Agenda

1. Proposed Operational Data Points Technical Specification for new Facilities

2. Proposed operation of Look Ahead points and Fast Start Facility considerations

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Technical Specification: Operational Data Points for Generating Facilities - Scheduled

- AEMO will shortly circulate a draft of the new Technical Specification.
- This document provides guidance on the requirements for new facilities seeking to participate in the WEM.
- Includes AEMO's proposed requirements for grid-scale Electric Storage Resources (e.g. batteries).
- Includes updates for requirements for other technology types.
- May require additional specific points depending on site specifics (e.g. special protection schemes)
- As new technologies mature, AEMO will continue to review and update.
- AEMO seeks feedback on the content and usefulness of this document.

Technical Specification: Operational Data Points for Generating Facilities – Semi-Scheduled and Non-Scheduled

- No change for existing Intermittent Non-Scheduled Generators that are automatically dispatched and have overall Facility MW and ramp rate setpoints.

- Facilities that do not have automated setpoint control will need to have these installed if they are classified as a Semi-Scheduled Facility.

- Smaller Facilities (<10 MW) are likely to be classified as Non-Scheduled Facilities. These Facilities do not need to receive automated setpoints, but do need to be able to respond to AEMO directions (via phone).

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Look Ahead Points

- A number of facilities currently operate with Look-Ahead points that receive indicative Dispatch Targets at fixed periods ahead of real-time.

- Proposal that Look-Ahead 1 (currently fixed at +5 minutes for all participants) becomes the Dispatch Target (EOI) value in the new market.

- For a facility with existing Look-Ahead points more than 5 minutes ahead, AEMO can feed Dispatch Schedule forecasts to these points.
  - Only provided at the Dispatch Schedule granularity (5 minutes).

- Facilities will need to consider implications for their future operation.

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Example: Changes to Lookahead Signals

Current Market
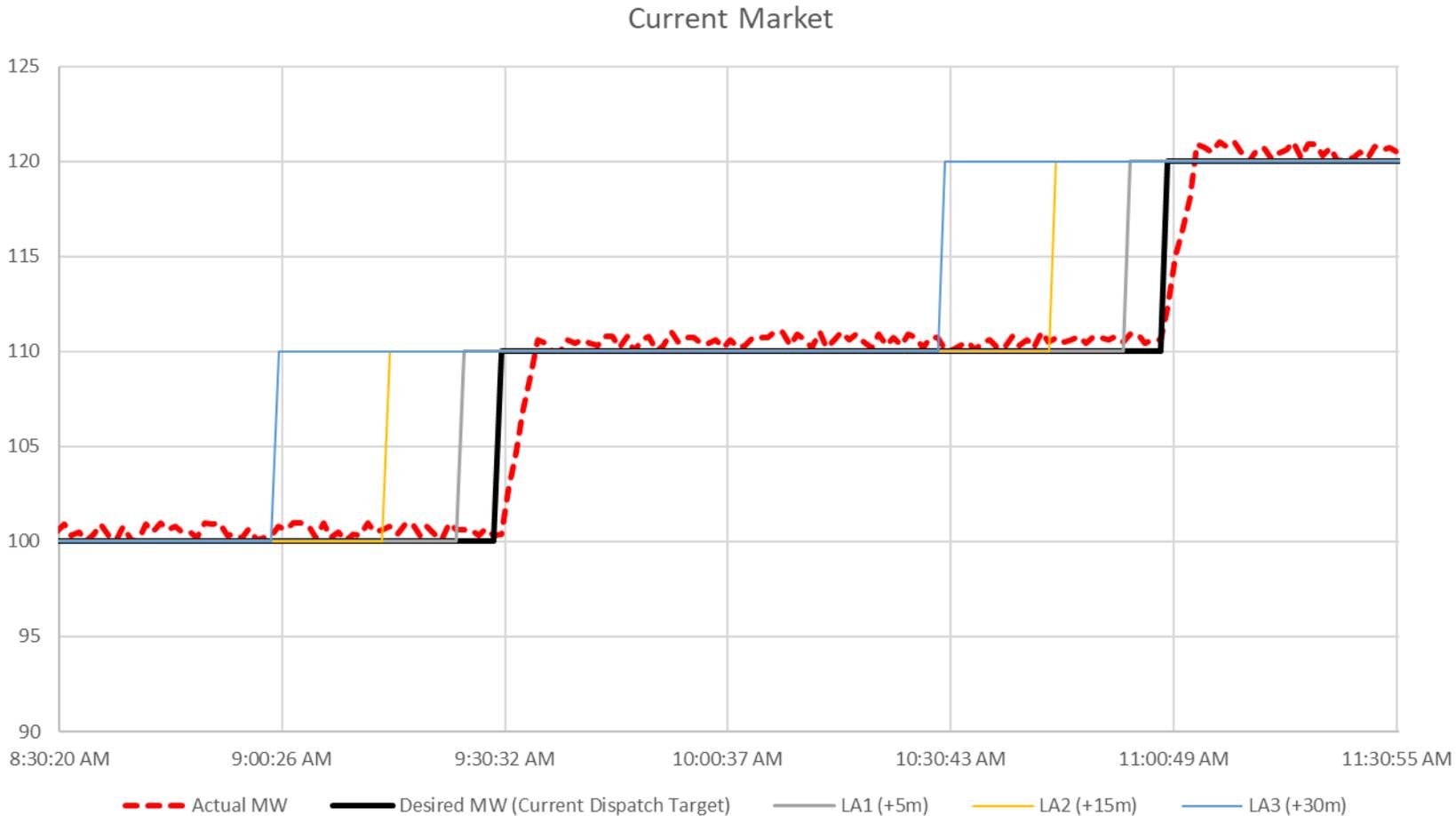
Current Market

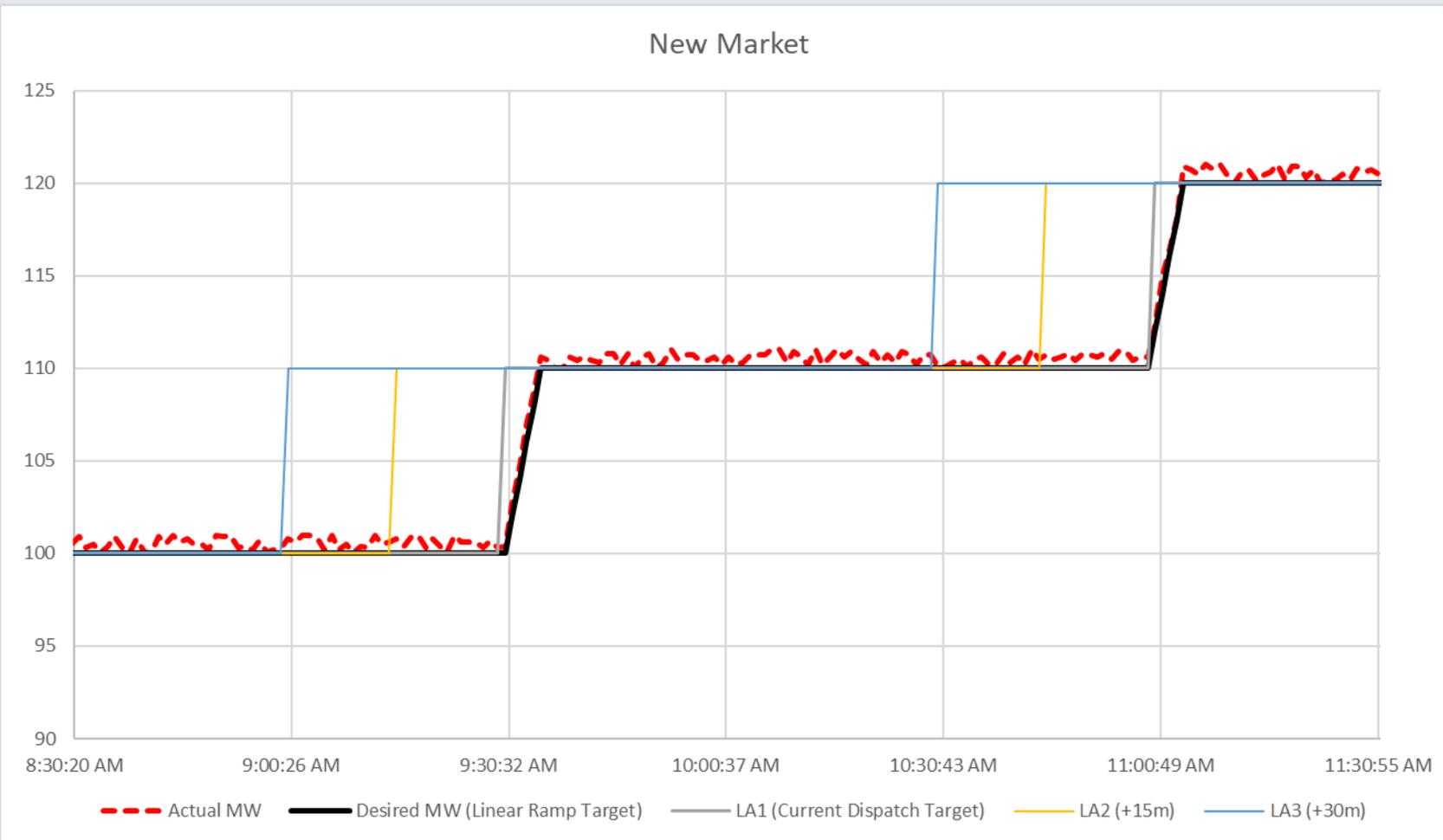Facility moving from 100MW to 110MW and then 120MW.

Desired MW = Current Dispatch Target (EOI)
Lookahead 1 = + 5 minutes
Lookahead 2 = +15 minutes
Lookahead 3 = +30 minutes

New Market

Facility moving from 100MW to 110MW and then 120MW.

Desired MW = Linear Dispatch Target
Lookahead 1 = Current Dispatch Target
Lookahead 2 = +15 minutes
Lookahead 3 = +30 minutes

Fast Start Operation and Look Ahead Points

- If a Facility wishes to participate as a Fast Start Facility, it will need a SCADA point for AEMO to send indications of a start to.

- This could be:
  - An existing or new digital start control;
  - An existing or new analogue point, with an agreed value to indicate start/stop

- AEMO can facilitate both approaches.

- Participants will need to consider facility logic in response to Look Ahead signals while bid as a Fast Start Facility.
  - If a Facility wishes to enable logic to automate its start based on look-ahead signals, it will need to rebid not using a FSIP, and manage its own start.

- AEMO seeks feedback from Participants who have Facilities that they wish to operate as Fast Start Facilities on:
  - How they wish for Fast Start signals to be communicated to their facilities;
  - How these fast start signals may interact with existing facility logic; and
  - Any other matters of concerns or any clarifications sought in relation to this topic.

Example 1: Self-Commitment Operation

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12:00 WEMDE Run

Item	12:05	12:10	12:15 – LA2	12:20
Dispatch Target	0 MW	-	-	-
Pre-Dispatch indicative target	-	0 MW	0 MW	15 MW
FSIP Mode	N/A	-	-	-
Facility Status	Ready to Start			

- Facility forecast to receive a dispatch target at 12:15 for 12:20 based on current Pre-Dispatch
- Facility has 15 minute sync time. This is linked to the Look-Ahead 2 point (LA2), which is fed the results of the 15 minute ahead Pre-Dispatch outcomes.
- At 12:00, 15 minutes ahead is still forecast for 0 MW Dispatch Target, and so no action is taken.

12:05 WEMDE Run

Item	12:10	12:15	12:20 - LA2	12:25
Dispatch Target	0 MW	-	-	-
Pre-Dispatch indicative target	-	0 MW	15 MW	20 MW
FSIP Mode	N/A	-	-	-
Facility Status	Start initiated			

- At 12:05, the PD results are updated for 12:20, indicating a 15 MW target. The Facility has chosen to implement automated logic to start at this point.
- The Participant should re-bid the Facility to ensure it is clearing for the appropriate quantity for the 12:20-12:25 Dispatch Interval at this point.

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12:10 WEMDE Run

Item	12:15	12:20	12:25 - LA2	12:30
Dispatch Target	0 MW	-	-	-
Pre-Dispatch indicative target	-	15 MW	20 MW	20 MW
FSIP Mode	N/A	-	-	-
Facility Status	Start in Progress			

- Facility is in the process of starting.
- Note, the 12:20 Pre-Dispatch will only indicate a dispatch if the facility has rebid as "In-Service" for this interval. If the Facility is still bid as "Available", this value will be zero, as it will not be considered for dispatch within its start time.

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12:15 WEMDE Run

Item	12:20	12:25	12:30 – LA2	12:35
Dispatch Target	15 MW	-	-	-
Pre-Dispatch indicative target	-	15 MW	20 MW	30 MW
FSIP Mode	N/A	-	-	-
Facility Status	Synchronised			

- Facility synchronises at 12:15, and aims to hit its first Dispatch Target of 15 MW on a linear trajectory at 12:20.

Example 2: Fast Start Operation

12:00 WEMDE Run

Item	12:05	12:10	12:15 – LA2	12:20
Dispatch Target	0 MW	-	-	-
Pre-Dispatch indicative target	-	0 MW	0 MW	15 MW
FSIP Mode	0	-	-	-
Facility Status	Ready to Start			

- Facility forecast to receive a dispatch target at 12:15 for 12:20 based on current Pre-Dispatch
- Facility has 15 minute sync time. The Look-Ahead 2 point (LA2), which is fed the results of the 15 minute ahead Pre-Dispatch outcomes.
- At 12:00, 15 minutes ahead is still forecast for 0 MW Dispatch Target, and so no action is taken.

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12:05 WEMDE Run

Item	12:10	12:15	12:20 - LA2	12:25
Dispatch Target	0 MW	-	-	-
Pre-Dispatch indicative target	-	0 MW	15 MW	20 MW
FSIP Mode	0	-	-	-
Facility Status	Ready To Start			

- At 12:05, the PD results are updated for 12:20, indicating a 15 MW target. The Facility has chosen not to implement automated start logic in this instance, and so does not respond to this signal.

12:10 WEMDE Run

Item	12:15	12:20	12:25 - LA2	12:30
Dispatch Target	0 MW	-	-	-
Pre-Dispatch indicative target	-	15 MW	20 MW	20 MW
FSIP Mode	0	-	-	-
Facility Status	Ready to Start			

- As per previous run.
- Note that as Facility is offered as FS, and therefore as "In-Service". This means that the 12:20 Pre-Dispatch is continuining to indicate the likely dispatch target, as the offer is not filtered.

12:15 WEMDE Run

Item	12:20	12:25	12:30 – LA2	12:35
Dispatch Target	0 MW	-	-	-
Pre-Dispatch indicative target	-	15 MW	20 MW	30 MW
FSIP Mode	1	-	-	-
Facility Status	Start initiated			

- At 12:15, the WEMDE first pass run would have dispatched this Facility for 15 MW. However, as it was enabled for Fast Start, the second pass run clamps it to 0 MW and initiates a start, dispatching the 15 MW elsewhere for this interval.

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12:20 WEMDE Run

Item	12:25	12:30	12:35 - LA2	12:40
Dispatch Target	0 MW	-	-	-
Pre-Dispatch indicative target	-	20 MW	30 MW	30 MW
FSIP Mode	1	-	-	-
Facility Status	Start in Progress			

- As the Facility is still in FS mode 1, it is clamped to zero again.

12:25 WEMDE Run

Item	12:30	12:35	12:40 - LA2	12:45
Dispatch Target	15 MW	-	-	-
Pre-Dispatch indicative target	-	30 MW	30 MW	30 MW
FSIP Mode	2	-	-	-
Facility Status	Synchronised			

- The Facility synchronises, and begins its ramp, moving to FS mode 2.

Example 3: Fast Start Operation in response to a contingency

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12:00 WEMDE Run

Item	12:05	12:10	12:15 – LA2	12:20
Dispatch Target	0 MW	-	-	-
Pre-Dispatch indicative target	-	0 MW	0 MW	0 MW
FSIP Mode	0	-	-	-
Facility Status	Ready to Start			

- Facility is not forecast to run under current conditions

12:05 WEMDE Run

Item	12:10	12:15	12:20 – LA2	12:25
Dispatch Target	0 MW	-	-	-
Pre-Dispatch indicative target	-	30 MW	30 MW	35 MW
FSIP Mode	1	-	-	-
Facility Status	Start initiated			

- Just prior to 12:05, a contingency occurs. The constraint / rebid of the tripped unit means that this Facility is now required to operate.
- However, as it is bid as a Fast Start Facility, it's Dispatch Target is clamped to 0 MW, and it is sent a start signal.

12:10 WEMDE Run

Item	12:15	12:20	12:25 - LA2	12:30
Dispatch Target	0 MW	-	-	-
Pre-Dispatch indicative target	-	30 MW	35 MW	40 MW
FSIP Mode	1	-	-	-
Facility Status	Start in Progress			

- Facility is in the process of starting.

12:15 WEMDE Run

Item	12:20	12:25	12:30 - LA2	12:35
Dispatch Target	20 MW	-	-	-
Pre-Dispatch indicative target	-	20 MW	30 MW	30 MW
FSIP Mode	2	-	-	-
Facility Status	Synchronised			

- Facility synchronises at 12:15, and aims to hit its first Dispatch Target of 15 MW on a linear trajectory at 12:20.

Transitional Arrangements

Proposal to support transition

- In order to de-risk cutover and help support both AEMO and participant readiness, AEMO is investigating options for testing/implementing AGC-based balancing earlier

- One proposal is to use the Desired MW to ramp the Facility at the same Ramp Rate as its Dispatch Instruction

- This essentially implements the same control logic as linear ramping, but using the current non-linear ramp rates of the balancing market which means the switchover to SCED becomes much simpler (just a change in ramp-rate and look-ahead 1)

- Potential also to look at moving the LA1 signal early as well

- It would require some transitional rules to support implementing this ahead of market start

- AEMO is seeking feedback from participants on the implications to their site automation or business processes, and whether this could be accommodated ahead of market start

Example