



WA DER Market Participation Forum

14 June 2023



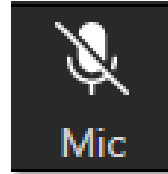
Welcome

Tom Butler – Manager, WA Distributed Markets

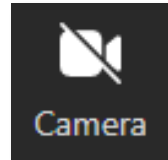
We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

We pay respect to their Elders past, present and emerging.

Online forum housekeeping



Please mute your microphone during the presentation.



Please leave your camera off as well but we'd love to see you during Q&A!



We are very interested in questions and feedback.

We will pause regularly to give you time to:

- comment in the chat; or
- raise your hand to ask a question.



We will share a copy of the presentation slides as a PDF after the meeting.

We welcome feedback via
WADERProgram@aemo.com.au

Agenda

*Please note that this meeting will be recorded by AEMO and may be accessed and used by AEMO for **capturing meeting outcomes**. By continuing, you consent to AEMO recording the call and using the recording for this purpose. If you do not consent, you may exit the meeting. No other recording of the meeting is permitted.*

1. **Welcome, recent updates and upcoming priorities** by Tom Butler
2. **Energy Policy WA update** by Aden Barker, Director Network Regulation & Customer Participation
3. **Project Symphony PMO update** by Kim McArthur
4. **Project Symphony Observations** by Bruce Redmond and Jason Hart
5. **Possible market arrangements for DER aggregators** by Bruce Redmond and Jason Hart
 - **Topics for discussion and feedback**
 - DER Aggregator Registration
 - Metering
 - Symphony Integration Approach (introduction)

5. Next steps & Close

Wrap up from the quarter, and upcoming priorities



Tom Butler, Manager WA Distributed Markets

WA Distributed Markets

Our vision:

Enabling DER and new technologies to be **an integral part of the SWIS through the WEM** by supporting security and reliability, as we move towards a 100% instantaneous renewable energy power system.

Focus Last Period

- Project Symphony
 - Final platform testing.
 - Commencement the 'Test and Learn' phase for all test scenarios.
- [Publication of Procedure Change Proposal, WEM DER Register Information](#) in December 2022 and consultation period in January 2023.
- Publication of Technical Report – [Compliance of DER with AS/NZS4777.2:2020 Technical Settings](#).
- System Restart Arrangements – Research into potential roles for DER in the restart process.
- Input into operational processes such as NCESS requirements and procurement.

Upcoming Focus

- Project Symphony
 - Testing and Analysis transitioning.
 - Recommendation development for DER Aggregator arrangements in the WEM.
 - Preparation of final reports and CBA with partners.
- Publication of Research into potential roles for DER in the system restart process.
- Emergency Solar Management enhancements (increase visibility, compliance, monitoring).
- Engaging with EPWA and Nationally on cyber security considerations for DER.
- Engaging with EPWA's Roles & Responsibilities Phase two review.
- Developing forward work plan for implementation of DER Roadmap Actions 26, 27, 29 and 30.



WA DER Market Participation Forum:

- 5 July 2023 (additional session)
- 13 September 2023
- 13 December 2023

View previous presentations on our forum web page:

[WA DER Market Participation Forum](#)

Contact us:

WADERProgram@aemo.com.au



Government of Western Australia
Energy Policy WA

Update by Energy Policy WA

Aden Barker

Director Electricity Networks & Customer Participation

Working together for a
brighter energy future.

Project Symphony

Our energy future

Project update by the PMO

Kim McArthur

Program Manager

Project Symphony

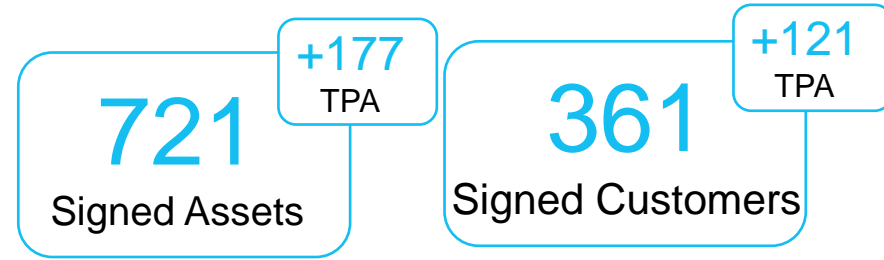
In partnership with:



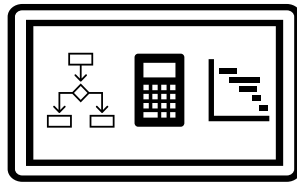
Project Symphony has received support from the Australian Renewable Energy Agency (ARENA) as part of ARENA's Advanced Renewables Program.

Project Symphony Success Criteria & Achievements to Date

Customer participation



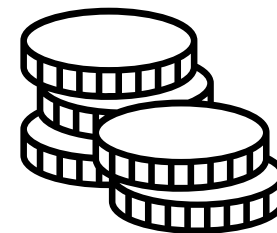
Technology solutions



Stability Period 'Go-Live' achieved.
A 90 day period during which no high severity defects on the technology platforms are to be incurred across the four must have scenarios.

NSS & BMO, CTZ and ESS scenarios are all now live.

Value



\$1.4B
Potential economic value. Commercial process for CBA has been awarded with results to be delivered in mid August

Test and Learn Progress Update

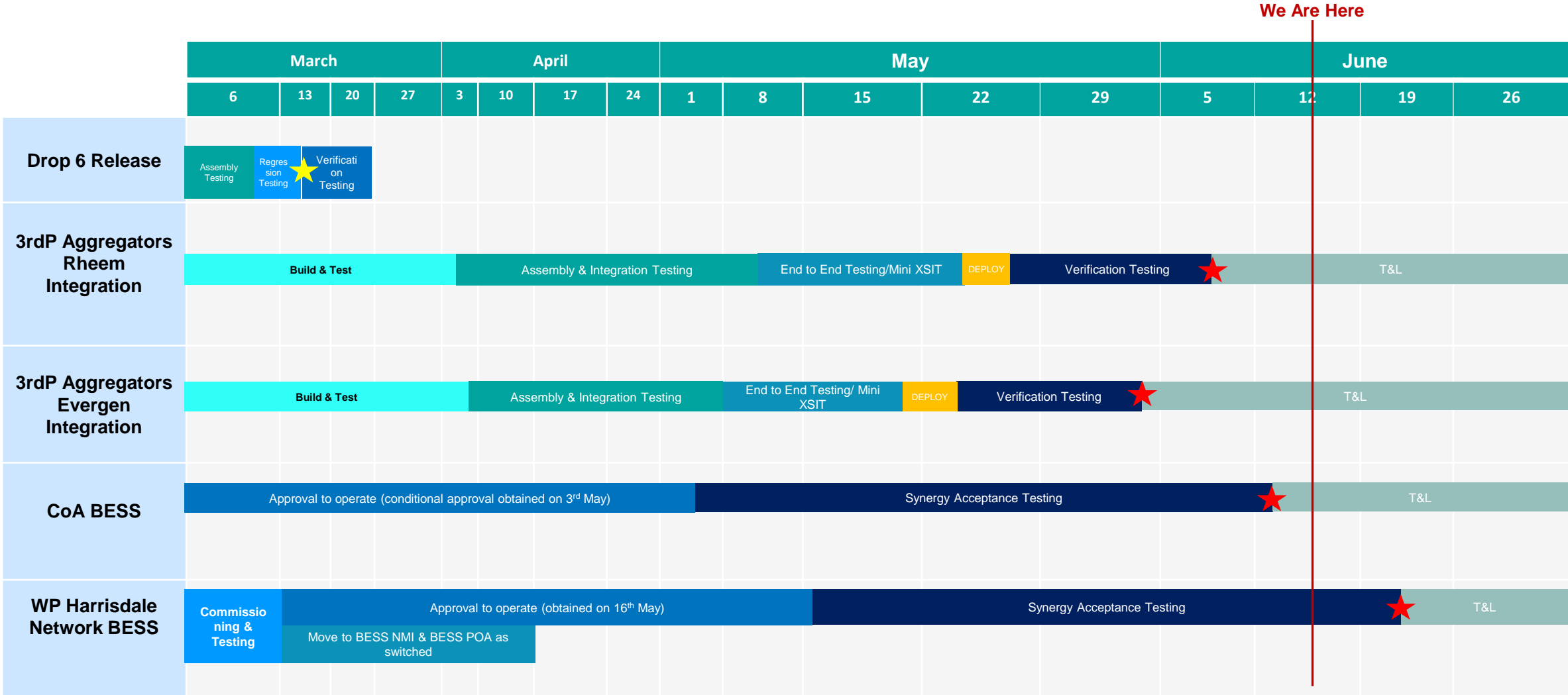
The high-level stability period test plan / schedule below. We have completed 2 or 3 months of testing. The findings and test results will be communicated later in the forum.

High-Level T&L Execution Schedule													
	Mar			Apr			May			Jun			
BMO	VT + Regression + Data Validation			Residential DER	Residential DER	Residential DER	TPA + DER	TPA + DER	BESS + TPA + DER	BESS + TPA + DER	BESS + TPA + DER	BESS + TPA + DER	BESS + TPA + DER
NSS	VT + Regression + Data Validation			Residential DER			TPA + DER	BESS + TPA + DER	BESS + TPA + DER			BESS + TPA + DER	
ESS-CR	Regression + Data Validation			Residential DER	Residential DER	TPA + DER	BESS + TPA + DER	BESS + TPA + DER	BESS + TPA + DER	BESS + TPA + DER	BESS + TPA + DER	BESS + TPA + DER	
CTZ	Regression + Data Validation			Residential DER	Residential DER							miro	

90Day Stability Period

Today

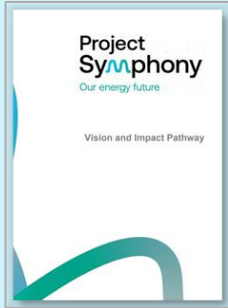
Integration Plan Summary up to June '23



ARENA Deliverables

LIBRARY
PUBLISHED

Milestone 3 documents have been submitted and will be available for review in a few weeks.



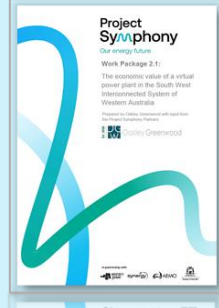
Vision and Pathway Work Package

Outline of the economic value of a virtual power plant (VPP) in the South West Interconnected System (SWIS) of Western Australia.



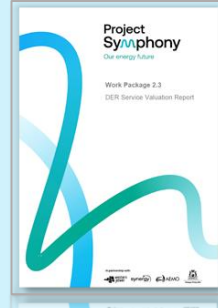
Pilot area report Work Package 1.1

Defines the selected pilot area that will be the focus of Project Symphony by using existing network data and possible future scenarios using Western Power's Grid Transformation Engine



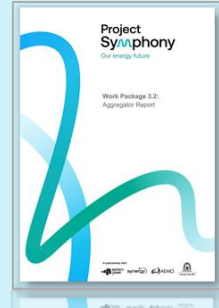
DER Services Work Package 2.1

Outline of the economic value of a virtual power plant (VPP) in the South West Interconnected System (SWIS) of Western Australia.



DER Service Evaluation Work Package 2.3

Valuation of Distributed Energy Resource Services:



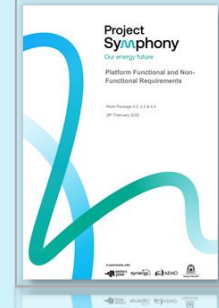
Aggregator Report Work Package 3.2

Results of two customer surveys to understand the sentiment of residential and commercial customers towards DER orchestration and Third-Party Aggregators.



Distribution Constraints Optimisation Algorithm Report Work Package 4.1

This document compares four equitable allocation methods, or Distribution Constraint Optimisation Algorithms (DCOA),



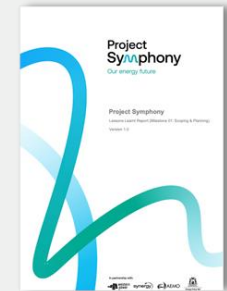
DSO Platform Work Package 4.3

Describes the approach, requirements, and conceptual design for the DSO platform delivered by Western Power for Project Symphony.
*Combined with 4.2 & 4.4

LESSONS LEARNED



Milestone 1 Scope and Planning



Milestone 2 Build and Integrate

Milestone 4 Deliverables

Milestone 4: Project Completion

Social Science Study (WP3.3)

DER Market Participation Principles Report (WP7.3)

AEMO Planning and Forecasting Report (WP7.4)

Regulation and Rules Report (WP7.1)

Market Participation Requirements Report (WP7.2)

Cost Benefit Analysis (CBA) Method Report (WP8.3)

End Project assessment of industry transition (WP8.2)

Project Close Out Report and Public Dissemination Report (WP8.4)

Provision of a Final Report



Project Symphony

Our energy future

Observations

In partnership with:



Project Symphony has received support from the Australian Renewable Energy Agency (ARENA) as part of ARENA's Advanced Renewables Program.

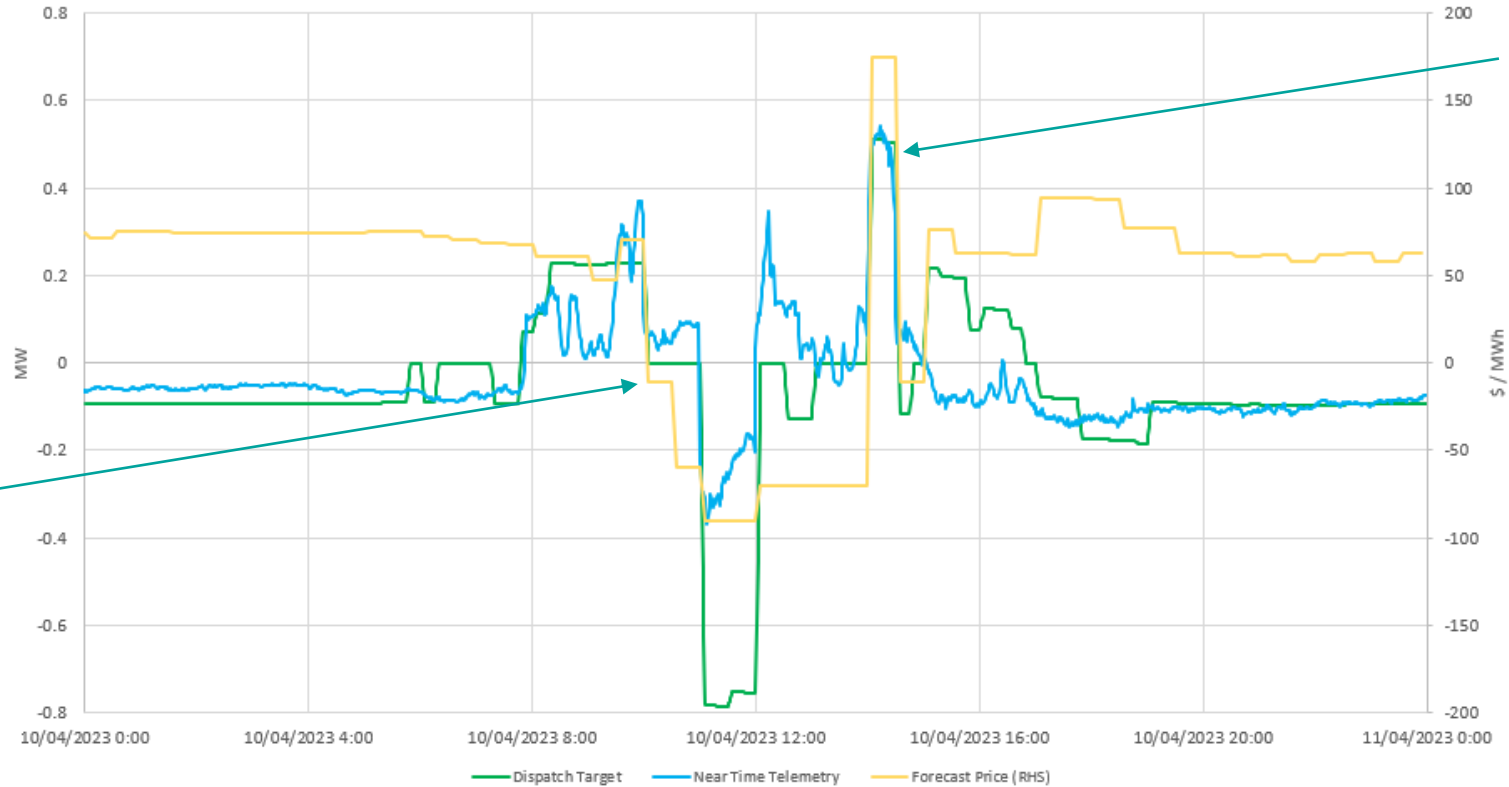
Observations

- WEM simulation demonstrating dispatch within network constraints (DOE's)
- All test scenarios are underway with testing identifying opportunities and limitations as it progresses
- The Aggregator is undertaking a constant exercise of trading off market and network opportunities against customer expectations for 'behind the meter' services from their DER to maximise benefits to the customer
- Optimisation has to combine and enhance forecasting and control of the aggregated facility
- The resulting aggregation does not cleanly align to current WEM participation arrangements...

Orchestration example on 10th April

The facility operated autonomously on what was initially a sunny public holiday before a storm front arrived in the mid afternoon.

Plentiful rooftop PV production across the SWIS results in negative prices and the facility responds.



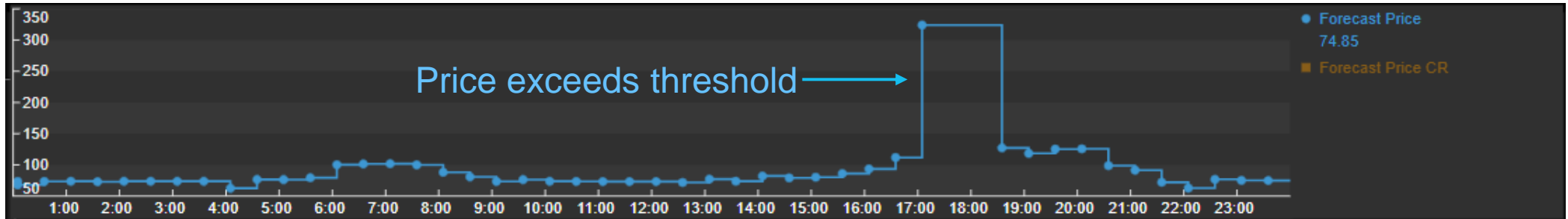
In the afternoon the storm front arrives. Prices spike.

Rooftop PV generation across Perth decreases from almost a GW of generation to nothing and is replaced by the generators who are scheduled to respond to the event.

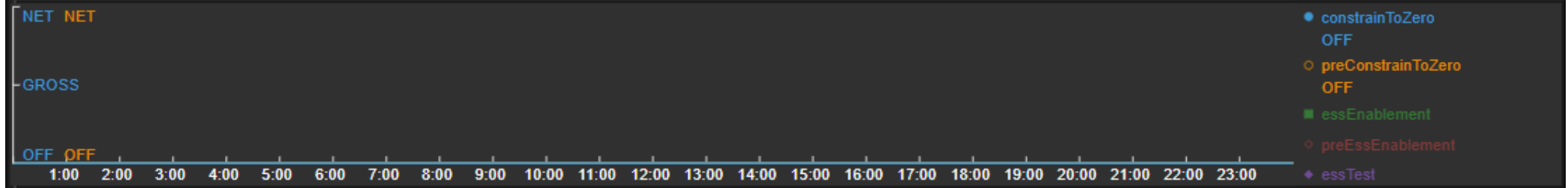
While other houses are spilling their excess solar in the morning then seeing it disappear with the clouds, the VPP offers to operate in reverse. It is instructed to reduce injection of additional energy and to withdraw, which can be achieved by storage or curtailment, when the wholesale price of electricity is negative. It then injects energy into the balancing market when the prices are high. On this day high prices occurred earlier than usual and were incorporated into coordinated actions.

Real Time View of Energy Scheduling

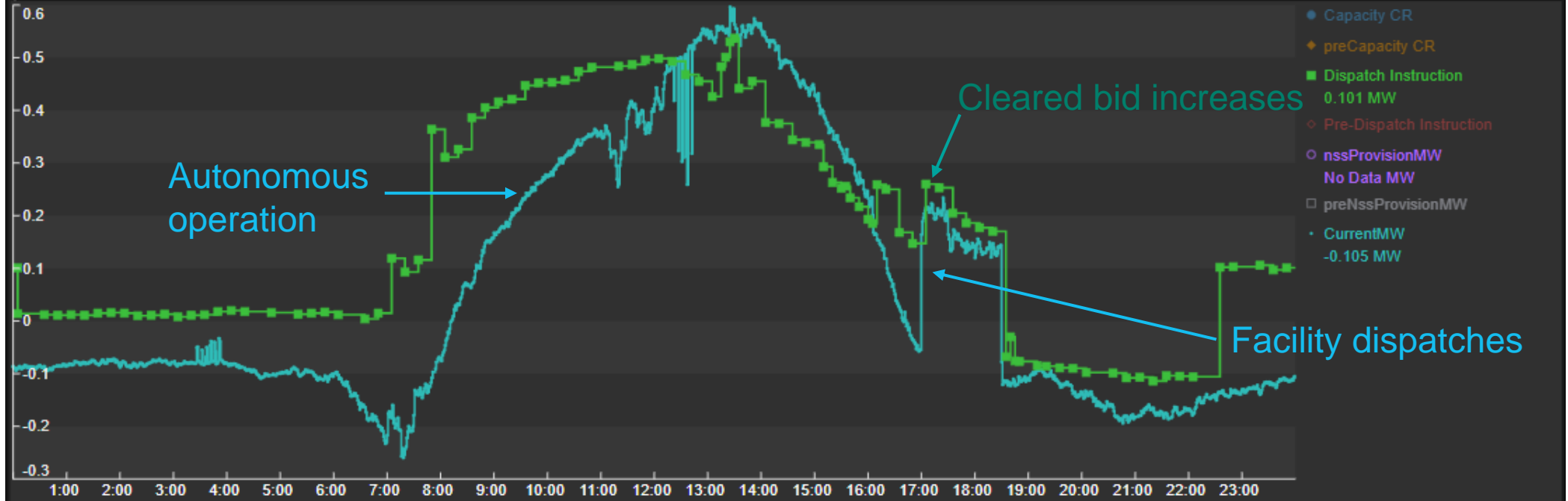
Prices
(\$/MWh)



Commands
(On/Off)

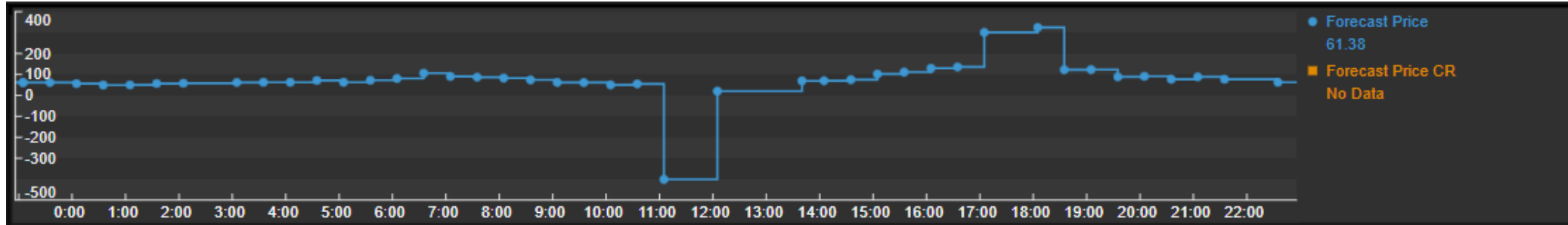


Instructions
and telemetry
(MW)

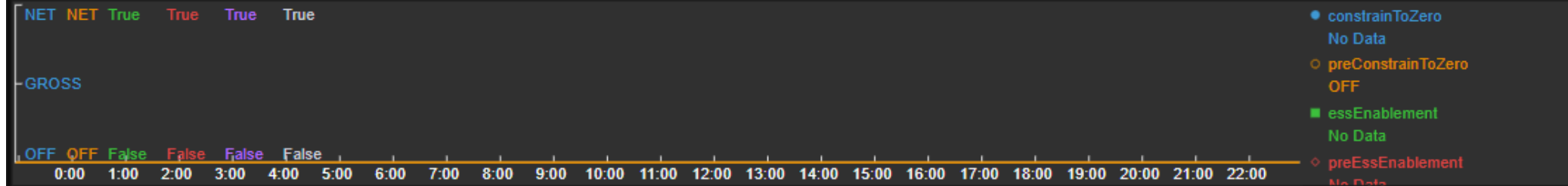


Real Time View of Energy Scheduling

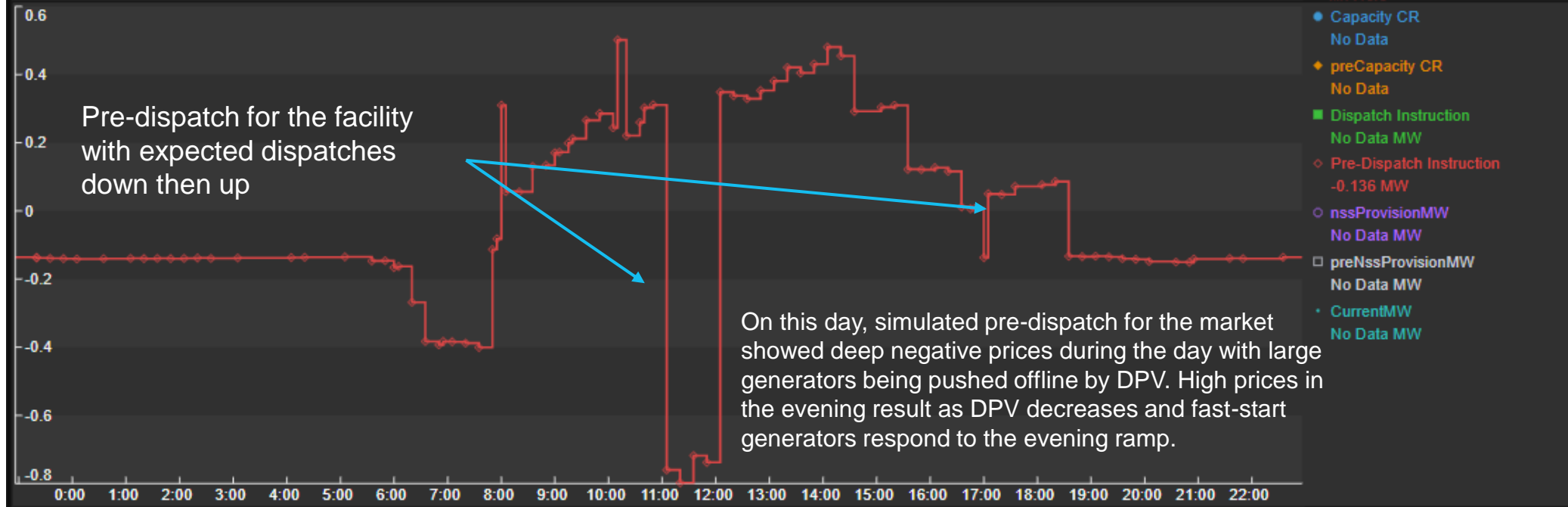
Prices (\$/MWh)



Commands (On/Off)

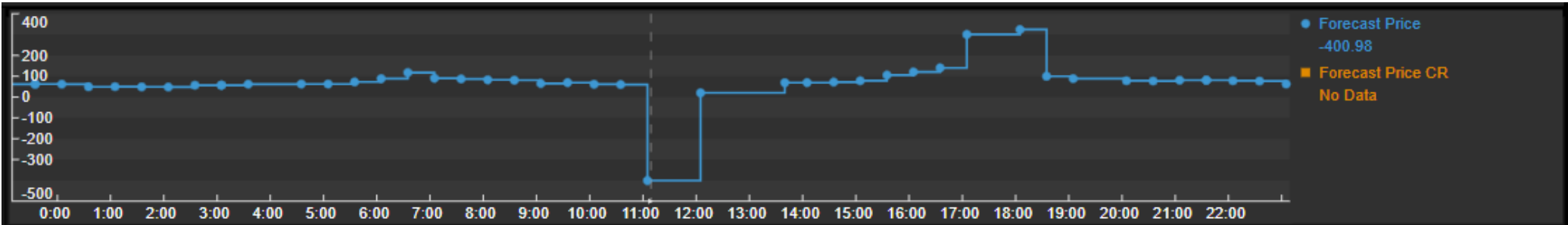


Instructions and telemetry (MW)

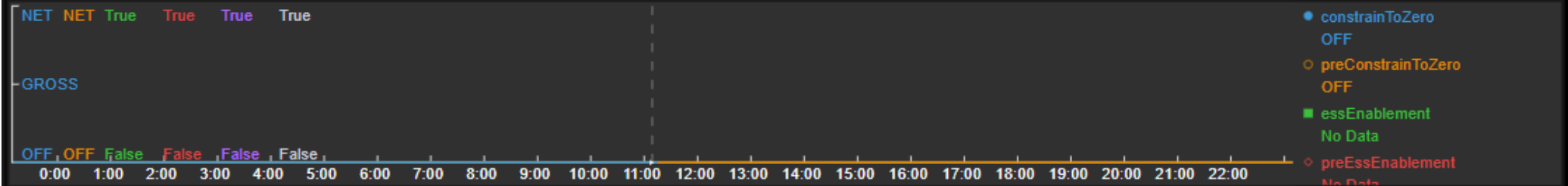


Real Time View of Energy Scheduling

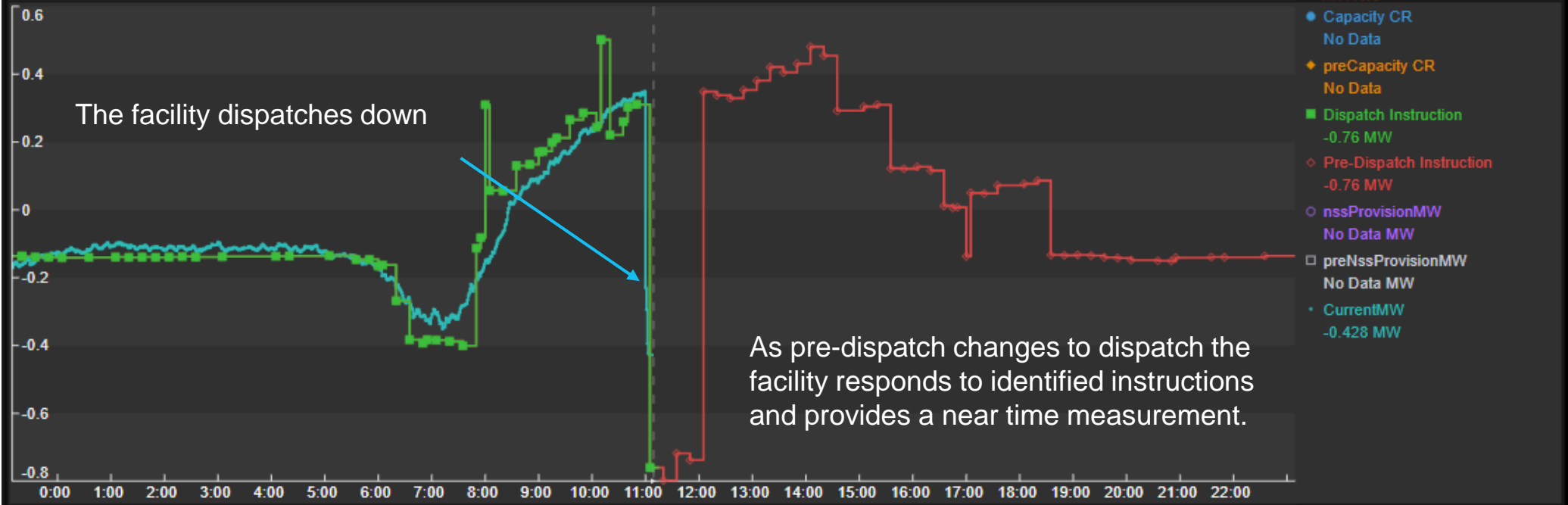
Prices (\$/MWh)



Commands (On/Off)

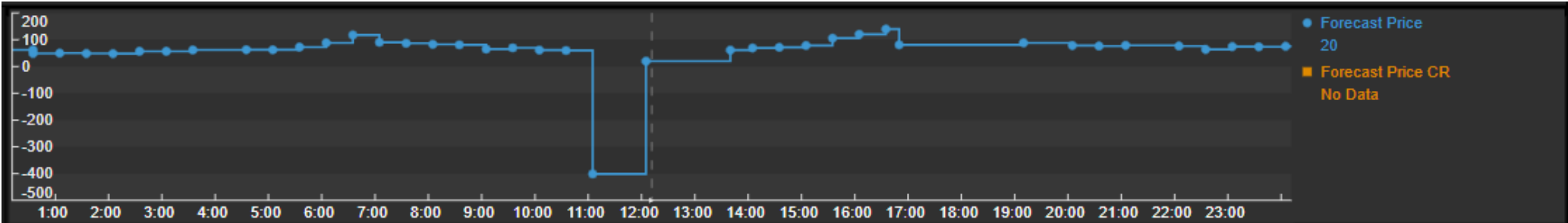


Instructions and telemetry (MW)

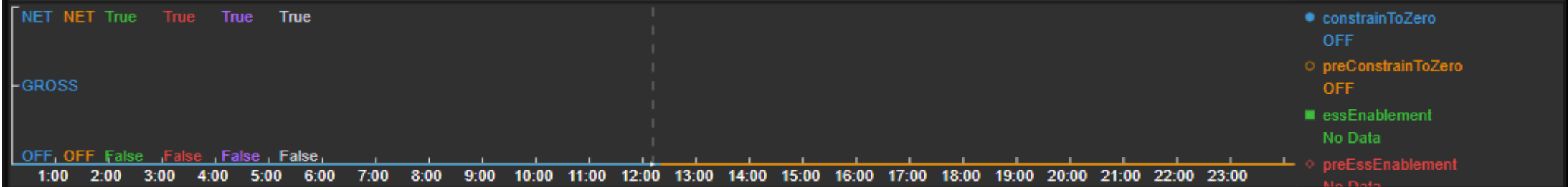


Real Time View of Energy Scheduling

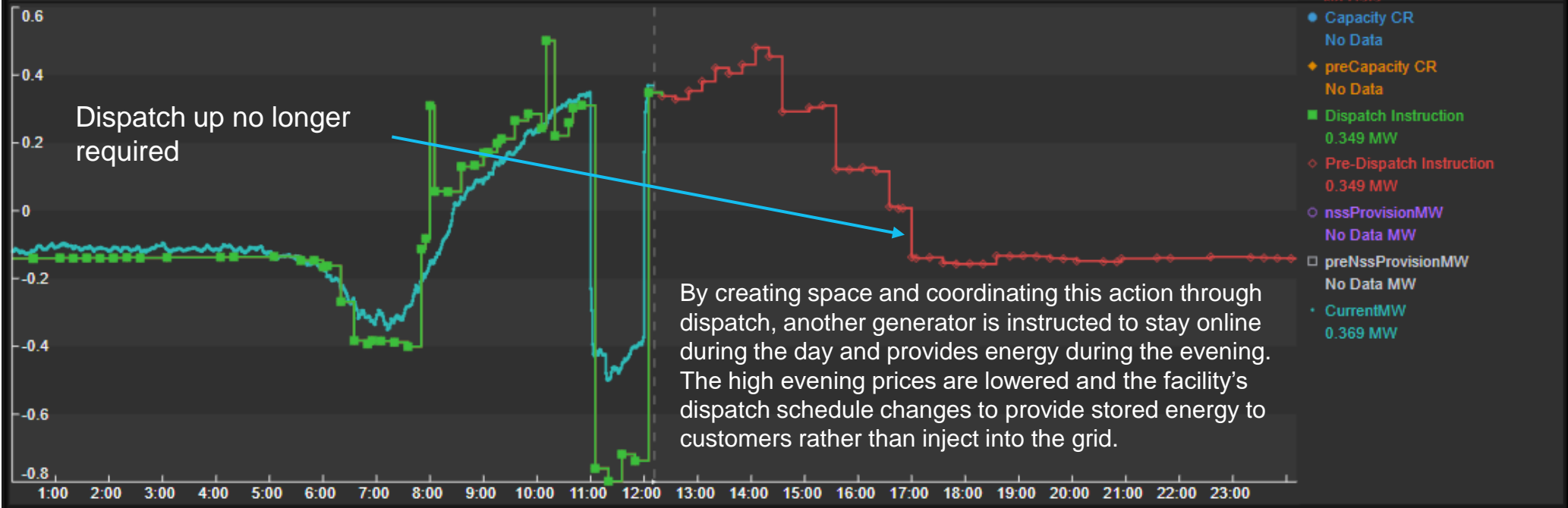
Prices (\$/MWh)



Commands (On/Off)



Instructions and telemetry (MW)



Dispatch up no longer required

By creating space and coordinating this action through dispatch, another generator is instructed to stay online during the day and provides energy during the evening. The high evening prices are lowered and the facility's dispatch schedule changes to provide stored energy to customers rather than inject into the grid.

Possible market arrangements for DER aggregators

Bruce Redmond, Project Symphony
Product Owner

Jason Hart, Project Symphony Senior
Analyst



Background

- AEMO is undertaking the development of recommendations for market arrangements to enable DER Aggregators to participate in the WEM.
- The following sections provide a high level view of key considerations for feedback.
- Rather than representing settled policy, the following principles and concepts are intended to provoke feedback that can be used to inform recommendations.

DER Aggregator Registration

Seeking stakeholder views on conceptual
arrangement for WEM Registration

Registration principles

DER Aggregator Characteristics

- Development starts small, with little limitation on scale
- Customers (NMI) composition changes over time
- DER Equipment / capability composition changes over time
- Electrical location (TNI) is not a factor in customer recruitment
- Commercial drivers will seek multiple service opportunities
- High sensitivity to entry costs
- DER Equipment compliance necessary
- Network configuration is changeable

Registration Framework Principles

- Clear and achievable requirements to apply at any scale
- Enable aggregator-managed NMI enrolment
- Enable aggregator DER Equipment identification
- Enable TNI identification via DER Register
- Scale information / registration requirements by service
- Limit IT integration requirements whilst enabling use cases
- Enable verification of compliance via DER Register
- Enable ongoing TNI alignment to define Facility (WEMDE)

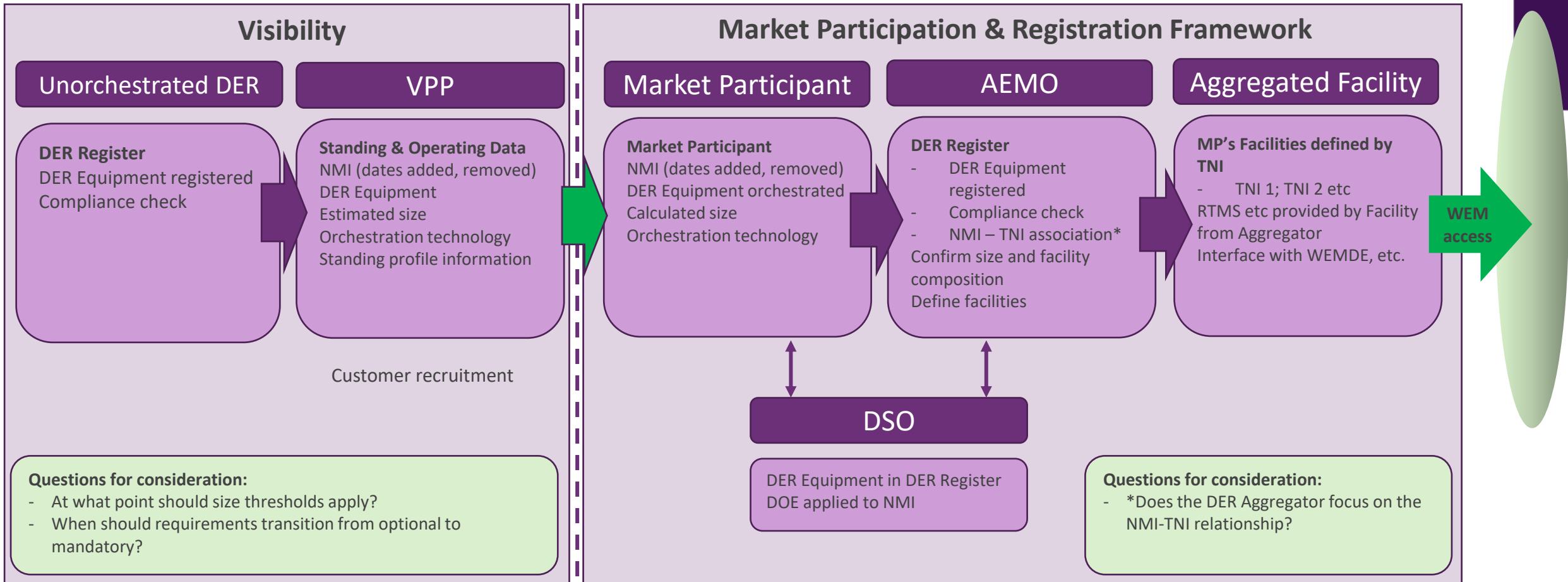
A flexible and scalable registration framework and process is required

Registration progression

Aggregation definition: Aggregation of DER registered in the WEM as a facility

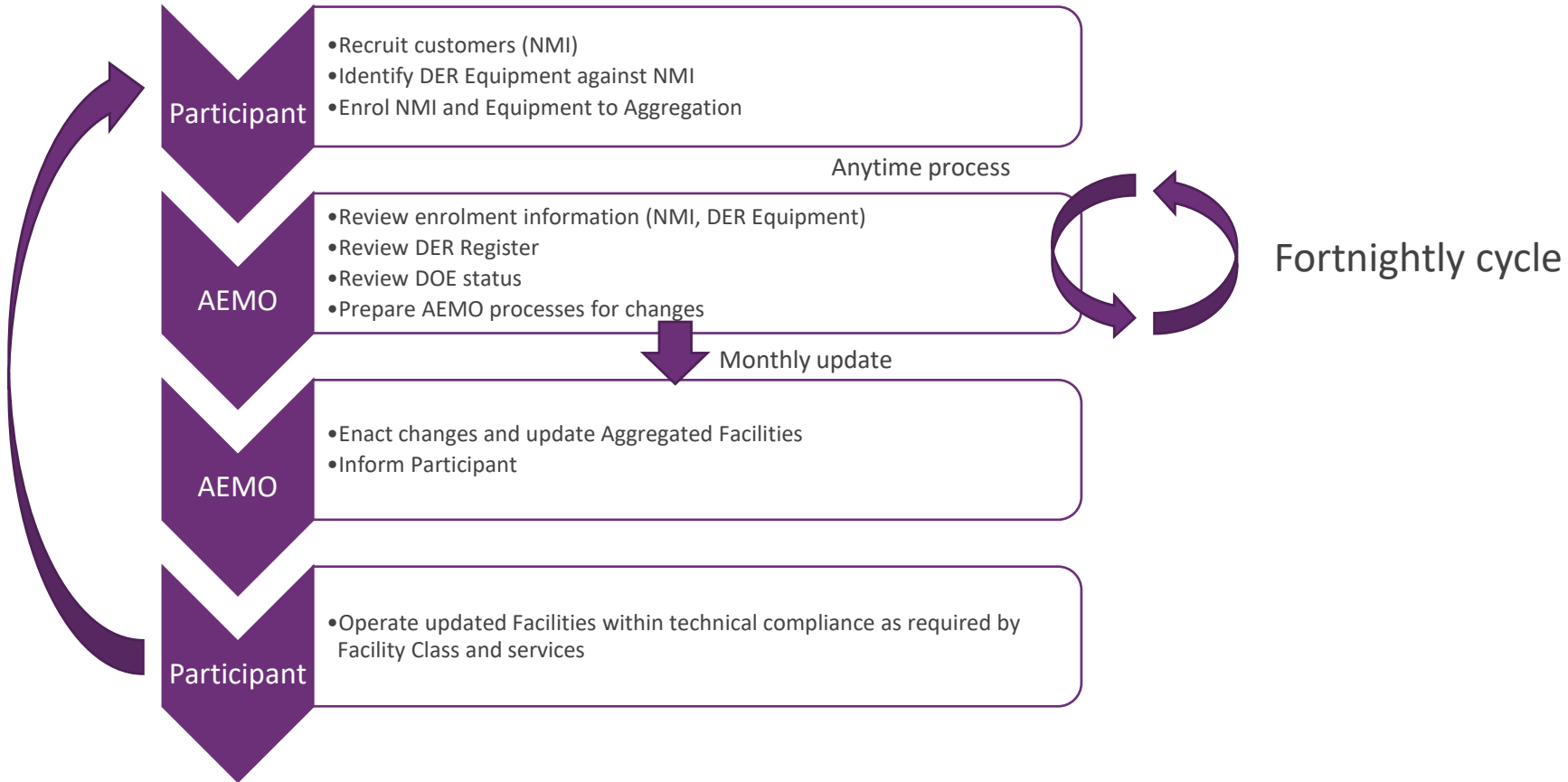
Logical progression from unorchestrated DER to VPP to Aggregator, with separate frameworks

Process independent of Facility Class and related operational information



DER Equipment Enrolment Process

Facilitate changes to facility composition over time



*Note: Timeframes are indicative to allow for operational adjustments, and would be subject to further design / implementation to confirm and may be subject to ongoing enhancement.

Our early recommendations

- VPP visibility should be embedded in WEM Rules
- DSO – AEMO integration required to ensure DOEs are coordinated
- Aggregation processes are needed to further build the Small Aggregation class
 - AEMO role should be to confirm facility sizes and composition, to enable market interfaces
 - Market Participants need ongoing information exchange systems to inform on customer and DER Equipment enrolment
 - WEM Rules need to accommodate loss factors for Aggregated DER facilities
- Integration methods should seek to avoid complexity and duplication
- Accreditation for services needs to set technical requirements

**Do stakeholders agree with the Registration principles?
Are there any further considerations to consider?**

Metering

Seeking stakeholder views on conceptual arrangement for metering to support DER Aggregator participation in the WEM

Our early recommendations

- Develop rule requirement for the Meter Data Agent to:
 - provide AEMO with 30min interval meter data for interval meters on the request to associate the connection point with a registered Small Aggregation and as a precondition to acceptance
- When 5 Minute Settlement is implemented:
 - provide AEMO with 5min interval meter data for interval meters
 - previously providing 30min interval meter data as part of a registered Small Aggregation
 - on the request to associate the connection point with a registered Small Aggregation and as a precondition to acceptance

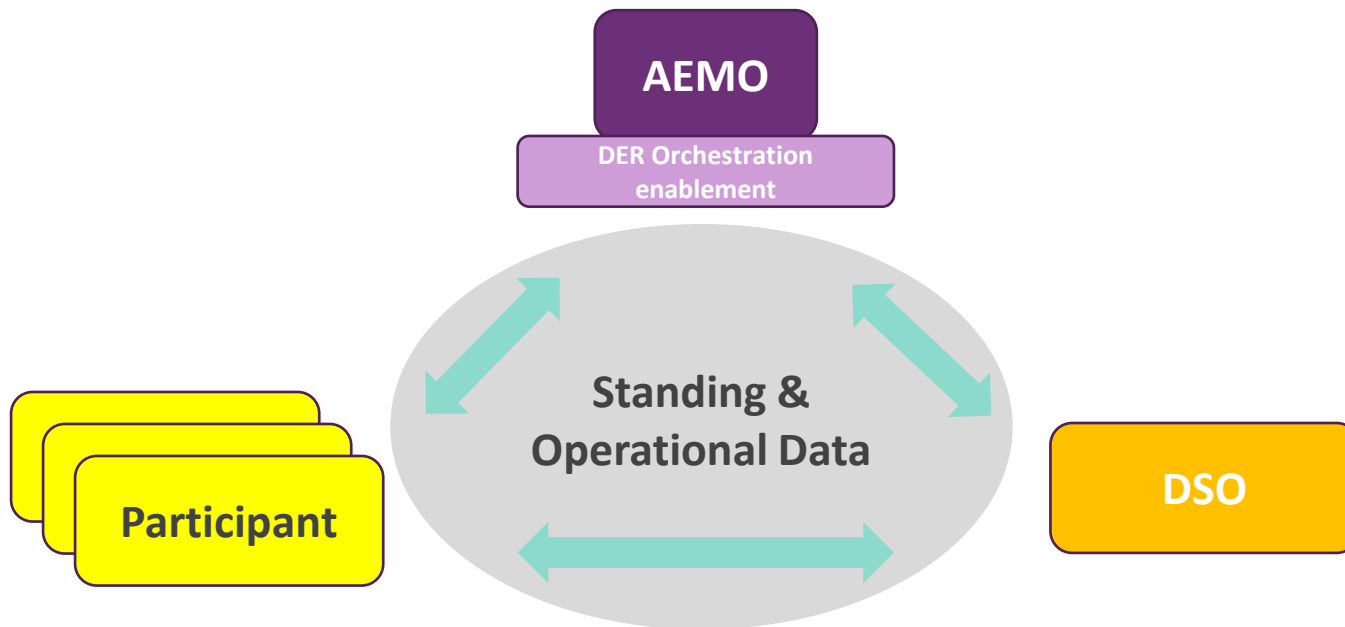
Does the proposal strike the right balance between cost to build and capability developed to facilitate wholesale participation?

Symphony Integration Approach

Seeking stakeholder views on data exchange requirements and models for the WEM

Data Exchange Objectives

- Facilitate Participation of VPPs and DER Aggregators in the WEM
- Enable Participant integration to AEMO systems and processes to facilitate VPP and Small Aggregation operations and participation within distribution network limits
- Avoid high barriers to entry to the WEM through aligned systems across Australia’s wholesale markets, whilst providing flexibility to accommodate local market and system needs
- Enable consistent, scalable, resilient and secure integration and information exchange to accommodate evolving use cases



What are your key concerns and considerations for a future data exchange solution to facilitate participation of DER in the WEM?

What's Next?

July 5th Stakeholder Forum

- DER Program Updates
- Symphony Test & Learn Observations
- Possible market arrangements for DER aggregators
 - Submission and Dispatch
 - Coordination with the registered aggregated facility
 - FCESS
 - Observations and results from ESS Contingency Reserve Raise
 - Settlement
 - Changes to settlement processes
 - Data Exchange
 - Enable consistent, scalable, resilient and secure integration

Feedback can be emailed to:
WADERProgram@aemo.com.au

Q&A

We welcome feedback and questions via
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- 13 December 2023

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