



**ENABLING BATTERY ENERGY STORAGE SYSTEMS TO
PARTICIPATE IN THE DEMAND RESPONSE AND
INTERRUPTIBLE LOAD PROGRAMMES**

FINAL DETERMINATION PAPER

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1. Background

- 1.1. The Energy Market Authority (“**EMA**”) supports participation from electricity consumers in the Demand Response (“**DR**”) and Interruptible Load (“**IL**”) programmes to increase system flexibility and enhance grid resilience. With system peak demand projected to grow an annual rate of between 3.1% to 5.5% from 2024 to 2033, alongside rising domestic solar generation capacity, the DR and IL programmes play an increasingly important role in balancing electricity demand and supply.
- 1.2. To facilitate the entry of DR/IL capacity into the Singapore Wholesale Electricity Market (“**SWEM**”), EMA launched a two-year regulatory sandbox in January 2023 to enhance participation in the programmes, which saw the registered DR/IL capacity increase to over 120MW.¹ However, based on EMA’s engagements with the DR/IL aggregators and consumers, it will become increasingly challenging to increase demand-side capacity significantly through pure load curtailment, due to the high opportunity costs for some consumers to participate in the programmes.

2. Comments and Feedback Received to Draft Determination

- 2.1. On 19 Jul 2024, EMA published a draft determination paper that sought industry’s feedback on the proposed rule change to allow battery energy storage systems (BESS) with nameplate rating of 1MW or more but below 10MW to participate in DR and IL, subject to a cap of 150MW for the overall BESS capacity that can be registered as DR and IL assets.²
- 2.2. EMA had received feedback from 11 respondents as shown in **Table 1**.

Table 1: List of Respondents

S/N	Respondents
1	Crystal Clear Environmental Pte Ltd
2	Diamond Electric Pte Ltd
3	Energy Market Company

¹ See <https://www.ema.gov.sg/our-energy-story/energy-demand/non-residential-consumers> for more information.

² See <https://www.ema.gov.sg/content/dam/corporate/partnerships/consultations/enabling-eg-participation-in-demand-response-interruptible-load-programmes/update-19-july-2024/EMA-Consultations-Draft-Determination-BESS-participation-in-DR-IL-20241907.pdf.coredownload.pdf> for more information

4	Engie South East Asia
5	Just Electric Pte Ltd
6	PacificLight Energy Pte Ltd
7	PUB
8	Sembcorp Cogen Pte Ltd
9	Senoko Energy Pte Ltd
10	Singapore District Cooling Pte Ltd
11	NaviX Solutions

2.3. A summary of the feedback from the draft determination paper is as follows:

2.3.1. Industry supported enabling BESS of 1MW or more but below 10MW to participate in the DR and IL programmes, subject to a registration cap of 150MW.

2.3.2. Other feedback includes: (i) requests for EMA to consider a wider range of criteria for the treatment of EGs, rather than excluding all thermal EGs from providing DR and IL; and (ii) a comment that the proposed enhancement creates inconsistent treatment between BESS with nameplate ratings below 10 MW and other types of generators that earn nodal prices.

3. EMA's Determination

3.1. On the feedback to consider applying a broader range of criteria for thermal EGs to participate in DR/IL, EMA has assessed that thermal EGs are pure generators and allowing their participation would deviate from the principle of DR/IL, which is for demand loads to contribute to system needs. In contrast, allowing BESS's participation is in line with the principle of DR/IL, as they can function as both loads and generators.

3.2. On the feedback that the proposed enhancement introduces inconsistent treatment between BESS with nameplate ratings below 10MW and other types of generators which earn nodal price, EMA has assessed that DR payments should not be compared to nodal price, as DR is only activated infrequently during periods of high wholesale electricity prices.

3.3. To unlock the benefits that BESS EGs can bring to the system, EMA will enable BESS EGs with nameplate rating of 1MW or more and below 10MW to participate in DR/IL, subject to a cap of 150MW for the overall BESS capacity that can be registered as DR and IL assets. Grid-connected thermal EGs such as diesel generators and steam turbines will be excluded. BESS EGs' participation in DR/IL will be subject to the parameters in **Table 2**.

Table 2: Modifications to enable BESS EGs to participate in DR/IL

1.	BESS with nameplate rating of 1MW or more and less than 10MW participating in DR/IL will continue to be registered as GSF under the Market Rules and be levied the prevailing market/reserve charges where applicable.
2.	The BESS GSF will be tagged to an identified LRF. BESS that participates in DR/IL will not receive payments for their injection energy quantity, which ensures that the BESS will not earn both DR and energy payouts. Such BESS will continue to pay for their withdrawal energy quantity and fair share of prevailing market/reserve charges.
3.	The LRF with BESS will be subject to the prevailing Market Rules for DR/IL participation in the SWEM.

- 3.4. EMA will maintain a 200MW cap on the overall DR and IL capacity that can be cleared in the market to monitor and manage the impact of DR and IL on the system.

4. Call for Applications

- 4.1. EMA welcomes applications for BESS EGs' participation in DR/IL by 28 February 2025, 2359 hrs Singapore time. Please submit applications to the EMA Energy Capabilities Development Department at the following email address: EMA_ECDD_Demand@ema.gov.sg. Applications should be supported by a letter of intent from the LRF. All applicants must hold a wholesaler/retailer license and be in good standing.
- 4.2. If the total BESS capacity from all applications exceeds 150MW, all applicants will be proportionally allocated (e.g., if the total capacity is 300MW, all applicants will be allocated half of their requested capacity). In this scenario, applicants may choose to withdraw their applications with no drawbacks.
- 4.3. Successful applicants will be required to complete the DR registration within nine months. All applicants who fail to do so will be disbarred from subsequent calls for applications, if any.

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