

Addendum to the Invitation to Tender

System Restart Ancillary Services

ITT No:	14489
Addendum No:	1
Date	25 May 2023
Addendum	<p>Question 1:</p> <p>'Minimum MW ramp rate at a different loading levels of 30%, 60% and 90% or equivalent' appears require tenderers to provide a ramp rate in MW/s. Usually, the ramp rate is provided in MW/min when providing bid and other information to the NEM. Can AEMO confirm if this is the unit of measure required for a compliant bid please?</p> <p>Answer 1:</p> <p>Some generators have two ramp rates. One of them is for when they step up/down the Pref when they are on load control mode (regulating P) and the other one is when the machine is in frequency control mode and responds to frequency variations via its droop curve (this is a faster response).</p> <p>We are interested in the governor's response to contingency events (like contingency FCAS) which is measurement unit is MW/s.</p> <p>This measure is not required for a compliant bid, but may be requested if needed to complete our evaluations.</p> <p>-----</p> <p>Question 2:</p> <p>How will AEMO apply the price listed each of the contract duration tables to the different start dates, especially if the tender submission allows for a start on 01-Jul-24 or 01-Jul-25?</p> <p>Answer 2:</p>

If prices are provided for 3 years and 5 years, and these prices are the same for both start dates selected (1 July 2024 and 1 July 2025), then AEMO will assume the prices will be applied from the earlier start date and may be adjusted for inflation for the later start date in the same manner as the standard contract.

It is ok to submit different prices for the different start dates and different terms, please add more tables as required, or apply notes to explain.

Question 3:

If the Tender submission offers multiple start date options, will the bid be conforming if the tenderer submits a set of prices for 3 year duration and/or 5 year duration for each of the start date options (ie. 4 price grids)?

Answer 3:

Yes the bid will still be conforming.

Question 4:

For tenderers with existing contracts, are they allowed to stipulate existing contract prices for Fin Year 2024 and apply the price grids from 01-Jul-25 onwards and still have a conforming bid?

Answer 4:

Yes.

For clarification, any potential provider can offer a price that changes per year if they wish.

This will still be a conforming bid that will be evaluated against the price of other offers and the procurement objective of long term lowest cost. Please update the tables as required.

Question 5:

What equipment would our BESS restart sources need to energise? (If we were to have a limited amount of reactive power available)

Answer 5:

The BESS needs to initially energise its step-up transformer, and successfully withstand the inrush currents (if they don't have soft start capability). Then transmission lines/cables would be energised towards the next generator. The auxiliary load of the generator is mostly from an induction machine, which requires a large amount of reactive power. The BESS would need to absorb a large amount of MVar if the transmission lines are long.

Question 6, 7 and 8:

- Is the 'proposed reserved energy' for a restart source the MW x duration? i.e. could blocks of energy in MWh be provided in hourly blocks to meet the duration objective?
- Can AEMO provide an estimate of the 'proposed reserved energy' that each of our respective battery assets would need to provide?
- Is the 'proposed reserved energy' the amount of energy that is required to cover the auxiliary power and any losses from re-starting the next nearest generator and network infrastructure?

Answer 6, 7 and 8:

Yes if the BESS is a restart source, then the contract would specify an agreed MWh. The estimate of the proposed reserved energy will vary depending on several factors specific to the bid and other bids.

The required quantity will be determined and discussed with Tenders as necessary during AEMOs assessment, development of restart plans and negotiations.

If a tender is required to alter their proposed reserved energy during this process, AEMO may allow a tender to alter their tender to reflect the revised reserved energy and offered fees, refer to point B.33 of the tender rules.

Please provide an initial offer based on your own technical and commercial assessments, you can refer to the AEMO maps here.

<https://www.aemo.com.au/aemo/apps/visualisations/map.html>

Question 9:

Does a restart source need to provide contracted power for the total restoration time described in Table 1 of the System Restart Standard?

Answer 9:

The BESS would not necessarily have to supply power for all that time, instead AEMO might develop a plan where the battery only needs enough MWh to restore nearby generators/sensitive loads. Also the system restart standard is not the total restoration time, instead Table 1 only specifies the target hours to restore a certain level of generation capacity in the region.

Question 10:

Is it possible to allow a BESS to operate in grid-following mode during normal operations, and during the provision of black-start source services switch over to grid forming mode?

Answer 10:

Yes this control change can be part of the system restart, the BESS would not need to operate in grid-forming mode under normal operation.

Question 11:

What are the operational re-start protocols for re-start of the BESS - is this delivered through comms to the relevant asset operator or does AEMO require operational control?

Answer 11:

Initial dispatch of a restart source is through verbal instructions from the AEMO control room to the asset operator. AEMO arranges secure voice communication, e.g. satellite phones, with all its SRAS providers. Later the AGC system (Automatic Generation Control) would be used by sending out manually set dispatch targets.

Question 12:

What are the anticipated energy variations that are needed to be supported during provision of the restoration support services? This might influence battery SOC during normal operations continuous headroom may need to be maintained to satisfy the service.

Answer 12:

The BESS support service assists with frequency control when load blocks are switched in and the generators take a few minutes to ramp up to meet the demand. Only a relatively small amount of headroom would be needed for this period. Also when other generators are online the battery could begin to recharge while continuing to provide frequency control.