

Public

Stability Short-Term Market Update

March 2026

Agenda



What was the original Stability Market Design?



Why was a short-term market (D-1) Proposed?



What have we been investigating and found?



What happens next and which stability markets are available?

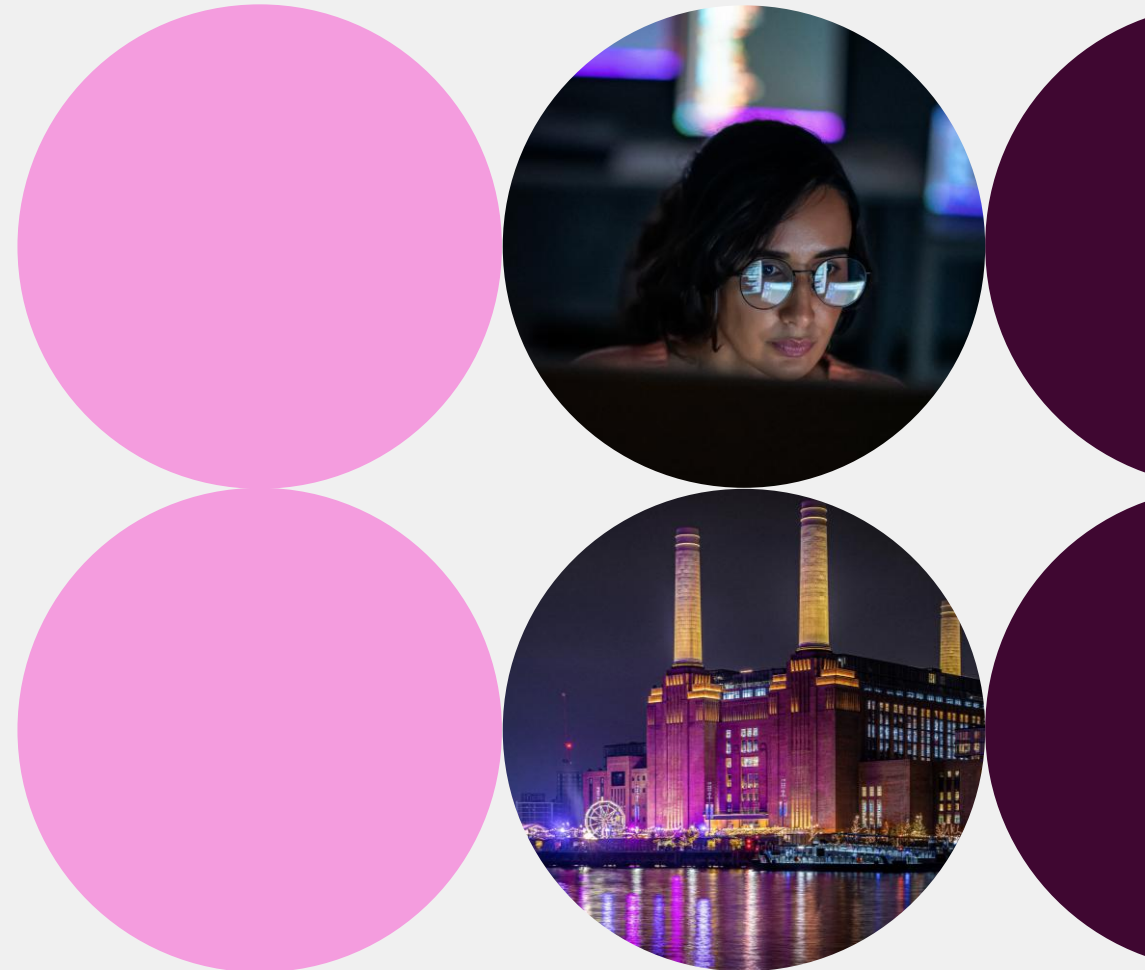
Aims of this Session

To provide an update on the short-term (ST) stability Market and our current minded to position.

Inform on research undertaken, key points of note for industry and next steps.

Key Topics:












- Refresh of NESO's stability market's purpose
- Short-term stability market studies.
- Why do we not think it is currently suitable / cost effective?
 - What does this mean for you?
 - What happens next?



Stability Market Design Overview

The Stability Market Design innovation project was conducted by AFRY, through NIA funding, to understand how best to **maintain compliance and reduce costs** associated with managing s stability.

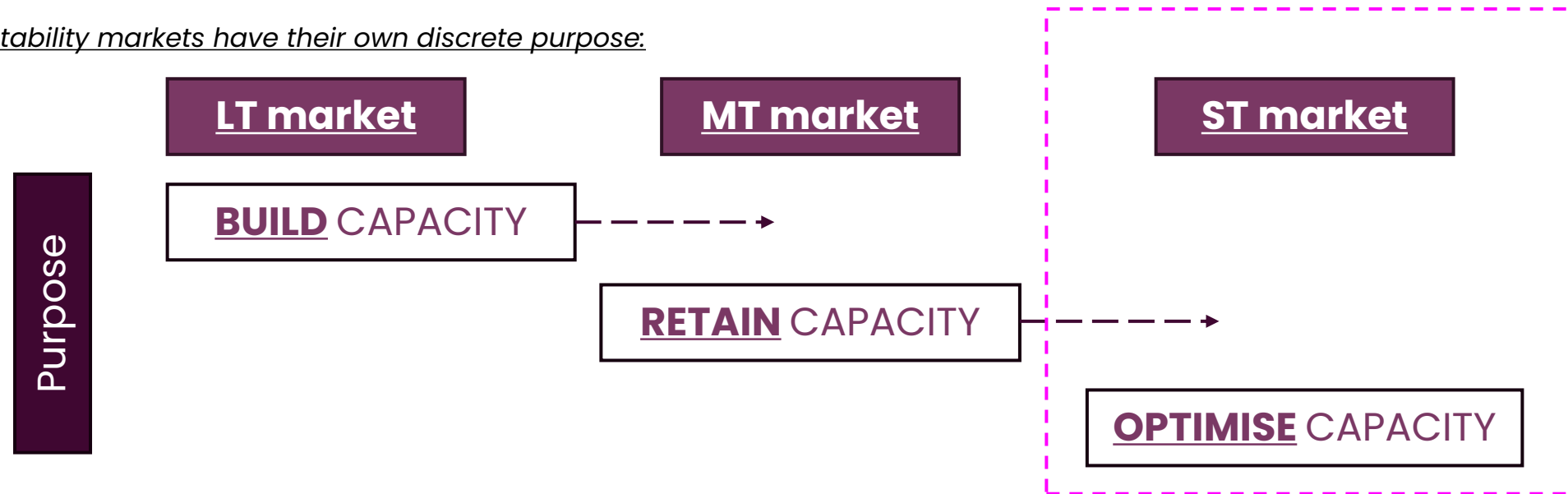
This project concluded by proposing the below markets and the results can be found [here](#).

		Long Term (Y-4)	Mid Term (Y-1)	Short Term (D-1)
 Purpose		<ul style="list-style-type: none"> - Procure capacity in advance (LT), to signal the need for new assets - Allow financing of new build capacity (and enhanced capability) through LT contracts 	<ul style="list-style-type: none"> - Procure capacity in advance (MT), to adjust LT procurement in case necessary - Allow MT financing of new, incremental and existing capability able to provide stability 	<ul style="list-style-type: none"> - Procure capacity to fulfil residual of total requirements for stability closer to real time (ST) - Allow remuneration of marginal costs for providing stability.
 Timeline	Procurement lead time	- Y-4	- Y-1	- D-1
	Contract duration	- 10+ years	- 1 year (Option up to 2 years)	- Service windows
 Product	Contract type	- Baseload availability	- Baseload availability	- 4 h (EFA blocks)
	Contract obligations	- e.g. 90% availability	- e.g. 90% availability	- 100% availability
 Eligibility		 Incremental investment  New build dedicated plants	 Incremental capability  Enhanced capability	 Incremental / existing capability  Existing plants
 Pricing	Payment type	Availability payment	Availability payment	Availability payment (delivery payment inc.)
	Price mechanism	<ul style="list-style-type: none"> - £/MW.s/SP - Pay-as-bid 	<ul style="list-style-type: none"> - £/MW.s/SP - Pay-as-bid 	<ul style="list-style-type: none"> - £/MW.s/h - Pay-as-bid - Pay-as-clear

What was the intended function of each Stability Market?

Long and mid term stability markets are designed with 10+ and 1+year contract durations, respectively. These markets were intended to provide access to capability from assets which have already installed Grid-Forming capability, or plan to in the future.

Stability markets have their own discrete purpose:

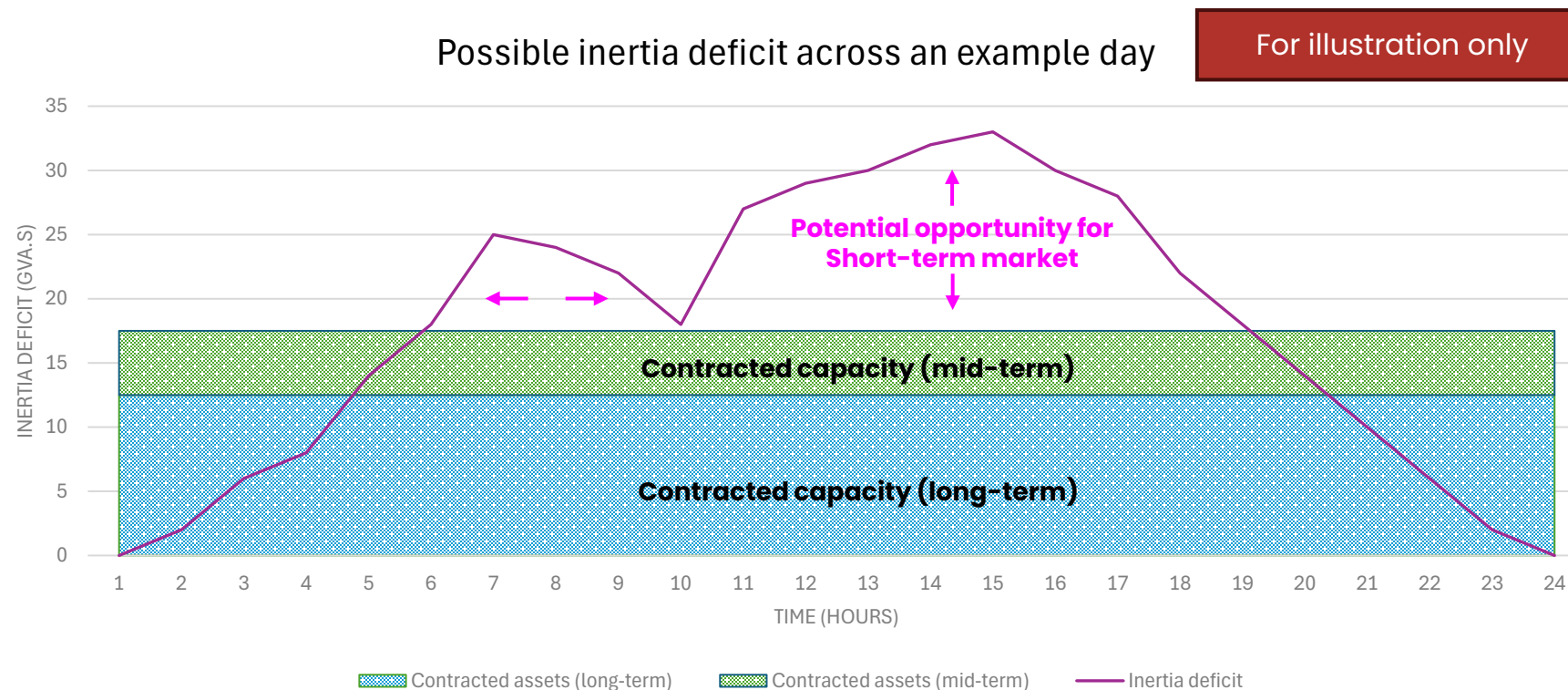


The Short-term market was designed for flexible assets that could optimise their inertia capacity within day and move between markets based on price signals.

What was the intention of the ST Market?

The Short-Term inertia market was intended for flexible assets to meet any potential inertia shortfall, seen at day-ahead, beyond the contracted capacity from the long and mid-Term Markets.

The proposed market aimed to reduce consumer costs, through acting as an alternative to the current within-day options, such as the Balancing Mechanism (BM), and offering a method to procure inertia without generating active power.



Public

How have we assessed the potential of a Short-Term market?

Short Term Market Assessment

NESO have undertaken assessments to understand whether the original ST market model was feasible and offered value to the consumer in the current market conditions.

The assessment process included:

- **Market opportunity assessment:**
 - Review of current participants in NESO stability Markets.
 - New/existing assets that have the potential to participate in stability Markets.
 - Assessment of expected competition within a ST stability market.
- **Cost benefit analysis:**
 - Expected market participants and forecasted pricing strategy.
 - Forecasted minimum inertia requirements.
 - Counterfactual actions through usual dispatching mechanisms (e.g. BM actions).
 - Expected procurement and delivery of mid and long-term contracts.
 - Expected market design.
 - Implementation costs.

Who was expected to participate?

AFRY's initial proposal highlighted 4 different technology types that would be expected to participate in a short-term market.

GENERAL SELECTIVE CHARACTERISTICS RULES

The Short-Term market will allow ESO to refine its procurement on a D-1 basis, using the Balancing Mechanism as backstop at real-time

ST Market	Existing capability
Eligibility conditions	<ul style="list-style-type: none"> - Any existing assets able to provide stability at 0MW (e.g. expired PF contracts) - Must meet availability requirements
Expected participating solutions	<ul style="list-style-type: none"> Existing non-synch. gen. with GFC¹ Existing synchronous condenser² Existing non-synch. storage with GFC Existing synch. gen. with clutch
Contract length	4h - EFA blocks
Lead time	D-1

Logic behind the market?

ESO

- Mitigates risk to lock capacity for too long periods when not necessary
- Procures D-1 residual needs when necessary

Providers

- Most suitable way to market for existing plants characterised by relatively high variable costs
- Preferable way for those providers not be able to commit for long periods (i.e. years in LT/MT)

1. And potentially equipped with additional storage as well; 2. Potentially equipped with a flywheel storage as well | GFC: Grid Forming Converter; PF: Pathfinder; ST: Short-Term; LT: Long-Term; MT: Mid-Term

19 | 17/07/2023 | COPYRIGHT AFRY AB | NATIONAL GRID ESO STABILITY MARKET - PRESENTATION OF THE FINAL OUTCOMES

AFRY
nationalgrid**ESO**

<p>Existing synchronous condensers</p> <p>Limited/no opportunity outside of stability services, availability or opportunity cost risk is low, meaning a longer contract would likely be a preference to ensure continued operation.</p>	<p>Expected to require longer contract guarantees</p>
<p>Existing synchronous generation w/ clutch</p> <p>e.g. Pumped storage hydro and OCGTs Many assets contracted in longer term tenders. For those that aren't, access to 0MW inertia is achievable already, so limited benefit to the end consumer expected.</p>	
<p>Existing non-synchronous generation with GFC</p> <p>Example – GFM Wind/Solar No units currently connected to the system.</p>	<p>No units able to participate in ST market in near-term</p>
<p>Existing non-synchronous Storage with GFC</p> <p>Example – GFM BESS Only two assets currently connected, both holding longer term contracts. Leaving limited opportunity from this technology type.</p>	

Impact of Variable Inertia on ST Liquidity

NESO have undertaken assessments to understand whether the original ST market model of **flexible assets, offering varying inertia levels**, including GFM BESS with variable inertia was feasible.

Flexible Inverter Based Providers:

- In the original work conducted by AFRY it was assumed that inverter based plant would be able to flexibly vary their inertia within day. However, in our work following the innovation project NESO have identified challenges with this proposal and believe it would have a detrimental impact on the operation of the electricity system.
- If variable inertia was allowed it would introduce additional risks such as interactions between plants and increased chance of oscillations occurring. In addition to this there would be additional complexities in the operation of the system in real time and the compliance process.
- NESO note that without these providers, there is limited additional inertia capability that can be accessed at 0MW that NESO do not already have access to.

Impact of this finding:

- Without variable inertia, there is limited value in the short-term market as a restricted pool of participants will be able to partake. Furthermore, the development of GFM BESS has not been at the rate projected by the innovation project. With no current uncontracted GFM BESS's connected to the system.

Key take aways from market assessment

Market liquidity/opportunity

- A market concentration assessment highlighted that a highly concentrated market was expected due to limited units/providers available to participate currently, leading to limited competition.

Cost benefit

- Any cost benefits closely linked to minimum target inertia requirements
 - The expected benefit of a short-term market diminishes if the minimum inertia requirement is dropped to 102 GVAs.
 - A short-term market could deliver consumer value when meeting our current minimum inertia requirements of 120 GVAs.
- Any forecasted benefits are highly variable and susceptible to key assumptions, in particular
 - Portion of applicable units actively taking part.
 - Competitive pricing strategies deployed by applicable providers.

Overall, it was deemed that the initially proposed short term market was unlikely to deliver consumer value at this moment in time, from the current pool of available assets and providers.

Next Steps in Short-Term Stability

What are the key factors we have and will continue to assess?

Theme	What does good look like?	How are we measuring this?
Market liquidity	High liquidity, competitive landscape and confidence in lower consumer costs Efficient dispatch, Efficient Investment & Consumer Value	Utilising the Market Design Framework (MDF)
		Connection tracker analysis
		Control room feedback
		Cost of meeting inertia requirement
		Competition in mid-term stability market
		Outcome of optional stability market development
Inertia requirements	Confidence in there being a requirement for a short-term inertia market	Long-term decision on minimum inertia level*

- As outlined on the prior slide, we are not implementing a full ST market currently.
- We are investigating the potential to implement an optional real time market as an alternative, which may offer benefit at a lower cost and effort; and will assess this using the Market Design Framework.
- We will continue to review this decision as the above conditions change.

What does this mean for you?

Despite the decision to not proceed with a full ST market, NESO still have several routes to market for Stability providers who can offer inertia at 0MW.



For new build assets aiming to offer stability services, the long and mid-term markets provide revenue security to encourage the building of new capacity and allow guaranteed access to this service provision.



We are exploring the potential for an alternative optional market to competitively procure Stability services at short-term and will review the potential for a full short-term market as conditions change.



We are continuing to develop our understanding of Grid Forming technologies and the advantages they may offer to the system.

What comes next?

Thank you for taking the time to listen to this webinar.

We would welcome feedback from industry, on this update, to help inform our next steps, and have a short questionnaire which you can access [here](#) and on the QR code below.

For any other feedback or questions please get in contact via email to box.stability@neso.energy



Market competition

The Herfindahl-Hirschman Index (HHI) measures the market share of participants in relation to the overall market they are in. It is a common measure of market concentration and gives a good indication to how competitive a market could be.

HHI score	Concentration
<1,500	Competitive marketplace
1,500–2,500	Moderately concentrated
2,500	Highly concentrated

Market potential	HHI score	Comments
All available	2,389	Assumes all applicable available units are active in the market. This includes Pumped storage units, applicable OCGT and synchronous compensators. This doesn't include any units that already hold longer term stability contracts (e.g. Pathfinders or Mid-term).
Optimistic estimation	1,830	Assumes only one unit from each pumped storage site competing, distributing the market concentration. Even in this optimistic outcome, we have a HHI score of around 2,000, indicating a moderately concentrated market, raising concerns of competition.
Pessimistic estimation	4,954	Assumes that synchronous compensators decide not to compete and we only get participation from a single pumped storage site, which is based on historic participation trends. OCGT's assumed to be participating due to limited opportunity costs in other markets.

Conclusion

Based on the current pool of applicable assets, the optimistic outcome for a short-term stability market would be a moderately concentrated marketplace. This indicates current liquidity is likely to result in limited competition, leading to either another assessment when more competition is present, or a reconsideration of market design.

Key assumptions

- Market assessment done as a snapshot of applicable assets for the market in Oct '26, with liquidity expected to not fluctuate significantly for the following year after this due to Mid-term contracts.
- Any new connects not forecast to be able to contribute towards a day ahead service before Oct '27.

Short-term market benefit

