Appendix F

Format for submissions

Submitter	

Questions	Comments
Understanding the characteristics, benefits and future operation of BESS	
Q1. Do you agree we have sufficiently identified the unique characteristics of BESS to assist in developing appropriate arrangements?	Yes, broadly. The paper correctly recognises BESS as both load and generation, and highlights time-shifting, flexibility, and controllability. One area to strengthen is how these characteristics play out for **distributed / aggregated** BESS fleets where multiple functions can be provided simultaneously through **logical BESS partitioning** and prioritisation.
Q2. Do you have any views on how BESSs should be defined in the Code?	A definition should explicitly reflect the bi-directional nature of BESS (charging/discharging), while avoiding a single-role assumption. I suggest defining BESS as a resource capable of both consumption and injection, and allowing for **logical partitioning of capacity** (for settlement/obligation purposes) where supported by auditable telemetry and declared operating constraints.
Q3. Do you agree that BESS can deliver the benefits described? Are there any other benefits that will assist us in assessing the size of benefits of different arrangements?	Yes. In addition to the benefits described, I suggest explicitly recognising: • **Consumer resilience / continuity-of-supply value** (especially for community-scale deployments). • **Network efficiency benefits** from peak shaving and reduced congestion. • **Reduced retail price volatility exposure** for consumer-facing models. • Possible **system strength contributions** (where grid-forming and fault-current-support capabilities are deployed), noting this may become more relevant over time.
Q4. Do you agree with our description of how BESSs are likely to operate and how this will change over time? If not, why?	Broadly yes. Over time, I expect increased: • automation and optimisation, • aggregation/fleet operation, • and participation in both market and network service arrangements. One nuance: emerging models will increasingly allocate capacity concurrently across functions (consumer supply, local resilience, market/network services) via **logical partitioning**, rather than switching the whole asset between modes.

Q5. Do you have any other insights about potential BESS operation that will help with assessing the benefits of our options?	A key operational reality is that BESS value often depends on **priority layering** (eg, reserve some capacity for consumer supply/resilience while offering only a declared portion to market/network services). Regulatory settings that recognise this will enable transparency and innovation. Settings that assume single-purpose operation may unintentionally discourage auditable partitioning and reduce overall system benefits.
Dispatch requirements for BESS when charging	
Q6. Do you agree with the way we have framed the issues?	Yes, largely. The framing appropriately highlights the need to balance flexible BESS operation with system/security requirements. The key is to ensure charging behaviour is visible and manageable where it creates system risk, without imposing disproportionate constraints on benign charging profiles (especially at distributed scale).
Q7. Do you agree with the Authority's preferred option? If not, what are alternative options that would better address the issues? Are there any particular risks with our preferred option that you would like to identify?	Still working on this — I need to review the preferred option in detail against distributed/aggregated use cases. **Provisional view:** Preferred arrangements should: ● preserve efficient charging opportunities, ● ensure system operator confidence where charging can create security risk, ● and avoid creating barriers that inadvertently privilege large, centralised assets.
Bids and offers forms for BESS	
Q8. Do you agree with how we have framed the issues?	Yes. Clear bid/offer forms are necessary to reflect BESS as both load and generation, and to reduce ambiguity in how BESS participates in the market.
Q9. Do you agree with out preferred options? If not what other options would better address the issues identified?	Broadly, yes — with some important caveats. Of the options presented, the introduction of **dedicated, BESS-specific bid and offer forms** appears the most promising. This approach is better aligned with how BESS actually operates, improves transparency around charging versus discharging behaviour, and provides a clearer foundation for representing state-of-charge constraints and logically partitioned capacity. By contrast, continued reliance on adapted legacy generator/load forms risks obscuring BESS behaviour and may unintentionally create friction or misclassification as participation grows. More

	restrictive approaches, if adopted too early, could dampen innovation and disproportionately affect smaller, distributed, or aggregated BESS deployments. While further work is still underway to refine a more robust and implementation-ready position, care should be taken to avoid locking in unnecessarily restrictive paths before the operational diversity of BESS is better understood.
Q10. Do you think further restrictions to BESS participation in MFK under the current arrangements would have any effect on their participation?	Yes — further restrictions are likely to have a material effect on both the level and nature of BESS participation in MFK. Restrictions that treat BESS as a single, indivisible resource risk discouraging participation by multi-function and distributed BESS operators, particularly where those assets concurrently support consumer supply, resilience, and other contracted obligations. Overly rigid eligibility or state-of-charge requirements could incentivise conservative or opaque operating strategies, reducing the effective contribution of BESS to frequency keeping. By contrast, arrangements that allow BESS participants to declare **explicit, auditable participation envelopes** (including state-of-charge boundaries) for MFK, accompanied by a qualified confidence rating reflecting forecast accuracy, operational uncertainty, and compliance history — without requiring surrender of operational control over non-participating capacity — would support reliable participation while maintaining system confidence. In this context, increased visibility should not be conflated with increased dispatch control. Clear separation between *availability declarations* and *control rights* would help preserve participation incentives while addressing the Authority's reliability concerns.
Balancing flexible trading with security needs	
Q11. Do you agree the issues identified by the Authority are worthy of attention? If so, do you agree with our framing?	Yes. As BESS penetration grows, the interaction between flexible trading and security needs becomes increasingly material. The framing is broadly sound; the implementation should preserve innovation while ensuring system/security objectives are met.

Q12. Do you agree that BESS should have the same arrangements when charging and discharging, and that embedded BESS should have the same arrangements as grid connected BESS?	Broadly yes in principle, but with caution. Physical and operational differences (embedded vs grid-connected, distributed vs utility-scale) can materially change risk profiles. Alignment is desirable, but some differentiated treatment may be warranted where justified by system risk and proportionality.
Q13. Do you agree with our preferred new arrangements for BESS?	Broadly, yes — provided the preferred arrangements explicitly accommodate the **multi-function nature of modern BESS**, particularly for distributed and aggregated deployments. Preferred arrangements that improve system operator confidence at gate closure, while preserving operational flexibility, are directionally sound. In particular, approaches that allow BESS participants to **declare auditable availability envelopes** (including state-of-charge boundaries) for specific market or system services are preferable to those that assume full-asset availability or single-purpose operation. However, care is required to ensure that new arrangements do not inadvertently conflate **visibility with control**, or apply obligations uniformly across the physical asset where only a **logically partitioned portion** of capacity is participating in a given function. For community-scale and consumer-integrated BESS models, portions of capacity may be contractually reserved for consumer supply or resilience and should not be subject to override or incompatible obligations. From an operational perspective, arrangements that support: • declared participation envelopes, • transparent prioritisation between concurrent functions, and • proportional compliance aligned to the **function being performed**, are more likely to scale safely than arrangements that rely on hard constraints or centralised control. Overall, the preferred direction is supported, but its success will depend on implementation choices that recognise **logical partitioning, priority layering, and confidence-based declarations** as first-class design features rather than edge cases.

Q14. Do you see any issues with how we have defined state of charge constraints?	The definition should be careful to distinguish **visibility from control**. I support SoC constraints where they are necessary for system/security outcomes, but note that multi-function BESS models may reserve capacity for consumer/resilience purposes. Clear treatment of **logically partitioned capacity** would reduce ambiguity and avoid unintended consequences.
Q15. Do you agree that the benefits of state of charge constraints likely outweigh the costs?	Likely yes, provided the constraints are proportionate and do not require participants to cede operational control beyond what is necessary for system outcomes. The compliance cost burden on emerging/distributed participants should be considered.
Q16. Do you agree with how we have characterised the differences between various options?	Broadly, yes — the Authority's characterisation captures the high-level trade-offs between flexibility, certainty, and complexity. However, the comparison implicitly assumes BESS are operated as single-purpose assets, which materially affects the assessment when applied to distributed, consumer-integrated, or aggregated BESS models. In practice, the relative merits of the options depend less on the specific mechanism chosen, and more on whether obligations are applied at the level of the **function being performed** rather than across the physical asset as a whole. Options that allow participants to declare auditable availability envelopes and prioritisation rules for specific services can preserve system confidence while maintaining flexibility. From this perspective: • lighter-touch approaches may preserve flexibility but risk scaling issues without clearer declarations, • structured declaration-based approaches offer a better balance if logical partitioning is recognised, and • more prescriptive or asset-wide approaches risk suppressing innovation and disproportionately affecting multi-function BESS.
Q17. Are there any other options that you think would better	Yes. In addition to the options outlined, a transitional approach that focuses on **declarative certainty**

achieve the gate closure objectives?	**rather than prescriptive control** may better achieve gate closure objectives while allowing learning as BESS participation scales. One such option would be to require BESS participants to declare, at gate closure, **auditable participation envelopes** for each relevant function (for example, market participation, frequency services, or consumer supply), including any applicable state-of-charge boundaries and prioritisation rules. These declarations would provide the system operator with confidence about what capacity is genuinely available without requiring full asset-level constraints or centralised dispatch authority. This approach could be complemented by graduated assurance mechanisms (such as confidence ratings or compliance history) to address forecast uncertainty over time, rather than imposing uniform restrictions from the outset. Compared with more prescriptive alternatives, this option is likely to better support innovation, proportionality, and safe scaling of distributed and aggregated BESS participation.
Q18. Do you consider an interim solution is necessary? If so, do you agree with the potential solution we suggested?	Yes — an interim solution is likely to be beneficial, provided it is clearly framed as transitional and does not pre-empt or constrain the design of longer-term arrangements. As BESS participation continues to grow ahead of fully developed enduring settings, an interim approach can help manage time-critical system risks while allowing operational learning. In this context, interim measures that rely on **declarative certainty** — such as auditable participation envelopes, state-of-charge boundaries, and prioritisation rules declared at gate closure — are preferable to prescriptive or asset-wide controls. Such an approach would give the system operator increased confidence in near-term availability without requiring BESS participants to surrender control over non-participating or consumer-reserved capacity. It would also allow the Authority to observe real-world behaviour, compliance performance, and scaling effects before finalising permanent arrangements. Accordingly, an interim solution is supported where it is: • proportionate to identified system risk,

	• limited in scope and duration, • compatible with multi-function and logically partitioned BESS models, and • explicitly designed to inform, rather than predetermine, longer-term regulatory outcomes.
Q19. Do you have any information that can help us better understand the benefits and costs of different options? This includes, for example, substantiating the system risks, and how to improve our modelling of benefits.	Yes. While full quantification will require further data and operational experience, there are several areas where modelling could be materially improved to better reflect the real benefits and costs of different BESS arrangements. First, modelling should distinguish between **physical asset capacity** and **logically partitioned functional capacity**. Treating BESS as a single, indivisible resource risks overstating system risk and understating available flexibility where auditable operating constraints and prioritisation rules are in place. Second, benefit–cost analysis should explicitly capture **consumer and community value streams**, including resilience, continuity of supply, reduced exposure to retail price volatility, and peak demand reduction. These benefits are particularly material for distributed and community-scale BESS but are often omitted or treated qualitatively. Third, network impacts should be modelled dynamically rather than statically. Distributed BESS fleets can reduce congestion, defer network investment, and smooth local load profiles, but these effects depend on temporal operation and aggregation behaviour rather than installed capacity alone. Finally, risk assessment should focus on **behavioural and operational uncertainty** rather than asset type. Mechanisms such as declared participation envelopes, state-of-charge boundaries, and confidence ratings provide a basis for modelling compliance performance and system reliability without resorting to overly conservative assumptions. Providing space for limited pilots or exemptions, alongside enhanced data collection, would allow the Authority to validate assumptions and progressively refine modelling approaches before locking in enduring settings.

Constrained off payments	
Q20. Do you agree the issues identified by the Authority are worthy of attention?	Yes. Constrained-off arrangements can influence bidding/offer behaviour and incentives, particularly as BESS becomes more prevalent.
Q21. Do you agree with our framing of the issue?	Broadly, yes. The Authority has correctly identified that constrained-off arrangements will become more important as BESS participation grows, and that poorly designed payments could create unintended incentives. However, the framing would benefit from more explicitly recognising that BESS may be **constrained off for one function while continuing to perform others**. For multi-function and logically partitioned BESS, constrained-off outcomes should be assessed at the level of the **declared participating function**, rather than assumed to apply to the physical asset as a whole. Clarifying this distinction would reduce ambiguity and help ensure incentives align with actual system risk.
Q22. Do you consider having constrained off payments would affect bidding and offering behaviour from BESS?	Yes, likely. Payment structure can influence both risk management behaviour and operational strategies. The design should minimise incentives for non-transparent behaviour while supporting efficient operation.
Q23 . Do you agree with our preferred solution?	Cautious support, provided constrained-off payments are tightly scoped and proportionate. Constrained-off payments are likely to influence BESS bidding and offering behaviour, particularly where batteries manage inter-temporal value through state-of-charge positioning. If applied at the physical asset level, such payments risk encouraging conservative declarations or strategic behaviour that reduces available flexibility. By contrast, a preferred solution that links constrained-off eligibility and compensation explicitly to **declared participation envelopes** — and only to the function that was constrained — would better align incentives with system outcomes. This approach would reduce gaming risk while ensuring participants are neither penalised nor rewarded for capacity that was not genuinely offered.

	Accordingly, the preferred solution is supported where it: • applies at the function level rather than asset-wide, • is based on auditable declarations made at gate closure, • avoids undermining consumer-reserved or resilience capacity, and • preserves incentives for transparent and efficient participation.