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ESO Response to the Inflexible Offer Licence Condition Consultation.

Dear Robin,

Thank you for the opportunity to respond to your consultation on the Inflexible Offers Licence Condition.

Who we are

As the Electricity System Operator (ESO) for Great Britain, we are in a privileged position at the heart of the energy system, balancing electricity supply and demand second by second.

As the UK moves towards its 2050 net zero target, our mission is to drive the transformation to a fully decarbonised electricity system by 2035, one which is reliable, affordable, and fair for all. We play a central role in driving Great Britain's path to net zero and use our unique perspective and independent position to facilitate market-based solutions to the challenges posed by the trilemma.

Our transformation to a Future System Operator (FSO) is set to build on the ESO's position at the heart of the energy industry, acting as an enabler for greater industry collaboration and alignment. This will unlock value for current and future consumers through more effective strategic planning, management, and coordination across the whole energy system.

Our key messages

We are supportive of a licence condition which inhibits excessive benefits being achieved in the Balancing Mechanism. However, we recommend some changes to further refine the wording and ensure it only targets immoderate pricing behaviour. Without changes to the wording on excessive benefits, we think this fundamentally changes the balancing market into a marginal cost of operations market. This change is more significant than could be modelled commercially and operationally in the time allowed for this consultation.

In summary:

- We are supportive of the changes made from the original proposed licence condition to now include all scenarios where a 0MW Physical Notification is submitted and believe that by removing the within-day change requirement a greater range of activity is covered.
- We understand the derivation of the Minimum Zero Time requirement and the exemption of flexible units but do not agree that a licence condition should exempt any unit category. Instead, flexibility should be valued through an appreciation of their different economic costs within the definition of excessive benefits.
- We believe there is opportunity to further clarify costs generators may incur and to expand upon other market reference points in the definition of excessive benefits as the current wording centres around marginal costs. While we appreciate that these tests would only be applied in the scenario that an

offer price is considered excessive, it may lead cautious operators to only price at their marginal cost which does not allow for the varied technology types or unit economics.

- We think this licence condition further increases the need for the balancing reserve product. This licence condition only targets the extreme price avoidance benefits identified through balancing reserve but does not deliver the wider benefits of firm procurement for margin requirements, provide a forward-looking view as to the scarcity or reserve or allow for more liquid markets to resolve for the reserve requirements themselves under normal operation.
- We acknowledge that any action that reduces the prices of competition from less flexible units will result in reduced balancing market prices for all units which seek to compete. Therefore, this does not directly incentivise additional investment in any asset category but does achieve the aim of closing an existing method for gaining disproportionately large benefits.
- Through the licence condition consultation process itself, we have seen more moderate pricing responses to scarcity of operating reserve under most scenarios. Therefore, we think this is strong evidence to continue with a variation of this licence condition.

We look forward to engaging with you further. Should you require further information on any of the points raised in our response please contact Claire Thorpe-Morris, Market Monitoring Senior Manager at claire.thorpe-morris@nationalgrideso.com in the first instance. Our response is not confidential.

Yours sincerely

Craig Dyke

Head of National Control

Appendix 1 – Consultation Question Responses

Question 1 Do you agree with our proposal to remove the within the operational day requirement for submission of 0 MW PNs? Please provide reasons for your answer.

Agree, removing the within-day requirement means this will cover a greater scope of scenarios whereby units may be synchronised or delay de-synchronised for system security. However, there are scenarios where units could still benefit excessively without a 0MW Physical Notification.

Removal of the within-day change requirement

With the original wording, it is likely that ESO would have a clearer operational view moving into the day and therefore have all options available to mitigate a low operating margin condition, including potential emergency return to service of circuits, interconnector counter trading, warming of additional units and stand-up of a silver command for communications and tactical management.

However, where margin is low at day ahead stage and remains low intraday, we still need to cover for the same risk position. Therefore, the previous wording may not remove the very high-cost actions taken to maintain adequate system margin. This is demonstrated through the outcomes of the balancing market review which showed that a unit was as likely to be taken if it changed its profile at day ahead stage or within day stage. Overall, from the 10 highest cost days in winter 2021 covered by the balancing market review, this definition would now apply to £225M in activity for assessment against excessive benefits, in place of £128M in the original drafting.

Table 1: Costs of extending generators with a profile to de-synchronise ahead of the darkness peak period between Sept-21 and Dec-21

Data Type	Cost Incurred
Within Day Revision of PN	£127.8m
Day Ahead PN Submission	£97.0m

Zero output criteria

An output of 0MW is not inherently a concern for operability or for costs within the Balancing Mechanism. There are many legitimate reasons for a 0MW physical notification to be submitted. For most changes to physical notifications, additional energy physical notifications are submitted on other units, thus balancing the overall energy requirement. However, it can provide an opportunity for market power through the positioning of a unit within its Minimum Zero Time to reduce the overall operating margin or through geographically specific, system requirements that can be resolved with a non-zero energy output. For this reason, we are supportive but do not believe that excessive benefits should be derived under any scenario if excessive benefits are appropriately defined.

A conventional synchronous generator operating at 0MW is typically inflexible and unable to respond quickly meaning that to manage operational requirements, long duration actions must be taken. System requirements represent reasons that high-cost actions are taken and provide opportunity for out of market prices to be secured by a balancing mechanism unit. Preventing excessive benefit where a PN is 0MW means that inflexibility will not present an opportunity to obtain excessive benefit from most system needs. However, this increases the importance that any additional benefits provided by units are valued appropriately through markets. In addition, allowing for excessive benefits to be derived under any scenario is not beneficial to the end consumer if those benefits are appropriately measured and make allowance for genuine scarcity, different technology economics and wider market factors.

Operating Configurations

In the scenario where a unit has a multi-shaft generation unit, margin could still be made unavailable for a period by submitting a physical notification to move to a different turbine configuration. This data is currently shared via SONAR rather than BMRS but may still lead to a period close to the Minimum

Zero Time whereby an excessive price may be paid to retain access to the higher Maximum Export Limit.

Question 2: Do you agree with our proposal to limit the scope of the condition to generators with an MZT greater than 60 mins? Please provide reasons for your answer.

Disagree, we understand the reason that flexible units are exempt from this licence condition as a lower utilisation higher profit margin market strategy is a legitimate and important function of the market but if the term excessive is defined correctly it will already allow for flexible units to obtain an excessive benefit in an individual settlement period. The proposal is to use Minimum Zero-Time (MZT) but this is only one measure of inflexibility, and it may be beneficial to also consider Minimum Non-Zero Time (MNZT) if leaving in this exemption.

Exclusion of flexible units

As ESO we are technology agnostic in our consideration of the merit order stack and therefore do not agree with exempting specific technology types within a licence condition. However, we appreciate that there is value in flexible units continuing to base their business case around supporting a scarcity event and thus 'excessively benefitting' from the settlement periods in which the energy or reserve is scarce. However, this would be better addressed through an explicit allowance to use scarcity as a measure of excessive benefit rather than providing an exemption directly.

A 60-minute MZT will exempt most current synchronous peaking units, in addition all asynchronous resources would be able to achieve this outside of a fault condition scenario which may require longer duration zero times.

Whilst units with a low MZT do not typically have a high MNZT there may be value in including this within the definition of flexibility within the licence condition given the purpose is to prevent very long duration runs at out of wider market prices. However, all the very high-cost actions identified in the balancing market review would be covered by this existing proposal.

Specifically with respect to the duration of 60 minutes, we agree that this threshold will not preclude peaking units from participating in a low utilisation high price market strategy and that their flexibility means that benefiting from periods of genuine scarcity is in the interests of consumers. However, we would note that at 60 minutes, this does not allow large synchronous units to choose to adopt this commercial strategy as it would be beyond the absolute technical limitations of these units.

Exempting flexible units from this licence condition will allow for these individual units to obtain 'excessive benefit' in any individual period but it may reduce the prices of inflexible competition which represents a large market share. Thus, it will indirectly reduce prices of flexible units in this period which seek to compete.

Question 3: Is the proposed licence condition drafting in Appendix 1 sufficiently clear? Are there any drafting edits or additions that you would encourage us to consider?

Clarification required, the wording is clear but, there is no explicit consideration of ESO trades in the guidance text.

ESO Trading requirements

The specific condition wording talks to "any relevant arrangement with the electricity system operator". However, the guidance and tests appear to talk to Balancing Mechanism offers only. We believe that the definition in the wording is likely to apply to schedule 7 trades undertaken by the ESO trading team on behalf of the control room, but this is not clear.

Longer duration system requirements can be negotiated at an advantageous cost to the balancing mechanism as any cost risk built into the BM price can be spread over a longer duration by the trading party. For this reason, it is expected that applying the condition to both trades and BM instructions is the intended wording but making this explicit is important for market participants and for ESO in interpreting this licence condition.

Question 4: Do you agree with our approach to considering excessive benefits, as set out in the draft guidance? Are there any other factors we need to consider for inclusion in the supporting guidance?

Additional factors should be considered, we think consideration of variable costs, avoidable fixed costs, shutdown costs, reasonable profit and other factors is appropriate in assessing most costs incurred but may not fully capture excessive benefits. There is potential that the current list prevents a market function of scarcity pricing by providing a definition of the generators cost base rather than a focus on specific out of market pricing characteristics. We think consideration of additional factors within the excessive benefits definition may mitigate this.

Start Costs

For a unit with a 0MW PN it is important to consider their start-up costs explicitly, a unit may have a number of starts with a risk premium for exceeding these, tolling arrangements limiting the number of starts or manufacturer guarantees that only apply for a set number of start conditions or running hours. These could currently be considered as an avoidable fixed cost but may need to be considered as a distinct category alongside shutdown costs for the avoidance of doubt.

Risk of Maintenance

For a unit with less operational out-turn certainty due to upcoming maintenance requirements or known operational issues, being unable to factor in this enhanced risk of unplanned maintenance inclusive of the costs for remedy and the opportunity cost of this maintenance, may encourage a more cautious approach to declaring availability. Whilst it is considered that this is unlikely to occur during a period of scarcity due to the price signals from other forward markets, it is a cost that should be acknowledged as fair and reasonable.

Scarcity

Consideration of overall market scarcity on a settlement period by settlement period basis is desirable from a security of supply perspective. Higher market prices over periods of system stress encourage investment and unlock liquidity, including influencing the position of interconnectors. However, we are supportive of legislation to prevent periods of scarcity pricing extending outside of the period of scarcity itself.

It may be appropriate to explicitly consider a measure of scarcity within other factors, with optionality of using forward market clearing prices as a representative measure, or publicly published Loss of Load Probabilities (LOLP) and De Rated Margin (DRM) at gate closure to prevent internal models that rationalise excessive benefits being used as a measure of scarcity.

Key to any indicator of scarcity that is used is that it should only allow for that price to be reflected within the periods in which it is scarce rather than the entire duration of requirements as created by a unit’s inflexibility. Otherwise, this would continue to advantage an inflexible resource above a flexible resource.

Other forward market indicators

There is no current consideration of the clearing prices for energy in the forward markets such as day ahead or intraday markets. Given that these resolve for the price of energy given prevailing market conditions, we believe these should be considered in the makeup of what is considered an excessive balancing market price. If a unit is not economic to run at a given forward market clearing price due to operational risk, inefficiency, or wider considerations, they ought not to be obligated to offer this capacity in the balancing market at a lower price point to avoid concern over a breach of this licence condition.

If the licence condition does not allow for reference to prevailing market prices, there is a risk that a generator may feel obliged to over-utilise its least efficient units at their least efficient generation output ahead of utilisation via the market, or for flexible units to be withheld from those markets until the BM. This creates a risk of increasing carbon intensity of generation. There is a risk also of creating an incentive to sell a position in those forward markets which the generator never intends to deliver, to benefit from a lower imbalance price than forward market price.

Impact on flexible generation resources

Limiting the opportunity for less flexible, longer duration units to raise their prices during scarcity periods could push overall BM prices downwards, reducing scarcity rents for short-run flexible assets. Further modelling is needed to understand how this might change overall dispatch compared to today, and whether this approach would under-remunerate the option value of flexible resources.

Other variable cost components

Emissions limitations exist under which a unit cannot operate after a certain number of hours running, for this reason they must be able to price in a manner to limit their additional balancing mechanism runs. This is better achieved through price than making a unit technically unavailable so is a reasonable cost to reflect within their BM offer price.

Balancing Service Use of System charges are also an element which should be considered within their cost base even if originally at a 0MW physical notification. Imbalance risk for the event of a failure to start or any enhanced risk of trip from continuing to generate should also be considered in their variable cost base.

Difficulty in benchmarking profitability

Greater clarity on what is considered an industry standard profit for 'reasonable profit' is important both for market participants to understand if they risk exceeding this threshold, and for monitoring bodies in their understanding of how to assess if this threshold might have been breached. Profit margin of units will be fuel-specific, highly variable and are not standard across the whole industry. For example, older plant will be run to a higher profit margin/lower utilisation standard due to their lower efficiency. Each trading party will also have their own outlook on required breakpoints with various commercial arrangements existing between Energy Management Companies and the stations which they trade on behalf of.

It is also important that a settlement period's profitability is not viewed entirely in isolation but in the context of the wider market positioning and profitability over an extended duration, particularly as further synchronous resources run following a lower utilisation/higher price commercial strategy to cover their cost base relating to remaining open.

Appendix 2 – Other issues

Balancing Reserve

"We expect the ESO to consider the impact of our proposed licence condition on their assessment of the need for a new reserve tool"

At ESO we consider all relevant licence conditions and codes in developing new ancillary services. We believe there is still strong consumer benefit from the balancing reserve product as demonstrated by an updated cost benefit analysis which considered a range of BM out-turn prices and explicitly considered a scenario with a version of this licence condition. The analysis suggests that the two changes are complementary, and the proposed licence condition does not significantly erode the benefit delivered by the new balancing reserve product.

In addition, Balancing Reserve will directly value our system requirements and the scarcity of this specific component of operability, whilst providing operational confidence of availability ahead of balancing market timescales. This will encourage long term investment through a transparent revenue stream that does not discriminate based upon a unit's flexibility or require units to adopt a high risk, high reward strategy of holding back capacity until the balancing market.

We believe that this licence condition only achieves one aim of balancing reserve which is to remove the pollution of start-up and shutdown costs from real-time energy balancing prices. Balancing Reserve would avoid the requirement to synchronise machines in the first instance through valuing the headroom held directly. Moving a unit from a 0MW position is inherently more expensive due to the requirement for them to factor in start costs. In addition, this headroom must also be valued at a minimum of the price required to deviate from their 0MW position due to the rules on bid offer structure. Therefore, even after removing instances of excessive benefits, you would expect balancing reserve to lower BM prices.

By valuing reserve requirements at day ahead stage this makes forward markets directly factor in this required system capability. This will incentivise other type of power to consume or produce in line with the margin-adjusted scarcity signals, such as interconnector flows and demand-side flexibility. This should reduce the volume of within-day and real-time ESO actions, like counter trading on interconnectors which currently resolves these issues in a less liquid market.

Demand and Margin Forecasting

"We expect ESO to ensure that its systems do not provide barriers to market participation and to provide accurate forecasts with (at least) continuous incremental improvements to forecasting accuracy"

At ESO we are continuously working to improve our demand and wind forecasting methodologies and accuracy. This is a key focus area for the business with multiple projects ongoing to improve this. However, all incremental improvements in forecasting accuracy require exponentially greater complexity as the demand and generation makeup changes. Therefore, maintaining the same level of forecasting accuracy also becomes increasingly complex and despite continuous improvement in methodologies this may not always lead to incremental improvements in the out-turn forecast accuracy.

Our generation de-rating and de-rated margin forecasting methodologies are published following a codified formula on which the Capacity Market Notices are generated. These are critical for the functioning of the Capacity Market and are not calculations we are currently looking to change as they form the basis for existing contracts.

The ongoing balancing programme aims to minimise any barriers to market participation which currently exist. We are aware of concerns from market participants that smaller, flexible units are under-utilised in the balancing mechanism and that particularly in the event of energy and reserve scarcity that triggered the high-cost days outlined in the balancing market review, their contributions towards margin are not valued adequately.

Our new reserve products in part mitigates this risk but, in our assessment, the introduction of this licence condition does not meaningfully change the likelihood of their activation. This is demonstrated through the balancing market review where even if the forecast error were 0MW, there would have been a requirement to delay de-synchronisation of multiple large units.

Should market participants have views on how we can better reduce barriers to entry through changes to our systems, we would encourage them to engage through the balancing programme.

Market Observations

Across winter 2022 to 2023, we have observed less sharp price responses to de-rated margin in most instances. This is particularly apparent when viewing balancing market offer prices accepted across January 2022 to January 2023. Over this period, from de-rated margins as high as 6GW, offers up to £3500/MWh were required due to the scarcity of reserve induced by operating profiles to de-synchronise in the early afternoon. As these scarcity prices were paid from the point of de-synchronisation until the point of genuine scarcity this meant that settlement periods with adequate operating margins required extremely expensive actions to retain access to the required operating margins across the peak of the day. In the data for winter 2022 to 2023 there were more limited examples of this de-synchronisation behaviour being associated with very high balancing market prices, for example in January 2023 there are not instances where the volume weighted price for any settlement period approaches £1000/MWh. These changes are present in the data across all winter months but is most distinct in January.

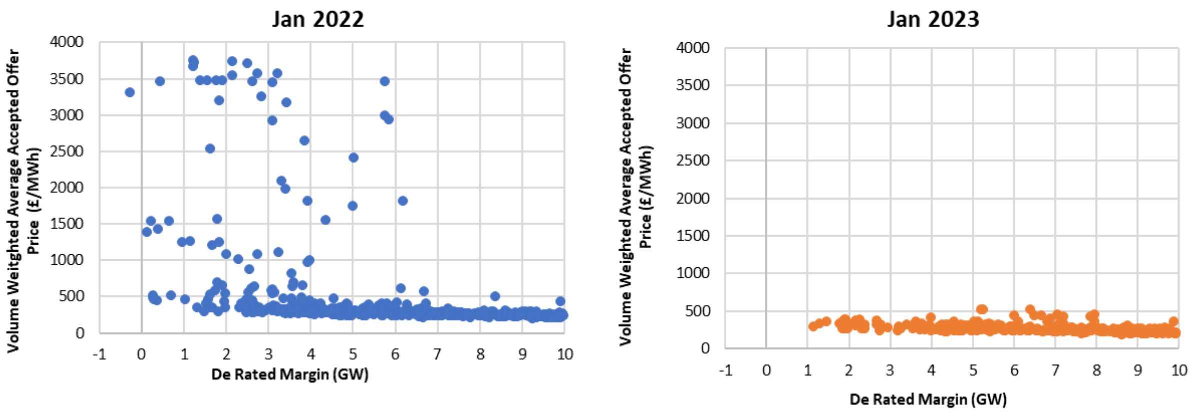

Figure 1: Accepted Prices in £ per MWh (Y axis) compared with a measure of reserve scarcity, derated margin in Gigawatts after reducing by the system tagged bid volume (X axis)

Notable market changes between these dates include the movement of coal units into emergency coal contingency contracts, removing a £4000/MWh benchmark of what might be achieved in the eventuality those units are warmed and the consultation by Ofgem on options to resolve these immoderate pricing responses.

This positive change in market pricing behaviour suggests that a licence condition prohibiting excessive benefits may not have applied to any accepted prices in January 2023. Therefore, the changes introduced by this licence condition would only prohibit behaviours that the market has already found means to self-mitigate. This means that it would be beneficial to allow for account to be taken of additional market indicators in assessing what is an excessively high price, representing an improved approach compared to a strict cost-based methodology. The aim should not be to fundamentally change the balancing market but to rationalise offer pricing practices in the context of actual market conditions and the degree of system stress.