

# NOA Stability Pathfinder Phase 2

Invitation for Expressions of  
Interest

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# Version control

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# Introduction

This invitation for Expressions of Interest (EOI) invites potential participants to express an interest in participating in NOA Stability Pathfinder Phase 2 by completing an Expression of Interest submission. NOA Stability Pathfinder Phase 2 is looking for options to support our stability requirements in Scotland between 2022 and 2030.

The pack is split into four sections:

1. How to submit an EOI	Outlines the process for providing us with your EOI submission
2. Context	Provides background to the NOA Stability Pathfinder and links to documentation from previous steps
3. Phase 2 EOI outline	Gives an overview of the process for NOA Stability Pathfinder Phase 2 and documentation included in this EOI pack

# 1. How to submit an Expressions of Interest (EOI)

- This EOI invites prospective parties to declare an interest in tendering into this procurement exercise but does not commit the party to progressing with the tender in any way.
- Any party wishing to tender later on in the procurement process, must have submitted a completed EOI template including the options they are considering tendering for by the specified EOI submission deadline and the option must have passed assessment against the criteria.
- Any TO solution wishing to be included in the assessment, must have submitted/confirmed solutions via a completed System Requirements Form (SRF) by the specified EOI submission deadline and the option must have passed assessment against the criteria.
- Providers may submit an EOI at any time during the 3-month period. Prospective providers who submit an EOI early will benefit from more time to develop their feasibility study.
- After submission of EOI, we will assess proposed solutions against the technical criteria and feedback to all providers.
- A pass/fail outcome will be bilaterally communicated to all providers. A successful outcome is required to be invited to participate in the Feasibility Study.
- We will publish an anonymised summary of the EOI. At this stage, no commercial sensitive information will be published.

**The deadline for submission is 17:00 8th Jan 2021. Please send your responses via email to [box.networkdevelopment.roadmap@nationalgrideso.com](mailto:box.networkdevelopment.roadmap@nationalgrideso.com)**

# 1. Webinars

We will be holding webinars to give an overview of the information included in this expression of interest.

You can register for the webinars below.

- Expression of Interest Summary – Wed 14 Oct 2020 13:00-14:00 - [Register](#)
- Technical Specification and Feasibility Study Guidance – Wed 21 Oct 2020 13:00-14:30 - [Register](#)
- Assessment Methodology – Tue 27 Oct 2020 14:00-15:00 - [Register](#)

## 2. Context

### Why are we running a Stability Pathfinder?

- The [System Operability Framework](#) (SOF) has highlighted operability risks expected due to the decline in transmission connected synchronous generation over the next decade.
- As part of our [Network Development Roadmap](#), we want to explore the benefits and practicalities of applying a Network Options Assessment (NOA)-type approach to the operability aspects of system stability.
- NOA Stability Pathfinder Phase 2 is the next step in expanding the opportunity for varied technologies and providers to participate in the assessment of market-based solutions against Network Owner options.
- The outcome of the NOA Stability Pathfinder Phase 2 procurement process will be a recommendation of the most economic & efficient solution for securing stability in Scotland.
- The recommended solution could consist of market-based options, Network Owner options or a mix of market based and Network Owner options.
- For the avoidance of doubt, an outcome could be that we accept no market tender and/or no Network Owner options if none of the solutions considered provide economic benefits against our forecasted alternative cost of maintaining stability through the Balancing Mechanism (BM).

## 2. Context

- Last summer we published a technical Request for Information (RFI) on our plans for the stability pathfinder. [LINK](#)

### Phase 1

- The RFI feedback identified a number of providers who could deliver stability solutions quickly, and so we responded by initiating an accelerated tender process: Phase 1. [LINK](#)
- Phase 1 subsequently launched in November 2019 inviting prospective providers to tender solutions for delivery by April 2021. [LINK](#)
- In January 2020 we accepted tenders from 5 providers across 7 sites – awarded contracts have now been signed with these parties and we are managing these through to delivery. [LINK](#)

### Phase 2

- Based on our technical analysis to-date, Scotland is our next priority area with short circuit level being a key focus and contribution to our inertia requirements also being considered.
- Phase 2 will open procurement to a broader range of technology types than Phase 1, building a feasibility stage into the tender timeline to allow technical capability to be demonstrated ahead of commercial tender.
- We will also remove the 0 MW export pre-qualification condition, building into our economic assessment the adverse impact of market distortion created as a result of bringing on active power alongside stability.
- We are still seeking to procure additional capability compared with what we expect to be inherently available in the energy market over the next decade and will therefore only place value in the commercial assessment against the additional capability tendered.
- In June we published an RFI on our plans for Phase 2 and have used this feedback to support the development of the information included in this EOI. [LINK](#)

### Subsequent procurement

- Beyond Phase 2 we foresee procuring stability on a frequent (possibly annual) basis on the path towards what may eventually become a 'closer-to-real-time' stability market.



## 2. Context

### What approach are we using to develop the pathfinders?

- The pathfinders are using a learn by doing approach. This means:
  - We are developing the pathfinders within the existing industry framework. Where we see areas which could be improved in the framework these will be flagged. This approach enables us to continue moving forward but recommendations may not be implemented before the pathfinder is completed given the timescales to make changes to the framework.
  - We are developing the service terms and assessment methodology in parallel with the expression of interest and feasibility stages so that we have a better understanding of the types of solutions which are on offer as we design the procurement approach.
  - We will learn lessons from other pathfinders which will influence how the process develops.
  - We are putting forward ambitious timelines for the work which we may find need to be changed as more information becomes available and we understand the scale of participation.
  - We are buying new services from new technologies and will learn new information about these during the process.
  - We are learning how to manage the interaction between tenders which require new connections and the existing connection process.
- We understand that this approach causes uncertainty for all parties at this Expression of Interest stage but moving forward with an imperfect but flexible approach allows us to progress with new solutions.

### What areas are do we see need for improvement?

- Clarity over the role of the ESO and the role of the network owners in the pathfinder process and the interaction with the connection process.
- Better understanding of how a range of technologies can be accommodated in delivery of the service.
- Clarity over the classification of OMW solutions in the industry framework.
- Competitive comparison of regulated network and commercial solutions.

## 2. Phase 2 RFI outcome

In June and July we requested feedback on our proposals for NOA Stability Pathfinder Phase 2, we received 36 responses.

Following this feedback we have made changes and updates to the following areas of the proposals:

- ✓ Service start dates - The earliest start date is now April 2022
- ✓ Process timeline – An updated version of the timeline is included in this document
- ✓ Connection review – We have added a step in the process to allow for a coordinated review of connections ahead of the tender
- ✓ Availability requirement – We will require 90% availability for short circuit level but availability for inertia will be a tender parameter
- ✓ Effectiveness information – We have updated the published effectiveness data
- ✓ Technical specification – We have updated technical specification

You can find a summary of the RFI feedback [here](#).

### 3. Phase 2 EOI outline



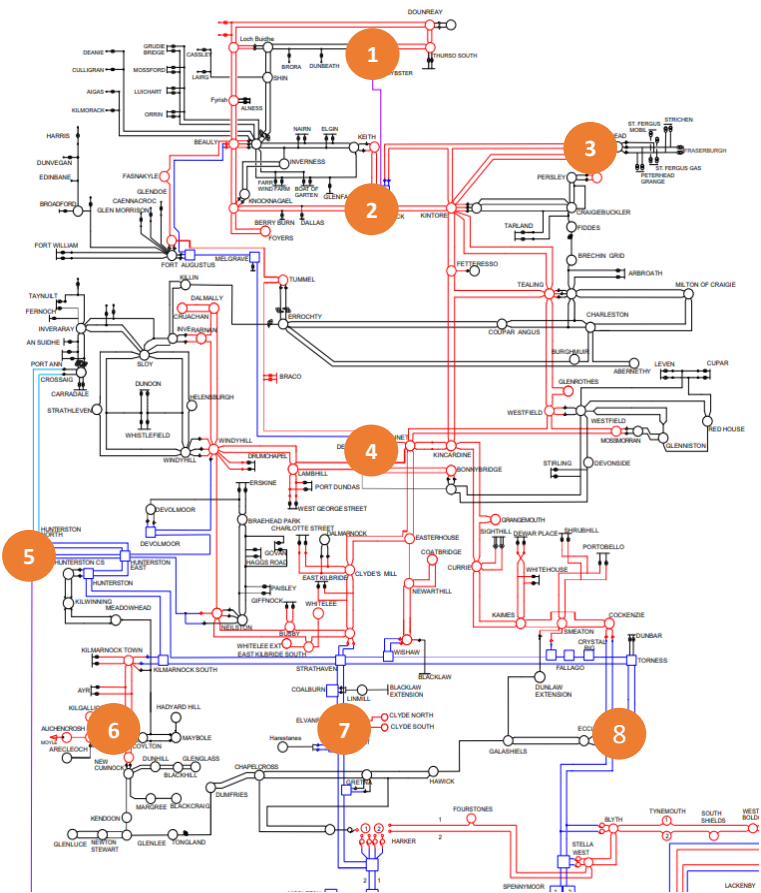
This section gives an overview of the process for NOA Stability Pathfinder Phase 2 and the documentation included in the invitation for Expressions of Interest (EOI).

# 3. Stability Phase 2 requirements

The primary requirement for stability pathfinder Phase 2 is for regional short circuit level. However, we have included a requirement for national inertia as we value inertia contribution alongside SCL. There is no locationality for the inertia requirement beyond it being in Scotland. Details on how the requirement will be valued is shown in the assessment methodology.

Location	Ref	Requirement (MVA)
Spittal	1	600
Blackhillock	2	1,300
Peterhead	3	1,300
Longannet area	4	600
Hunterston	5	1,200
Mark Hill/ Coylton area	6	400
Moffatt/ Elvanfoot area	7	1,800
Eccles area	8	1,200
Total		8,400

	Requirement (MVA.s)
Inertia	6,000
Total	6,000



The total requirement for SCL is for 8.4GVA across the 8 locations as above. As any solution at one location will have a positive knock-on impact on all the other 7 locations, the totality of volume procured across all sites is expected be less than 8.4GVA.

# 3. Stability Phase 2 procurement scope

Topic	Phase 2
Requirement procured	Inertia, short circuit level, dynamic voltage support
Region	Scotland
Service delivery period	Services can start as early as April 2022 and must start by April 2024* at the latest Services have a fixed end of March 2030
At what voltage levels can solutions be offered?	Solutions can be offered at 132kV and above, however connections at higher voltages will attribute a higher effectiveness weighting in the economic assessment.
Technology	Any type of solution can participate but they must demonstrate capability through a feasibility study prior to submitting a commercial tender.
Non-zero MW providers	Non-zero MW providers can participate but must provide additional capability. The assessment methodology will only value the additional stability being offered beyond what we expect to be inherently provided. Furthermore, the assessment will incorporate the cost of displacing in-merit generation on the system.
Can TOs participate?	Transmission network owners have license obligations to ensure safe, economic and reliable operation of their networks and to facilitate connections. In an absence of market solutions, TOs will be investing in their network as needed to ensure an operable network. Through this pathfinder, we will make a comparison of transmission solutions and tendered commercial solutions in the tender assessment. Any necessary TO investment will be brought forward under existing regulated processes separate to this pathfinder.
Can DNOs participate?	Whilst we are not precluding the participation of DNOs in this tender, we are only seeking transmission connected solutions

\*We will not fail an option at the EOI stage based on the connection date, allowing it to take part in the TO connections review. At this stage we will receive a better view of all options' start dates. If there are not enough options which connect before April 2024 to meet our needs, then we may consider buying options with later start dates.

# 3. Timeline overview

KEY:

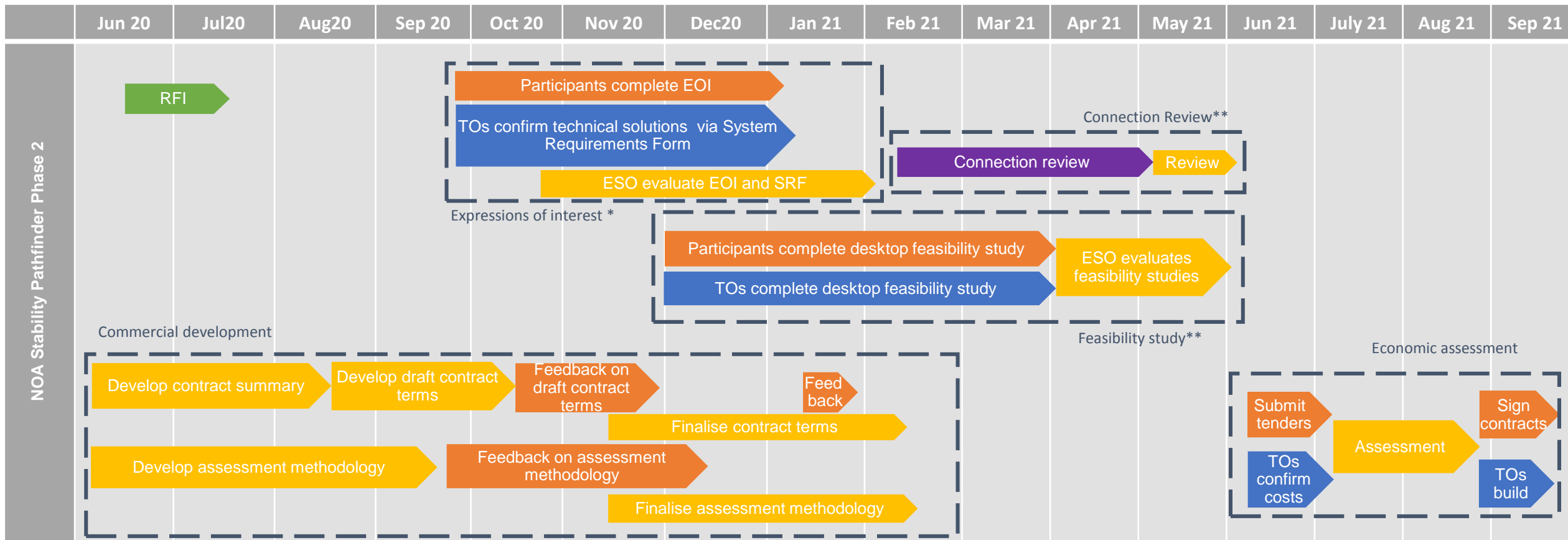
Commercial options

Network options

ESO

Connection assessment

NOA Stability Pathfinder Phase 2



\* Providers may submit an EOI at any time during the 3-month period. Prospective providers who submit an EOI early will benefit from more time to develop their desktop feasibility study.

\*\* Timeline is dependent on number of participants who require a feasibility study and connections review. Timeline will be reviewed after EOI closes.

# 3. Expression of Interest Criteria

Expressions of interest will be assessed against the following pass/fail criteria. Each proposed solution must fulfil all the criteria below to be invited to participate in the feasibility study stage.

- The proposed solution must be directly or radially connected to a point on the Scottish transmission system at 132kV or higher.
- The proposed solution must be A/C connected to the main GB synchronous transmission system.
- The proposed solution's technical concept must be able to provide synchronous machine response and/or grid forming converter technology concept of voltage source behind an effective impedance as described in the technical specification.
- The proposed solution must meet the additionality criteria as explained in on the following slide.
- The proposed solution must able to meet minimum 90% short circuit level availability.
- The participant must agree that to participate in the NOA Stability Pathfinder Phase 2 tender they must successfully complete a feasibility study in line with the feasibility study guidance.
- The participant must be willing for key parameters (including price) submitted into the assessment to be published following the assessment outcome.
- If a proposed solution requires a new connection or a change to an existing connection, the participant must share with the ESO all relevant technical information when requested and be willing for the ESO to supply relevant information to the appropriate TOs for the purpose of the connections review. This includes the completion of the DRC template.
- The participant must complete EOI template fully and submit in the excel template provided by the end of EOI deadline.

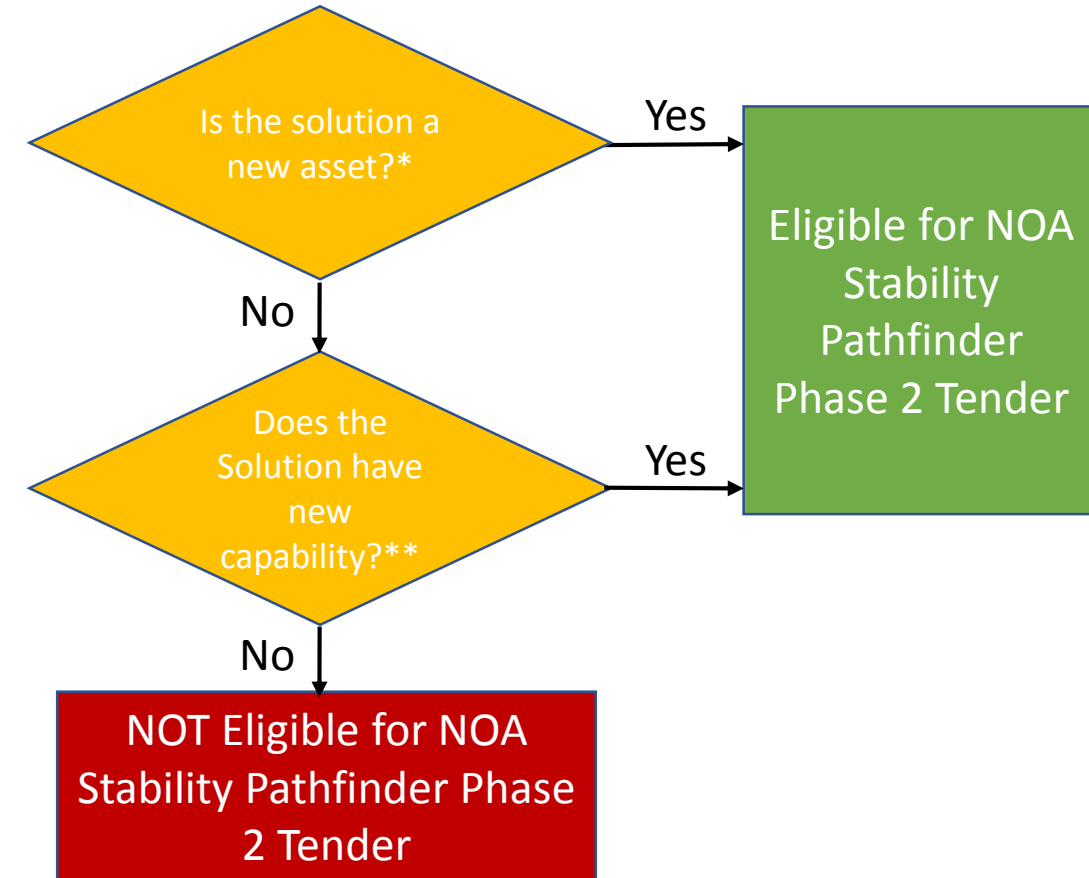
# 3. Additionality Criteria

As part of the NOA stability pathfinder Phase 2 we are looking to buy additional capability beyond that which is currently available either being dispatched as part of the energy market or that can be brought onto the system through the ESO control room actions in the BM.

We have therefore set up the following criteria to define additionality to allow a solution to bid into the NOA Stability Pathfinder Phase 2.

\* The solution must be new build for the purpose of the stability pathfinder to be eligible to tender. Any providers that are in TEC register will be expected to be built and will NOT be considered to be new for this criteria.

\*\* Existing assets must demonstrate that they are increasing their capability to provide SCL and/or inertia above what is currently provided to be eligible to tender or by having the new ability to operate at or below 0MW. Suitable option include (but not limited to) a converter retrofitting grid forming capability, an existing synchronous machine increasing its SCL or inertia, or an existing generator converting to operate at 0MW.





# 3. Associated documentation

Alongside the publication of the expression of interest overview we have publish the following documents:

- Expression of interest invitation letter
- Expression of interest submission form
- Feasibility study guidance
- Connection review scope
- Technical specification
- Assessment methodology
- Effectiveness information
- Heads of terms
- Payment calculation

# 3. Technical specification and Feasibility study guidance

- We have included an updated technical specification for the service alongside this invitation for expressions of interest. This includes a tracked changes version of what has changed since the RFI. This final version will be converted into legal text to be included in the service contract.
- Having successfully passed the EOI stage, prospective providers will be then be required to demonstrate that their solution meets the technical specification by undertaking feasibility study and submitting it to NGESO for review.
- A guidance note for what we expect to see in the feasibility study in is included in the EOI pack. The feasibility study must be submitted in the template provided.
- We will hold a webinar to provide an overview of the Technical specification and Feasibility study guidance. You can register for the webinar [here](#).
- **The deadline for submission of the feasibility study is 17:00 01 April 2021. Please send your responses via email to [box.networkdevelopment.roadmap@nationalgrideso.com](mailto:box.networkdevelopment.roadmap@nationalgrideso.com)**

### 3. Development of contract terms

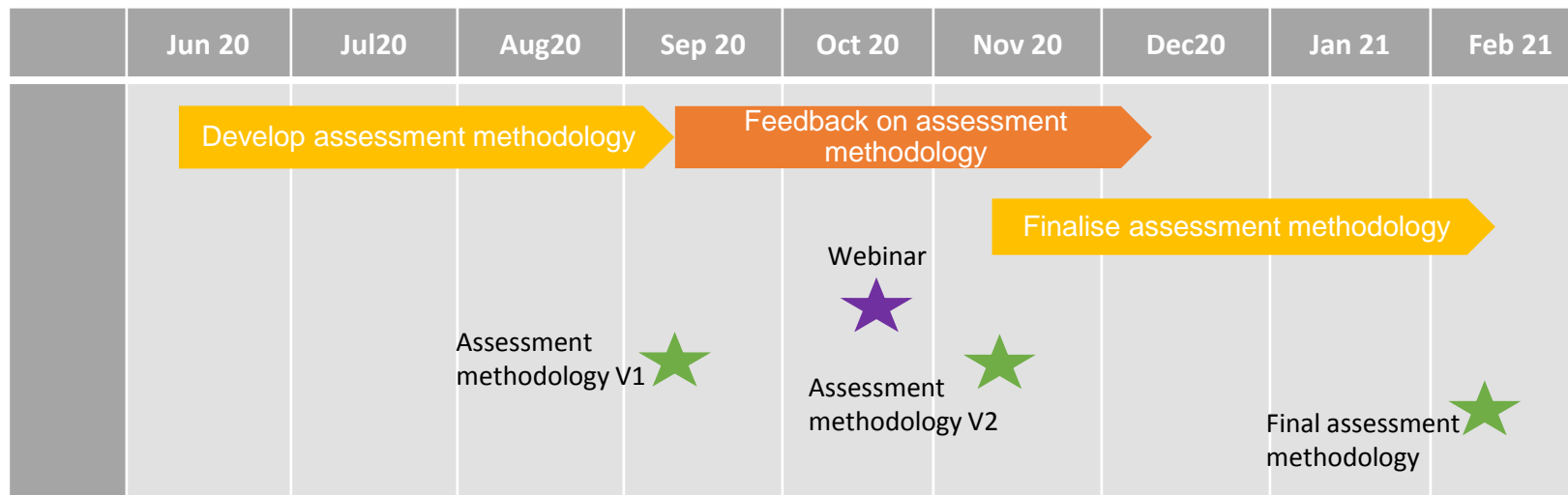
- We have published heads of terms alongside the invitation for expressions of interest to give potential participants an indication of the service terms which they would be expected to deliver under to support their decision on whether to participate in the process.
- We are looking to open this service to a broader range of participants and would like to develop the contract terms with input from potential participants. With this in mind, we have factored time in the process to consult on the draft contract terms.
- We will publish the first version of the legal text for the contract terms in October. This will be accompanied by supporting documentation explaining more information on the terms and how to respond to the consultation.
- We will hold a webinar shortly after launching the consultation to provide an overview of the contract terms with the opportunity for questions. Feedback can be provided at any time during the feedback period.
- We will publish a second draft of the contract followed by a shorter period of consultation while we work to finalise the terms after which we do not intend to change any of the terms for any providers.



# 3. Development of assessment methodology

## Assessment methodology

- We have published our first draft of the assessment methodology alongside this invitation for expressions of interest. We would like to work with you to develop the final version of the methodology.
- We will hold a webinar to provide an overview of the assessment methodology with the opportunity for questions. You can register for the webinar [here](#).
- If you have any feedback on the assessment methodology, please send this to [.box.networkdevelopment@nationalgrid.com](mailto:.box.networkdevelopment@nationalgrid.com)
- Feedback can be provided at any time during the feedback period. However we will aim to publish a second version in November so any feedback you can provide during October will help us shape this.



## Effectiveness information

- We received feedback on the effectiveness information during the RFI and have published an updated version. We have now updated this with an example which can be found as part of this EOI pack.

# 3. Level playing field

- The Pathfinder process is an innovative learning by doing approach that aims to address challenges as they are identified. The concept of non TO owned 0MW connection participants has only emerged through these tenders and has not previously been actively considered in the CUSC charging methodologies.
- In our role as the GB electricity system operator we continuously evaluate the charging methodology to drive improvements that enable fair charging and a level playing field.
- We identified elements in the charging methodology that may have a negative impact on competition between different types of pathfinder participants. We have shared our findings with Ofgem and are utilizing the industry change processes and governance to address challenges and to enable a level playing field.
- As an example, in the TCR TDR implementation in CMP334: Transmission Demand Residual – consequential definition changes (TCR), we raised an alternative solution that would exclude providers that exclusively provide 0MW voltage solutions from incurring the TDR charge. CMP334 is currently with Ofgem awaiting a decision.
- We will share our progress and considerations to give providers visibility of our plans and intentions to level the playing field for NOA Pathfinder competitions.

