nationalgridESO

Constraint Management Pathfinder RFI Webinar 22/01/2020

Webinar FAQ

Updated 20/02/20

Updates

1. Technical question: Q49, Arming frequency

Commercial Questions

Timescales

1. If the service is found to be viable when will orders be placed?

We will provide an update on whether we choose to proceed to the tender stage and when this could take place as part of the RFI feedback in Q2 2020.

2. For those generators connecting after 2021/22, can they participate?

Depending on the contract structure, we may allow a window with a firm stop date within which providers can begin commercial operation after contract award. This would allow assets to complete construction and commissioning prior to service delivery.

3. Obviously grid constraints are only going to get worse as we move towards 2025. Do you see further tenders being released after the 21/22 delivery tender?

Our pathfinders are to allow us to take a learning by doing approach to the various operational challenges on the network. Depending on the outcome and learnings of this pathfinder and possible future requirements, we may choose to extend the constraint service more widely and frequently.

4. What will be the frequency of tender, or will it be a one-off?

At this stage, should we choose to proceed to the tender stage, it would be a one-off tender for the locations stated in the RFI pack. As stated in our response to the above question, in future we may extend the procurement of the constraint service more widely and frequently.

Stacking

5. 24/7 availability over a 10-year period does not promote flexibility or use assets effectively. Many assets who sign-up for this service could be used to solve other constraints/network issues at different times however would be restricted in doing so.

   (Alternative Qs: Can stacked services be used like VSM inertia being developed by GC0137 and frequency response? Is it not much more cost effective to allow the storage system to stack other services (such as BM) while there are no constraints expected in those boundaries? If the asset is going to be 24/7 waiting for a dispatch, that means the whole cost of the asset needs to be covered by this service.)

We understand providers may want to use their assets in other markets while not required for this constraint service. Against this, there is a value to the ESO in the certainty of knowing an asset will be available when the service may be required, including at short notice. We are working to understand the timescales within which we could be in position to need to arm an asset, which should provide guidance on other markets the asset could participate in.

In addition to this, we are undertaking a review of our Response and Reserve products which may have an interaction of an assets ability to stack services and we would welcome feedback if you have any views on this.

Furthermore, we may consider allowing stacking of active and non-active power services as the provision of one, may not impact the ability to deliver the other.

6. Will this service be stackable with the CM?

Under the Capacity Market Rules, various services are listed that are classified as Relevant Balancing Services which allow service providers to hold a contract for any such service and a Capacity Market contract at the same time. Should we choose to contract for this constraint service, it would be termed as a Relevant Balancing Service and allow providers to deliver this alongside a Capacity Market contract.

Utilisation

7. Please define utilisation - is this the period when an asset is armed or only when activated? Activation may be a rare event ~(i.e. in response to a fault)

Utilisation is the period when the asset is actively taking power off the system on the constrained side, or injecting power on the import side. The frequency of utilisation will be dependent on system conditions in real-time, though generally we expect it to be used when there are high levels of wind generation in Scotland.

8. What is meant by "tripping fee" - is this the same as utilisation?

This is the same as utilisation. As we mentioned in the webinar, we are interested in the market's view as to whether this should be a fixed £/trip or a £/MWh for the actual energy delivered or another mechanism.

9. How often will the system be armed and how often actuated?

The usage of the service will be dependant on real-time system conditions. The service will enable additional power flows across the network pre-fault reducing the need for curtailment of energy during normal conditions.

10. Is there more info on seasonality / time of day / time of week or conditions for arming?

At this stage, we cannot commit to the frequency of use of this service, but generally we would expect the service to be armed when the relevant circuits/boundaries are operating near their operational limits.

11. Is there a maximum yearly utilisation?

We encourage providers to feedback on whether their assets would require limits (either number of activations or in MWh). If so, we may consider this as a possible tender parameter and an assessment criterion.

Codes/Regulation

12. Do you foresee that Article 6(9) of the recast Electricity Regulation within the Clean Energy Package will have an impact on contract length? It could be argued that this would not apply for the Voltage and stability pathfinders as there are no MWh involved but in this case active power is involved.

The requirements of A6.9 relate to balancing which is the actions and processes we carry out to maintain system frequency. As this is a constraint management service and not related to managing system frequency, we do not believe the requirements of the CEP apply.

13. It mentioned that the service will be limited to those that are not connected behind any load management system. Can you explain more about the load management system? Does the Load Management Scheme count it as load management system? What about the Active Network Management? Can those generators signed up with LMS and ANM participate in this service?

This service is limited to those not connected behind any LMS or ANM. If assets are connected behind any ANM or LMS they may not be able to respond or be effective at delivering the requested service.

14. Assume penalty for non-availability?

Should we move to tender, as part of the contract terms, we will design a set of rules around payment and any events that would result in penalties.

Competition/Availability

15. Does limiting the number of aggregated sites reduce competition? Should offers not be received and then discounted as part of a transparent technical evaluation, as opposed to being ruled out beforehand?

We have not identified a minimum for a single participating site and therefore a limit on the number of aggregated sites that could participate. Should we move to tender, we may consider introducing a minimum capacity limit.

Other

16. What does NG mean by "indicative annual return expectation". Net benefit to consumer or to owner~?

This question is in the RFI Feedback form and is asking providers what their expected return from the service would be. This will help us ascertain the expectation from market to the level of utilisation. As stated in the RFI pack, no sensitive information will be published.

17. Does NG see it as high risk to have multiple asset owners delivering service (i.e. 5 providers of 200MW dual solution each rather than aggregated?

Through this pathfinder we want to understand the technologies and solutions that may be able to provide the service. By opening the possibility to deliver the service to a larger number of providers, this should deliver highest value for consumers. Additionally, we recognise that not all potential providers will have assets that may be capable of delivering all or most of the service requirement.

18. Will providers require a firm grid connection?

From a transmission connection perspective, if your connection agreement allows you to provide this service, we do not see why a provider would not be able to participate whether they are firm or not. Please see the assessment criteria and the technical requirements for more information on what qualifies as being able to provide the service. We have restricted DNO connections to only those not connected behind any load management system. Please see question 29 for more clarity.

Technical Questions

Size

19. You say the minimum to be tendered is 200MW for 2h service. What is the maximum to be tendered?

    (Alternative Qs: If 200MW for 2hr service is the minimum what is the maximum the service will tender?)

Our analysis have not identified a maximum. We are interested in finding out what the economies of scale would be for providers interested in offering more MW.

20. What do you expect the minimum level of MW to be for a single participating site?

    (Alternative Qs: Is there a min capacity requirement to enter the service? What is the min requirement (in MW) per asset please? Also, is there a minimum requirement for aggregated sites?)

We have not identified a minimum for a single participating or aggregated site however there will be a cost to connect participating service providers to the ENCC communications. A cost benefit analysis, CBA, will be conducted should a service be tendered for and a minimum might be identified at this stage.

21. Is the max requirement of 200MW-2h per boundary?

A service provider located above a boundary will impact all boundaries beneath, therefore the RFI is not looking 'per boundary' but overall.

22. Is it beneficial to have storage systems of just 1hour duration in the service? Is 2 hours a minimum requirement?

We are interested in receiving feedback on all options that can be provided. However, we expect 2 hours will provide more benefit to the control room in removing residual constraints and therefore will be the duration requirement if a service is tendered for.

23. Would you give additional points to storage assets with durations in excess of 2 hours?

We are interested in receiving feedback on all options that can be provided as this might inform future work by the ESO. However, we expect 2 hours will be the duration requirement if a service is tendered for.

Technology Type

24. Is your requirement 200MW from 1 provider or multiple providers?

We are interested in either 1 provider or multiple and in a tender, this would be decided on price once all other technical requirements have been met.

25. Would this service be technology agnostic?

The ESO is technology agnostic. Please see the assessment criteria in the RFI pack for information on how potential providers will be assessed.

26. Would interconnector provided service be attractive bearing in mind the flows are a function of 3rd party market trades rather than I/C owner energy position?

We are open to any technology type to provide this service subject to the provider meeting the technical requirements and assessment criteria. We are aware that some regulatory restrictions might prevent interconnectors from participating in future, this will have to be reviewed if a tender takes place.

27. Is this pathfinder solely aimed at generation/storage/demand?

We are open to any solutions available and look to those engaged to highlight potential technologies that could provide the solution.

28. Will Wind farms be able to participate given their intermittent nature?

    (Alternative Qs: Similar to the Q above, what is the view at this stage on intermittency, i.e. is this suited to a wind site which may not always have full generation available for curtailment; or is this targeting storage which would have a much better availability %? Will wind farms have to be integrated with a storage system to provide the service?

We want to hear from all technology types and would like to create a service that does not have blockers to specific parts of the industry. Therefore, we would like to hear what issues providers anticipate and any solutions that the industry can think of. We anticipate that there will be a strong link between service use coinciding with times of high wind and therefore would expect wind generators to be able to participate.

29. Is the tender open to Distribution-connected sites? Or only Transmission connected?

    (Alternative Qs: Is this open to distribution connected assets or Transmission connected only?)

We are open to distribution connected solutions though we have stipulated that these solutions cannot be located behind any load management system. This is because the ESO Control Room need full visibility and control of the service providers.

30. Based on the previous answer it's not clear if windfarms are credible contenders for this service (since their output is variable). Should there be more effectiveness given to generators that are dispatchable with higher load factors?

Effectiveness may well be a credible comparison of technology types. Specific technologies have not yet been studied as we are looking at the RFI feedback to inform our next stage of studies.

TRL

31. There is now a new type of energy storage being used in the USA that is lower in cost than Lithium at the 2 hour storage time scale. Will these be allowed under the TRL levels?

    (Alternative Qs: Requiring solutions to have a TRL score of 7-9 will limit the entry of new technologies that are able to provide this service more effectively. Will NG ESO be open to run a feasibility study process to assess the potential of technologies with a TRL score of less than 7?)

If a service is tendered, we would look for established technologies to take part in the first tender. This is because part of the pathfinder project is providing the proof of concept and getting the service live. It might be that the project is expanded in future years and less established technology types are able to participate.

Response Time/Duration

32. Does the increase in gen also need to happen in 150ms?

    (Alternative Qs: How quickly do MW need to be injected in the south? Is the requirement in the midlands to synchronise within 150ms? >200MW clearly cannot be delivered in this timescale. I think the 150 ms will be extremely restrictive, even more so for the gen increase/dem reduction at the southern end of the constraint - views?)

Ideally, we would look for the exporting service to mirror the importing service and therefore be 150ms. However, we appreciate that this may be difficult for some technology types and therefore seek feedback on the ramp rates of different technology types to inform the dual service location feasibility. It is important to mention the technical requirements of this service are based around ESO Control Room needs and the technical requirements which provide significant benefit to the operation of the system.

33. Why it is 150ms and where is this coming from? Is it the same timescale for the aggregator?

150ms has been specified as this allows the service to operate without impacting voltage and stability limits which makes the service most valuable to the ESO Control Room. It is important for feedback to be given on how/if this will impact a service providers ability to provide the service.

34. What are the requirements for power injection, ramp rates, response times etc?

    (Alternative Qs: What are the maximum (slowest) ramp rates that would be applicable in both directions?)

Ideally, the service provides full output within 150ms and therefore we would want to hear the ramp rates of specific technology types if they cannot provide this response time.

35. How to provide speed of response if it is an aggregator? How to define the injection/absorption duration if it is an aggregator?

We do not expect to treat aggregated service providers differently to other providers. Therefore, we would expect the provider to meet the technical requirements of 150ms response time for a 2-hour service period. This would mean that for any aggregated solution all parts of the solution must individually be capable of meeting the technical requirements.

36. Is the 150 ms the total time taken from a signal sent from ENCC until the circuit breaker is opened / closed or is the 150 ms intended to be the time from receipt of the signal at the site?

The time frame is based on the operational requirements of our protection systems which operate around 150ms from fault detection. Therefore, we would like a response from our providers from fault detection. We are keen to hear feedback on this if the time required to receive the signal adds a few 10ms onto the total response time. However, we anticipate the technology type itself will be the limiting factor in most cases.

Operational Strategies

37. To be clear, is this basically a Scotland-specific intertrip service for wider system constraints with the option for additional MW in the South?

The RFI is targeting residual constraints located across the B6-B8 boundaries and taking MW from within Scotland which aligns with existing intertrips. What we are not prescribing is how those MW are removed therefore we are not calling this an intertrip service. The dual location concept is a service that would operate in England or Wales and there is potential that if this service proves beneficial, other areas of GB could be considered in future tenders.

38. It's unclear to me if you are considering multiple solutions at the same time. Also, are you going to consider solutions that support innovation in new technology types? The current criteria do not acknowledge that you are looking at new solution types. Asking for one long-term solution now crowds out lower cost solutions that might be developed in the next few years

It will be the ESO's responsibility to link service providers in the north and south, therefore it might be the case that more MW are successful in the tender in the north than the south. Decisions will be made based on the economic value of the service to the end consumer.

Feedback on contract lengths is beneficial and allowing innovative technology is something that we support. However, the pathfinder must provide a workable solution and therefore we expect that if this service is tendered for, the first tender will require established technologies.

39. For the dual service, does the provider need to provide the service on both sides of the boundary?

    (Alternative Qs: Does NG seek one or two owners in Option 2 (I.e. separate assets for two owners or one owner for both assets)

It will be the ESO's responsibility to pair providers. The same provider can tender into both locations, equally the service can be tendered by different providers.

40. Is the service symmetric?

Yes. The energy that is constrained north of the border must be injected in the south, in similar timescales.

Constraints

41. Earlier information you published indicated ~50% of constraints are >12 hours in duration. Why are you only procuring for 2 hours?

This service is addressing residual constraints and therefore the quoted information might not address residual constraints exclusively. However, we are aware that the current service size is not our full constraint requirement and therefore we look to service providers to feedback on the economies of scale of providing more.

Effectiveness/Assessment

42. How does load factor influence effectiveness? i.e if you have a windfarm with a 30% LF there may be a good proportion of time when it has no output and therefore its impact is zero. Is this service only required during high wind?

    (Alternative Qs: Will a high load factor site have a higher effectiveness (as it would be expected to be operating and therefore more certain to be effective)?)

We have not studied specific technology types and therefore do not have effectiveness study results based on load factor. Once feedback has been received from this RFI we will better know how to proceed with future studies.

This service is likely to be armed during times of high wind, however we cannot exclusively say that this is the only time the service will be used.

43. I am unclear about how you are assessing storage facilities that are between B4 and B6? It sounds like above B4 is ideal but above B6 is still good...Why didn't you just draw the southern boundary at B6 and de-rate projects accordingly?

Essentially that is what will be done. The effectiveness studies will lead to the economic savings of each solution and then a CBA will decide the outcome of whether a tender is valuable. It is also important to mention that other assessment criteria points are valuable, and providers will be assessed on all points.

44. Are all substations and at all voltages behind the same boundary awarded the same effectiveness?

Through the studies we have conducted to date, we have not seen significant variation in effectiveness with solutions above specific boundaries. We do expect that there will be some variation and location is part of the assessment criteria. We will look to adapt our studies once the RFI has closed to evaluate the effectiveness of more specific solutions where we see benefit.

Specific Qs

45. Are you interested in receiving data on new Energy Storage technology that suits longer storage times?

We currently have an innovation project focused at investigating how long-term storage can integrate into the Electricity Network. The ESO will publicly share the findings of this innovation project once completed. We hope this will contribute to future work of the ESO. We would like to receive feedback on all potential technology types though it is unlikely a longer service period will be tendered for from this RFI.

46. If we could provide a dual site option above B6 and just below the B9 boundary, would that still qualify?

We have specified location as a point in the assessment criteria. However, this is only one of the points and therefore we would like to receive feedback for all potential options and will use all of this to inform if a tender is viable.

Other Technical Questions

47. If a system absorbs power in the upper zone and exports power in the lower zone when triggered when can these systems export / import power to reset the associated energy stores?

This is something that will need to be managed by the ESO control room though no decision has been made yet. We seek feedback from industry on ideas to manage this. It is also important to note that we expect some technology types to not need to reset and we are interested in all types.

48. With the use of DC interconnectors at high ratings like 1 GW a sudden trip of an interconnector will cause power transients. Will this service operate under these conditions and will a 1 GW be needed from either 1 or more systems?

This service has the potential to operate in several system conditions and we do expect that more than 200MW could be valuable. As mentioned, we look to industry for information on the economies of scale of increasing the MW size of service providers.

49. Can you estimate the number of times this service will be armed within a year?

We have analysed our data and have estimated that the service will need to be armed between 1500 and 3000 hours. We appreciate that this is a wide window, however our analysis considers the uncertainty of the generation background in the future using the FES scenarios which have informed the range. We also have allowed some contingency for varying weather conditions year on year which we anticipate will directly affect the service's arming frequency. If this service is tendered for the arming frequency prediction might be updated. Utilisation of the service will not be specified however we anticipate this to be infrequent.

General Questions

50. My interest is in how to send signals and encourage demand to locate in Scotland, and how NGESO can work alongside Scottish Enterprise which is interested in developing a cluster of data centres in SW Scotland, which could help to mitigate constraints.

The current Significant Code Review on Access and Forward-Looking Charges is exploring forward-looking charging signals. If you would like to learn, contribute and shape the reform of network access and charging arrangements in GB, you may do so by signing up to Charging Futures: http://www.chargingfutures.com.

51. Would NG support developers in accelerating a connection?

Our current process does not support accelerating connections to facilitate the provision of the service. However, we would like to understand what risks and costs this would add to service proposals. You can do so in your response to our RFI or through future market engagements.

52. Do you see any issues relating to the CION process and indeed helping co-locations concepts?

The Connection and Infrastructure Options Note (CION) is the document where the output of the CION optioneering process is recorded. It provides a joint record of the rationale for the selection of the overall preferred connection option from the technical, commercial, regulatory, environmental, planning and deliverability aspects.

NGESO applies the CION process as part of the connection and modification application process for connection applications received from Developers (offshore transmission and interconnectors).

Hence, we do not plan to use the CION as part of this pathfinder as the CION process is related to the connection of offshore wind and interconnectors. However, as detailed in the RFI pack, part of our assessment will be based on location effectiveness (to measure the effectiveness of the proposed solution) but this will not be done through the CION process.

Providers wishing to learn more about the CION process may do so by clicking the link below.

https://www.nationalgrideso.com/document/45791/download

53. There may be other innovative strategies for relieving congestion by third parties using technology on the networks. Are you open to third parties providing this service?

The outcome of the Constraint Management pathfinder will be the recommendation of the most economic and efficient solution (s) which should be taken forward.

NGESO are committed to ensure competition everywhere. This means we are technology neutral and are open to providers who can meet the operational, technical and commercial requirements.

54. Are the TOs willing to facilitate grid connections for Tertiary winding as NGET did for the Mersey Pathfinder?

Providers are welcome to apply for grid connections of their choosing via the normal connection application process. Providers will need to remain mindful of the technical requirements of the service. We are happy to explore potential connection design options with potential providers and TOs.

55. Does this pathfinder tie in with the Commercial Solutions recommended by the NOA, or will that be a different service?

Although NOA optimal path constraints share some similarities with residual constraints (as this pathfinder seeks to alleviate), neither will compete against transmission asset build. Each have somewhat separate drivers which will impact commercial decisions like contract lengths.

56. Notwithstanding the regulations around access to grid. Does it not make more sense to auction off the grid connection as part and parcel of the required services. i.e. NG provides the POC along with costs and participants then bid their price and package to construct an asset to provide the service. This way NG should be getting best price (to the benefit of energy users). Instead of creating value for developers who have been holding connection offers in these areas and will demand high fees for to any funders of projects, which ultimately bill payers will need to pay for.

This is an interesting view which would require a fundamental change to the connections and procurement process and as such this is not something we're looking to further consider or change as part of the Constraints Management pathfinder.

57. Item B3 in the feedback template requests the cost of solution in £/MWh, please clarify this

B3, now B4, is asking for the estimated cost of the solution overall. This will differ significantly based on existing connections compared to new connections. This is commercially sensitive information but as part of the analysis we perform in the Economics Team, it is useful for understanding the whole market cost to the end consumer. We will not publish any commercial sensitive information. This is was placed as £/MWh which was incorrect, we are looking for £/MW which has been updated.

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