



Scope of Work for the Review of the Participation of Demand Side Response in the Wholesale Electricity Market

1. Introduction

The Coordinator of Energy (**Coordinator**) intends to review the rules for participation of Demand Side Response in the Wholesale Electricity Market (**WEM**) under clause 2.2D.1 of the WEM Rules. Clause 2.2D.1(h) confers the function on the Coordinator to consider and, in consultation with the Market Advisory Committee (**MAC**), progress the evolution and development of the WEM and the WEM Rules.

The Coordinator considers that Loads/Demand Side Response will play an important role in the future of the WEM because of:

- the changes to the nature of the demand profile and generation in the SWIS since the market start; and
- the transition to a low emissions energy system characterised by increasing levels of intermittent and distributed generation.

Therefore, it is important to ensure that there are no barriers to the participation of Loads/Demand Side Response in all of the WEM components.

The purpose of this review is to ensure that Loads have adequate incentives to participate in the WEM, and are compensated appropriately for the provision of their services (neither over- nor under-compensated). The importance of Demand Side Response as a flexibility/firming resource in the WEM has also been highlighted during the Reserve Capacity Mechanism (**RCM**) Review scenario modelling work.

1.1 Current Participation of Loads in the WEM

Currently the direct participation of Loads in the WEM is limited to their participation as a:

- Demand Side Programme (**DSP**) or part of a DSP in the RCM; and
- Interruptible Load.

Loads also participate indirectly in the WEM as they:

- pay for the consumption of energy either through bilateral contracts or the Balancing Market; and
- pay for the RCM based on their Individual Reserve Capacity Requirement (**IRCR**).

While Loads will be able to register as Scheduled Facilities in the New WEM to provide other market services, analysis of the WEM Rules must be undertaken to ensure that they can provide services and extract value in all of the WEM components simultaneously, in the same way as other Scheduled Facilities.

1.2 Related Reviews

The Coordinator is currently undertaking a review of the RCM that may affect this review of participation of Loads in the WEM. Energy Policy WA's system stress analysis for stage 1 of the RCM Review indicated that Demand Side Response will be important for system reliability in all of the future modelled scenarios.

While Stage 2 of the RCM Review will consider the treatment of DSPs and IRCR, the RCM Review is not going to examine the participation of Demand Side Response across all of the WEM components.

The Coordinator is currently also undertaking the following projects that may impact the participation of Loads/Demand Side Response in the WEM:

- SWIS Demand Assessment;
- Sectoral Emissions Reduction Scheme; and
- DER Roadmap.

1.3 Participation of Loads in the New WEM

The new WEM is planned to commence on 1 October 2023. In theory, Loads will be allowed to participate in most aspects of the new WEM as long as they meet the relevant requirements.

The relevant WEM Rules that are expected to be in place for the new WEM include:

- Section 2.29 of the WEM Rules sets out the rules for registering facilities in the WEM. At a high level, the registration and participation framework for Loads sets out:
 - A Load (defined as one or more electricity consuming resources or devices, other than Electric Storage Resources, located behind a single network connection point or electrically connected behind two or more shared network connection points) is a Facility Technology Type (clause 2.29.1).
- The Facility Classes relevant to Loads are (clause 2.29.1A):
 - Scheduled Facility;
 - Semi-Scheduled Facility;
 - Non-Scheduled Facility;
 - Interruptible Load; and
 - Demand Side Programme.
- The following are Facilities that are relevant for Loads for the purposes of the WEM Rules (clause 2.29.1B):
 - a Small Aggregation;
 - a Demand Side Programme; or
 - an Interruptible Load.

1.4 Benefits that Loads can provide in the WEM

Energy Policy WA considers that loads can contribute by:

- participating as a Scheduled Facility in the Real Time Market;
- reducing consumption during system peak (i.e. by being part of a DSP in the RCM);

- shifting consumption from system peak to times of low load; and
- adjusting consumption to provide Essential System Services (**ESS**).

Different types of Loads have different characteristics that affect the benefit that they can provide to the system. The relevant characteristics include:

- how quickly and reliably a Load can respond to instructions;
- how long the Load can respond in a single instance;
- how frequently the Load response can be deployed over a period;
- whether there are any seasonal or time-of-day restrictions on use of the Load;
- the cost that the Load incurs for its response; and
- the impact on overall system demand, including by:
 - Load reduction (virtual generation);¹ and
 - Load shifting (storage/virtual storage).²

1.5 Future Changes in Load Technologies

As the energy system evolves, new sources of load flexibility are expected to emerge, including:³

- electrolysis for large-scale hydrogen production;
- electrification of metals and minerals processing;
- smart controls for commercial buildings;
- electric vehicles;
- behind the meter solar and battery storage; and
- orchestrated energy consumption devices.

2. Project Scope

The objective of this review is to:

- identify the different ways Loads/Demand Side Response can participate across the different WEM components;
- identify and remove any disincentives or barriers to Loads / Demand Side Response participating across all of the different WEM components; and
- identify any potential for over- or under-compensation of Loads/Demand Side Response (including as part of “hybrid” facilities”) as a result of their participation in the various market mechanisms and provision of Network Services.

¹ Where a load reduction is not compensated by an increase in demand at another time (e.g., if a customer sets their air conditioning at a warmer temperature during peak periods on a hot day, this would result in an absolute reduction in system demand).

² Some sources of flexibility must be compensated by an increase in demand at another time (e.g., if a customer pre-cools their building to avoid using the air conditioning during peak periods on a hot day, then this would not decrease the total system demand over the day, and may increase demand over the course of the day to account for inefficiency in pre-cooling relative to cooling when it is needed [i.e. the building is not perfectly insulated]). Like physical batteries, this type of load flexibility shifts energy use.

³ <https://arena.gov.au/assets/2022/02/valuing-load-flexibility-in-the-nem.pdf>

The following aspects related to the participation of Loads are out of scope for this review:

- certification and dispatch baseline for DSPs; and
- treatment of IRCR.

2.1 Guiding principles

The guiding principles for the review of the participation of Loads in the WEM are that any recommendations should:

- (1) Meet the Wholesale Market Objectives.
- (2) Enable the orderly transition to a low greenhouse gas emissions energy system.
- (3) Be cost-effective, simple, flexible and sustainable.
- (4) Allocate risks to those who can manage them best.
- (5) Provide investment signals and technical capability signals that support the reliable and secure operation of the power system.
- (6) Ensure that the value of Demand Side Response can be maximised for the benefit of those who provide it and the WEM as a whole.
- (7) Ensure that Loads are not under- or over-compensated for their participation and treatment in any of the WEM components.

2.2 Project stages

The review of the treatment of Loads in the WEM is planned to comprise the following elements.

- Step 1: High level assessment of the participation of Loads/Demand Side Response across all WEM components based on:
- A review of the participation of Loads/Demand Side Response in other markets in the context of what problems their electricity systems are facing or are expected to face in the future, and whether/how these arrangements relate to the WEM. Jurisdictions to be investigated include:
 - NEM;
 - UK;
 - PJM; and
 - any other jurisdictions identified by the MAC or Energy Policy WA.
 - The outcome of the system stress analysis from stage 1 of the RCM Review.
 - Identification of typical flexible loads (e.g. large cold stores) that exist in the WEM and don't participate.
 - Assessment of possibilities for over- or under compensation for different scenarios of Loads/Demand Side Response participating in various market mechanisms and Network Service provision.
- Step 2: A gap analysis identifying any barriers and disincentives for Loads to participate across all components of the WEM and provide the services identified under Step 1, including in:
- the registration framework;
 - the Real Time Market;

- the ESS market, including Non-Co-Optimised ESS; and
- the RCM.

This includes assessment why the non-participating flexible loads identified under Step 1 don't participate.

Step 3: Formulations of recommendations for further action, if any, and development of Rule changes, if necessary.

3. Stakeholder Engagement

The review of the participation of Loads in the WEM will be undertaken in close consultation with the MAC, directly through MAC meetings and, through the establishment of a Working Group. Participation in the Working Group will not be limited to MAC members and should include stakeholders operating loads.

Energy Policy WA will develop consultation papers based on the outcomes from the Working Group and MAC meetings and invite feedback from all stakeholders.

Under clause 2.5.1C of the WEM Rules, the Coordinator must consult with the MAC before commencing the development of a Rule Change Proposal.

4. Project Schedule

The following is a preliminary high-level project schedule for this.

| Tasks/Milestones | Timing |
|---|------------------------|
| Consult with the MAC on the Scope of Works for the Demand Side Response Participation Review and timing for commencement of the review | October 2022 |
| Commence the review | March 2023 |
| Engage a consultant(s) to assist with the review | April 2023 |
| Establish a MAC Working Group | |
| Initial MAC Working Group meeting | April/May 2023 |
| Step 1 - Assessment of the participation of Loads/Demand Side Response across all WEM components | |
| Literature review of the participation of Loads/Demand Side Response in other jurisdictions | June 2023 |
| Assessment of the relevance of the jurisdictional review to the WEM in consultation with the MAC/MAC Working Group | |
| Assessment of the outcome of the system stress analysis from stage 1 of the RCM Review. | July 2023 July 2023 |
| Identification of typical flexible loads (e.g. large cold stores) that exist in the WEM and don't participate. | |
| Assessment of possibilities for over- or under compensation for different scenarios of Loads/Demand Side Response participating in various market mechanisms and Network Service provision. | |

| Tasks/Milestones | Timing |
|---|----------------|
| Step 2 - Gap analysis identifying any barriers and disincentives for Loads to participate across all components of the WEM and provide the services. | |
| Gap analysis in consultation with the MAC/MAC Working Group | September 2023 |
| Step 3 - Formulations of recommendations for further action | |
| Formulation of recommendations for further actions in consultation with the MAC/MAC Working Group | October 2023 |
| Develop and publish a Consultation paper regarding the recommendations | November 2023 |
| Submissions on consultation paper close | December 2023 |
| Develop and publish an Information Paper on the changes to the participation of Loads in the WEM, and proposed Amending Rules for stakeholder consultation | February 2024 |
| Stakeholder Consultation on the proposed Amending Rules | March 2024 |
| Submit any necessary Rule Change Proposals for consideration and approval by the Coordinator and the Minister | April 2024 |
| Commencement of rule changes | TBD |