WEM Fast Start Facilities

Fact Sheet

This fact sheet explains the participation of Fast Start Facilities in the Real-Time Market in the WA Wholesale Electricity Market (WEM).

Fast Start Facilities are Facilities that meet the requirements to be classified as such under the WEM Rules[1], and have been approved as Fast Start Facilities in accordance with AEMO's accreditation process.

Capitalised terms in this fact sheet have the meaning given in the WEM Rules, unless otherwise defined.

Frequently asked questions

What are the prerequisites for Fast Start accreditation?

This is detailed in the WEM Rules Glossary (see Fast Start Facility) and summarised below.

A Fast Start Facility must be a Registered Facility, either a Scheduled Facility or Semi-Scheduled Facility, and it must be capable of:

(a) Synchronising and changing its rate of Injection or Withdrawal within 30 minutes of receiving a Dispatch Instruction from AEMO; and
(b) Shutting down within 60 minutes from the time the Dispatch Instruction to synchronise was issued.

Registered Facilities seeking to participate as Fast Start Facilities should also note the requirements in Appendix D of the Technical Specification: Operational Data Points for Registered Facilities[2].

How are fast start parameters communicated to AEMO?

A Fast Start Facility's capability is communicated to AEMO in the form of a Dispatch Inflexibility Profile, via Real-Time Market Submissions (RTMS).

What is a Dispatch Inflexibility Profile?

The Dispatch Inflexibility Profile for a Fast Start Facility represents its MW capacity and time related dispatch inflexibilities, that determine how the Facility is dispatched when triggered on fast start.

[1] Wholesale Electricity Market Rules accessible at https://www.wa.gov.au/government/document-collections/wholesale-electricity-market-rules, as at 27 July 2024.

[2] Technical Specification: Operational Data Points for Registered Facilities accessible at https://aemo.com.au/-

The Fast Start Inflexibility Profile (FSIP) is comprised of the following parameters: T1, T2, T3, T4 (in minutes), and minimum load (MW) (**Minimum Load**). These parameters are defined in the WEM Rules (Cl 7.4.44) and further documented in WEM Procedure: Dispatch Algorithm Formulation[3]. A summary of the FSIP structure is provided below, and a visual representation in *Figure 1*.

There are six modes associated with the FSIP:

- Mode 0 – Offline Mode
- Mode 1 – Synchronising Mode
- Mode 2 – Start-up Mode
- Mode 3 – Minimum Loading Constrained Operation Mode
- Mode 4 – Shutdown Bounded Mode
- Mode 5 – Normal Operation

Mode 1: The Facility has been committed as a result of the dispatch process, and is starting, but not yet synchronised. This Mode lasts for T1.

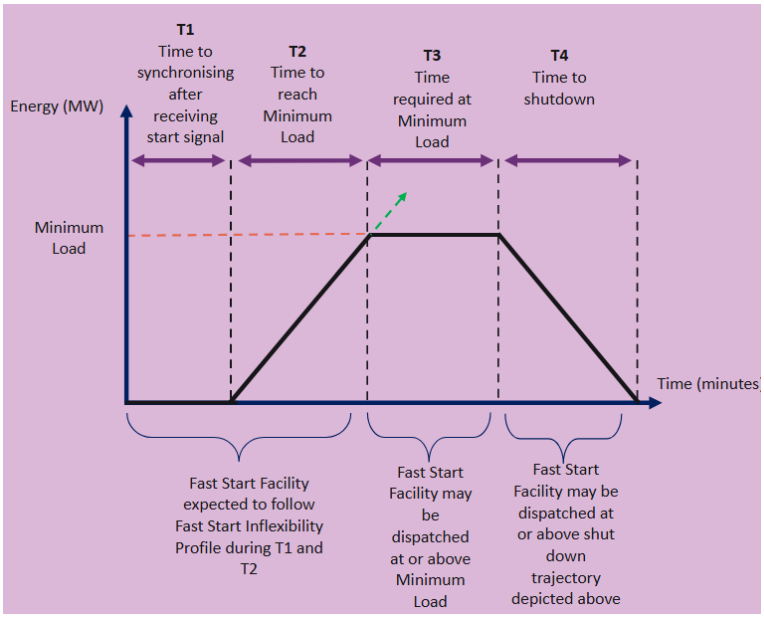
Mode 2: The Facility has synchronised, but has not reached its Minimum Load, and is therefore on a fixed-dispatch trajectory. This Mode lasts for T2.

Mode 3: In this Mode, the Facility has reached its Minimum Load, but has not operated at or above this level for the required period of time, i.e. T3**.** In Mode 3 the Facility may be dispatched at or above the Minimum Load.

Mode 4: The Facility has been running at or above its Minimum Load level for longer than T3, but has not been running longer than T2 + T3 + T4. In this mode, the Facility may be dispatched at or above the MW value indicated by the shut-down trajectory (the shut-down trajectory is depicted below T4, *Figure 1*).

Mode 5: After T2 + T3 + T4 minutes, the Facility is now in normal operation and it is eligible for shut-down. The Facility is dispatched the same way as any other regular unit (i.e. via security constrained economic dispatch) until the MW target becomes zero and the Fast Start Facility is placed into Off-Line Mode (Mode 0).

Figure 1: A visual representation of a Dispatch Inflexibility Profile



/media/files/electricity/wem/participant_information/guides-and-useful-information/operational-data-points-for-registered-facilities-technical-specification.pdf, as at 17/06/2022

[3] WEM Procedure: Dispatch Algorithm Formulation accessible at https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/wa_wem_consultation_documents/2023/aepc_2023_03/pcr-documents/wem-procedure---dispatch-algorithm-formulation-v20-clean.pdf?la=en&hash=AF36AD58AD979A9CFADB1265409B8FC5, as at 12 December 2023.

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How is Fast Start activation triggered in the dispatch process?

Fast Start activation will occur when:

- A Fast Start Facility includes a valid FSIP in its RTMS; **and**
- It is committed via usual security constrained economic dispatch.

Once activated, the Fast Start Facility will receive start signals in accordance with Technical Specification: Automatic Generation Control, SCADA Dispatch Instructions, and Fast Start Facility Operational Behaviour[4]. The Fast Start Facility will have until T1 to synchronise following the start signal, from which point it is expected to follow the Dispatch Inflexibility Profile (*Figure 1)*.

A detailed description of Fast Start activation is included in the WEM Procedure: Dispatch Algorithm Formulation[5].

How long will my Facility be dispatched for on fast start?

Once triggered on fast start a Facility will run for a minimum of T2 + T3 + T4; spending a minimum of T3 at or above the Minimum Load.

After T2 + T3 + T4 minutes, the Fast Start Facility is considered in normal operation and is dispatched the same as any other Facility, according to security constrained economic dispatch. In this mode the Facility may be dispatched to 0MW if economic and security conditions allow.

How are Facility ramp rates considered in fast start?

When triggered on fast start, alternative ramp rate limitations may be applied for Fast Start Facilities. Where applicable, these alternative limitations will prevail over the ramp rate limitations applied during the Facility's normal operation. Ramp limitations in each of the fast start modes are:

Mode 1: Hard constraint maintaining the Facility at 0MW during synchronisation.

Mode 2: Soft application of the profile depicted under T2 (*Figure 1*), but normal ramp rate limitations are considered.

Mode 3: In this mode it is assumed the Facility will be able to reach its Minimum Load. This means that a Facility may be scheduled above its normal ramp rate, if it is operating below its Minimum Load.

Mode 4: The profile T4 (*Figure 1*) acts as a floor, and the Facility's normal ramp rate are considered.

Does my Facility need to bid 'In-Service' be dispatched as a Fast Start Facility?

Yes. When the Facility is participating as a Fast Start Facility, it must bid 'In-Service' with an appropriate FSIP, in order to dispatched as a Fast Start Facility.

How is a Fast Start Facility dispatched?

For a technical guide on the dispatch of Fast Start Facilities, including information on how start commands are issued, please refer to Technical Specification: Automatic Generation Control, SCADA

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[4] Technical Specification: AGC, SCADA Dispatch Instructions and Fast Start Facility Operational Behaviour, accessible at https://www.aemo.com.au/-/media/files/electricity/wem/participant_information/guides-and-useful-information/technical-specification--agc-scada-dispatch-instructions-and-fast-start-facility-operational-behavio.pdf?la=en, as at 27 July 2024

[5] WEM Procedure: Dispatch Algorithm Formulation accessible at https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/wa_wem_consultation_documents/2023/aepc_2023_03/pcr-documents/wem-procedure---dispatch-algorithm-formulation-v20-clean.pdf?la=en&hash=AF36AD58AD979A9CFADB1265409B8FC5, as at 12 December 2023.

Dispatch Instructions, and Fast Start Facility Operational Behaviour[6].

How can my Registered Facility become accredited as a Fast Start Facility?

Registered Facilities seeking to participate as Fast Start Facilities can reach out to WA Market Operators (wa.operations@aemo.com.au) to commence the Fast Start accreditation process.

Where can I find more information?

The following resources include information on fast start arrangements and have been referenced in this FAQ:

- WEM Procedure: Dispatch Algorithm Formulation
- Wholesale Electricity Market Rules
- Technical Specification: Automatic Generation Control, SCADA Dispatch Instructions, and Fast Start Facility Operational Behaviour
- Technical Specification: Operational Data Points for Registered Facilities

Alternatively, please contact WA Real-Time Market Monitoring (wa.rtm@aemo.com.au).

[6] Technical Specification: AGC, SCADA Dispatch Instructions and Fast Start Facility Operational Behaviour, accessible at https://www.aemo.com.au/-/media/files/electricity/wem/participant_information/guides-and-useful-information/technical-specification--agc-scada-dispatch-instructions-and-fast-start-facility-operational-behavio.pdf?la=en, as at 27 July 2024