new connections approach in Stability Phase 3 and are listed in the Tender Overview document (slide 14) and the Connection Approach document (page 4).

- 59. When will the NGET feasibility report be completed and shared?**

Response: The report is already underway. We are aiming to release it around the time of tender launch.

- 60. Could you clarify the status of connection applications in process but for which no offers have been provided? (Added 19/11/21)**

Response: Tenderers are able to submit solutions that connect to any substation within the areas of need, (as described within the Connection Approach document). Solutions that are connected to non-reserved bays need to demonstrate a connection or modification offer (i.e. not just an application) as part of the tender submission. Please see pages 6-9 of the Connections Approach document for more information.

61. **As I am sure ESO is aware at a number of the SP3 substations National Grid have existing landholdings that might be suitable. Are NG intending on holding a procurement exercise on these sites? My presumption then is NGET will be looking at a process of disposal/renting in-line with the tender process? [Note: other similar questions have been received by NGESO] (Added 19/11/21)**

Response: As per the Stability Phase 3 Connections Approach document, NGESO has not and will not be reserving any land for tender participants. As also noted in that document, NGESO has commissioned NGET to complete Estate Reviews on the substations where connections have been reserved. These will be released to Stability Phase 3 tenderers with the invitation to tender. NGESO also plan to organise site visits for tender participants to look at the NGET non-operational land surrounding the substations where connections have been reserved.

Beyond this, NGESO has no influence over the NGET non-operational land process (<https://www.nationalgrid.com/uk/electricity-transmission/document/136486/download>) as we are a legally separate company.

We are liaising with NGET to provide guidance to tenderers who may wish to use NGET's non-operational land and the process that will need to be followed based on NGET's non-operational land process.

62. **What happens to TEC belonging to parties who are not successful in the tender? You do not need TEC for this? (Added 19/11/21)**

Response: If tender participants have sought their own connection agreements and their solutions are based on providing MW (TEC), it will be up to them to decide whether to retain their connections if they are not successful in the Stability Phase 3 tender. For the avoidance of doubt, any TEC accounted for the reserved bays will be released if this is not required for the solutions who have won the tender. Having TEC is not required for the stability service that we are procuring but we are aware that some service providers are keen to stack other services alongside the stability service.

63. **For the infrastructure costs of new assets, will the NGESO provide a cost breakdown as some costs would be spread/socialised over the life of the asset? This will allow non TO solutions to compete with 30 years given to TO assets. Will TO Solutions incorporate infrastructure costs through forecasted TNUoS by NG ESO or as upfront CAPEX? In addition, connection costs borne by a new network user will include the amortisation of the Gross Asset Value (GAV) across project life. Will the TO factor in such costs as well?**

See the following example: We have a cost of £XM for a bay, £XM for a cable and £XM for a remote breaker all in as an A1 cost. This is a connection cost over say 30/40 years (Synchronous Tech life), how do we account for this is the SP? Do we put it in or does NG? This is outside of the TNUoS. (Added 19/11/21)

Response: In response to the first question regarding infrastructure costs, we assume this is asking whether the feasibility report being conducted by TO will provide infrastructure cost details?

If so: for reserved bays, the following indicative connection cost information will be provided in the Connection Feasibility Report.

- Indicative infrastructure costs per connection point (bay)
- Indicative infrastructure costs in terms of Final Sums securities liabilities
- Indicative one-off works that could be incurred

If bidders do not wish to use the reserved bays, they have to seek their own connection offer through the usual connection process, and therefore the connection cost information provided will be in line with the usual process. For more information please refer to the connection approach guidance document on the ESO website.

In relation to incorporating infrastructure costs into TO submitted solutions:

TO solutions will incorporate infrastructure asset costs through CAPEX - there is no split for TO work into user/connection/infrastructure as all is paid for in same way. So costs of assets that for 3rd parties would be infrastructure or connection assets will form part of overall TO CAPEX. This then is used by the ESO along with their price control's cost of capital figure to calculate a present value. Details on this will be in the economic assessment methodology which will be available with the invitation to tender.

Details on what costs should be used to inform your pricing submission will also be confirmed in the assessment methodology, which will be available with the invitation to tender.

64. If connecting at one of the listed substations, who has responsibility for the connection route, developer or TO / ESO? (Added 19/11/21)

Response: The definition of connection route will be the responsibility of the tender participant up to the point of entering the non-operational land. The connection route on non-operational land would need to be agreed with the TO lands team to ensure it avoids any constraints and does not prevent any future development, but even in this case, the tenderer will remain ultimately responsible.

65. Is the Connection Feasibility Report only dealing with the reserved bays and a separate document of substation effectiveness being produced? This information will be critical for those tenderers looking to provide additional capability at existing connection points. (Added 19/11/21)

Response: Correct. The Connections Feasibility Report will provide details on a defined list of substations where bays have been reserved and have been studied. This of course is only for those substations within the regions of need. Additional information will be provided at tender launch including a separate document that confirms the effectiveness of all substations within the regions, not just for those with reserved bays.

66. Can you please clarify the location of the Yaxley Substation mentioned in the attached Connection Approach. We haven't been able to find an address for this site. (Added 19/11/21)

Response: The details of the location of the new Yaxley substation, in addition to details of which substations fall into each region of need, with a network map, will be available with the invitation to tender launch later this year. There is a lot of information available publicly regarding Yaxley substation.

Contract Queries

67. The technical/connections webinar suggested that solutions would only be considered if they were providing both SCL and Inertia. The contract terms seem to suggest it could be one or both provided by given solution?

Response: Solutions must have capability and tender for both SCL and inertia. The draft contract covers the scenario where a solution cannot deliver inertia at the same time as SCL i.e. 90% of the time, e.g. because of the type of technology and so requires slight differences in the payment calculation.

68. Will units that currently have a sync comp contract in place be replaced with an inertia/SCL contract if they are successful in the tender process?

Response: We will inform the market shortly on how units with existing contracts would be treated.

69. Are the lump sums that were indicated in the contracts webinar calculated based on CAPEX of the equipment? If so, will this be discounted from the payments for service provision? Or how would this work?

Response: At this stage, we do not have a position and we welcome your views in the feedback - please see the specific question towards the bottom of the consultation form.

70. How long is the contract?

Response: As part of the consultation, we have proposed 10 years with contract end as 31 March 2035. The Contract length is under review as part of the consultation, and we will let the market know the end date and whether extension provisions would apply in the final set of terms.

71. Is it possible to bid on other markets (such as DC/DM/DR) while we are in contract with the Pathfinder?

Response: In the draft terms we have listed provisional list of services that could be stacked. In general, the principle is to allow stacking for the listed services where it is viable.

72. After the Stability Phase 3 contract ends, will NGENSO extend the contract or offer a different service that can be captured for the assets? This is considering the assets life are 25+ and inertia need on the system may still be present.

Response: In the consultation we have stated we are considering including extension options - please do refer to this and provide your feedback on your thoughts about including extensions on Stability Phase 3 specifically.

Separately, ESO is working to develop a stability market (more details here <https://www.nationalgrideso.com/future-energy/projects/stability-market-design>) that may offer another route for assets to offer their capability.