Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**
Energy Policy WA

DSR Working Group

Meeting 2

7 June 2023

Working together for a **brighter** energy future.

Participation of Hybrid Facilities

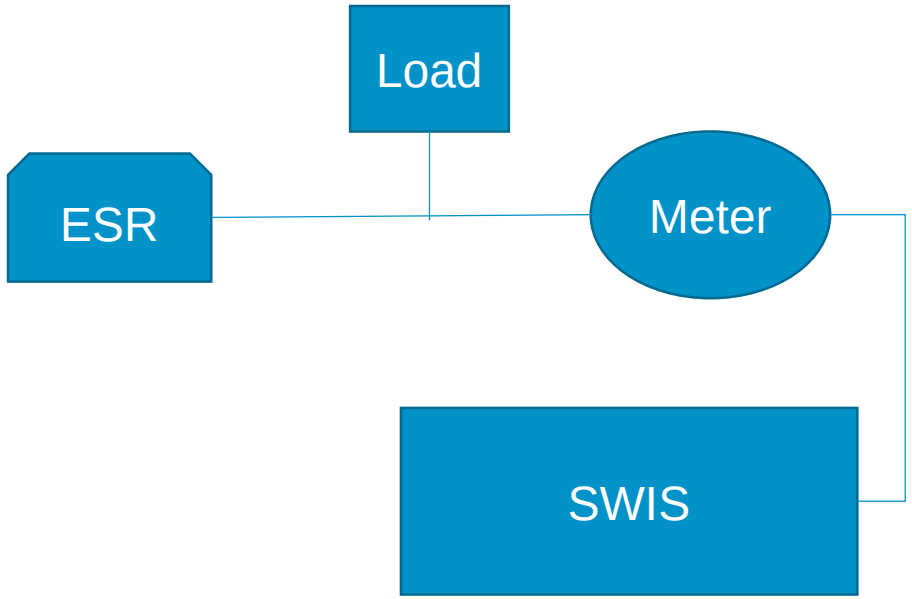
Hybrid Facility including a load

A Hybrid Facility is a Facility compromising of two or more different Facility Technology Types

- **Usually considered as a combination of generation and storage**
- **However, a Hybrid Facility can include a load and one or more other technology type(s)**
- **A hybrid facility is considered as a single Facility in the WEM Rules, and operated as such**
    - The RCM does, however, consider each technology separately for the Reserve Capacity Certification purposes (“separately certified components”)

Load and ESR Hybrid

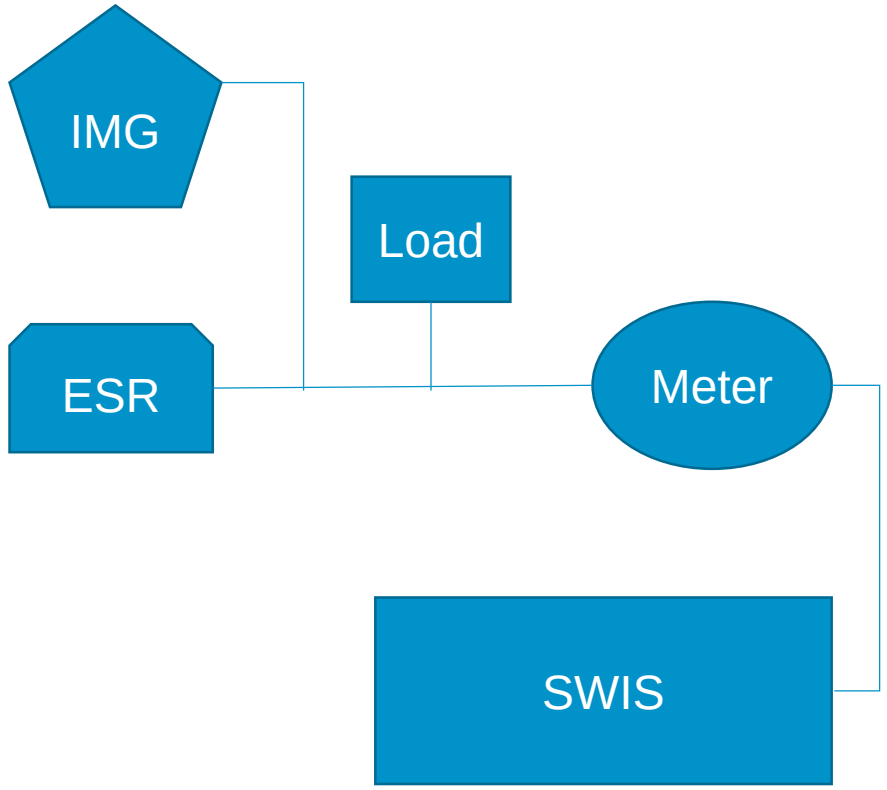
Load and ESR Hybrid Facility registration dependent on the size of generation and direction of energy flows



Total injection rated capacity < 5 MW and net import only	Exempt from registration, load
Total injection rated capacity < 5 MW and bi-directional energy flows	Exempt from registration, Scheduled, Semi-Scheduled, Non-Scheduled
Total injection rated capacity > 5 MW and < 10 MW and net import only	Possible exemption from registration, load
Total injection rated capacity > 5 MW and < 10 MW and bi-directional energy flows	Scheduled, Semi-Scheduled, Non-Scheduled
Total injection rated capacity < 10 MW and net import only	Load or an Interruptible Load if has equipment installed to respond to frequency variations
Total injection rated capacity ≥ 10 MW and net import only	Non-Scheduled
Total injection rated capacity < 10 MW and bi-directional energy flows	Scheduled, Semi-Scheduled, Non-Scheduled
Total injection capacity ≥ 10 MW and bi-directional energy flows	Scheduled, Semi-Scheduled,

Load, Generation and ESR Hybrid

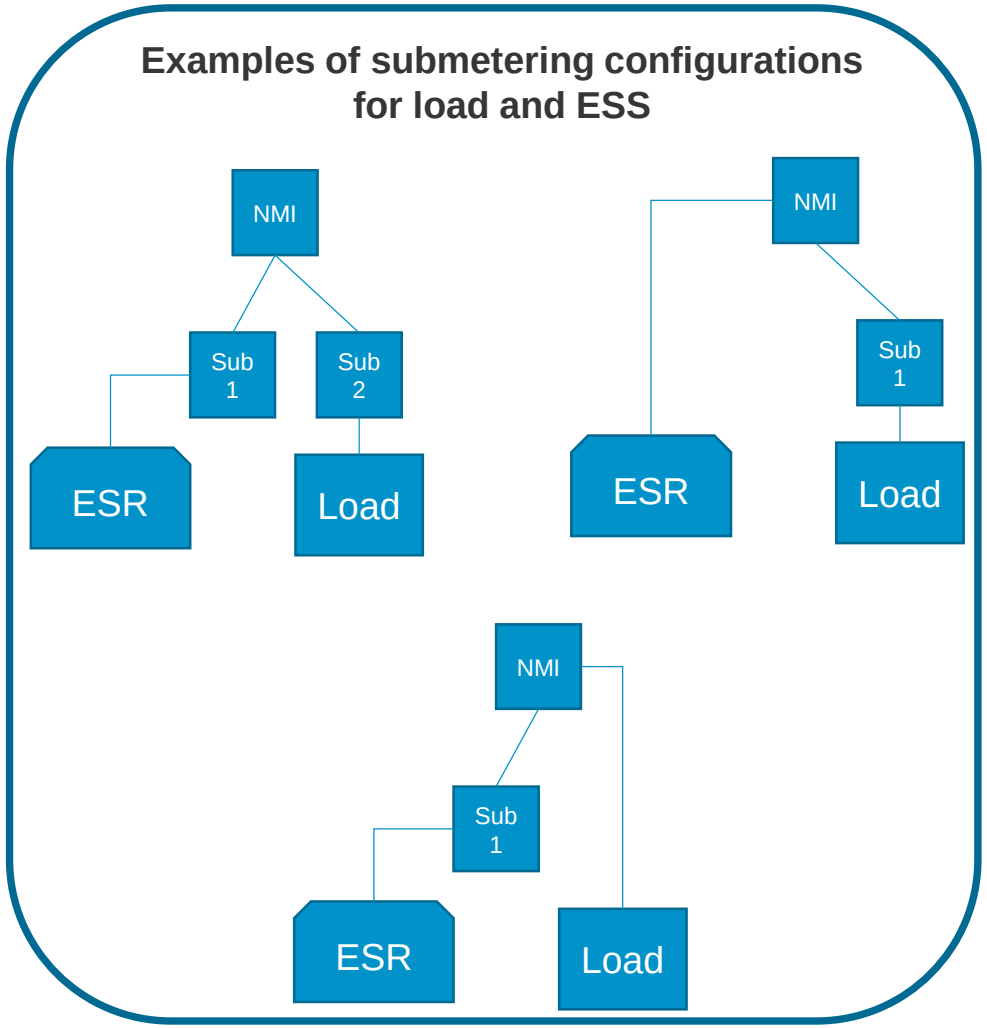
Hybrid generation can be intermittent or non-intermittent



Total combined injection capacity < 10 MW and net import only	Load or an Interruptible Load if has equipment installed to respond to frequency variations
Total combined injection capacity ≥ 10 MW and net import only	Scheduled, Semi-Scheduled,
Total combined injection capacity <10 MW and net export only	Scheduled, Semi-Scheduled, Non-Scheduled
Total combined injection capacity ≥10 MW and net export only	Scheduled, Semi-Scheduled
Total combined injection capacity < 10 MW and bi-directional energy flows	Scheduled, Semi-Scheduled, Non Scheduled
Total combined generation capacity ≥ 10 MW and bi-directional energy flows	Scheduled, Semi-Scheduled

Metering and submetering

The RCM requires submetering for each separately certified component of a hybrid facility



- **Submeters are required only for the RCM for certification and testing**
- **Submetering is also required if only component of a hybrid facility is seeking certification**
  - For example, and ESR and Load hybrid facility must be sub-metered even if only the ESR is applying for CRC
- **Submeters are not used for settlement**

Metering and submetering

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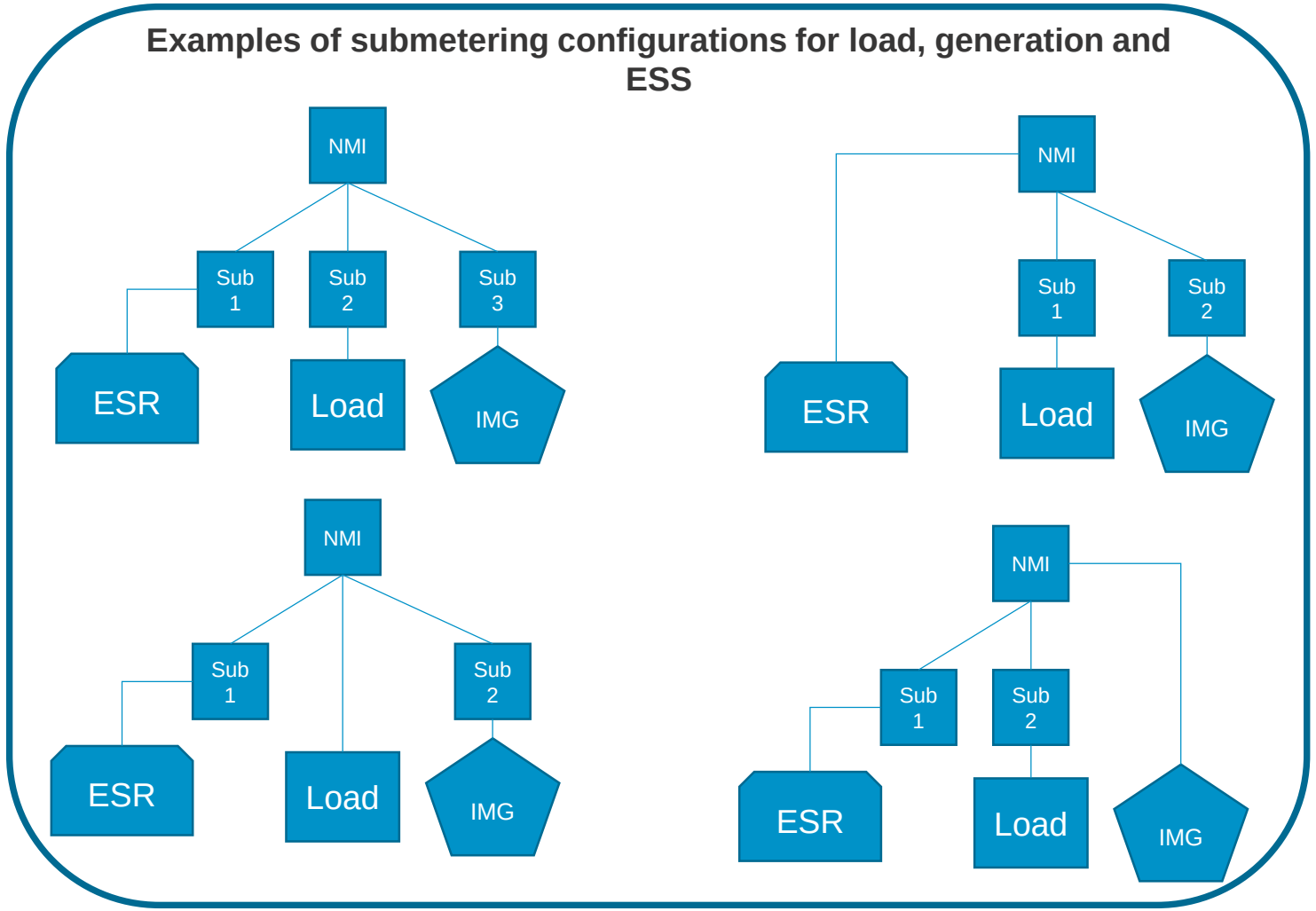

Hybrid Facilities WEM Participation

Reserve Capacity Mechanism

- **Hybrid Facilities are eligible to apply for certified capacity.**
  - Hybrid Scheduled or Semi-scheduled facilities has each technology component assessed separately, applicable to the technology type
  - Hybrid Non-scheduled facilities are assed under the RLM
  - Capacity credits assigned to hybrid facilities set as the amount of CRC for each component, capped by NAQ
  - If CC is lower than the sum of CRC, Market Participant can advise the number of CC for each component
- **DSP is an eligible component as part of a hybrid facility and also requires sub-metering**
  - DSP component certified using relevant demand
  - DSP sub-metering doesn't override the requirement that the associated loads all have a common TNI, rather it's in addition to this requirement
- **Is a hybrid facility with a DSP comprising of non-contestable loads practically and technically feasible?**

Hybrid Facilities WEM Participation

Reserve Capacity Mechanism

- **The RCOQ for a hybrid facility reflects each technology type**
  - Subject to refunds as a single Facility based on the applicable refund for the Registration type. Scheduled Facility refunds ‘blended’ refunded in proportion to the CC for each component
- **Hybrid Facilities (apart from intermittent components) are subject to RC testing, and each component is tested**
  - Test failure leading to a CC reeducation will only reduce the CC for the failing component
- **Hybrid Facilities required to submit outages in line with Registration type**

Hybrid Facilities WEM Participation

RTM, STEM and ESS

- **For the purposes of the RTM, STEM and ESS markets there is no concept of a hybrid Facility. Participation in those markets is dependent on the Facility's Registration**
  - AEMO determines a hybrid Facility's Registration depending in it's controllability
- **Hybrid Facility with CC must achieve the RCOQ for each component. For example:**
  - Hybrid with DSP and ESR will have 8am to 8pm RCOQ for the DSP and 4-hour RCOQ for ESR
  - Hybrid with IMG and DSP will have no RCOQ for IMG and will have 8am to 8pm RCOQ for DSP
- **What is the commercial incentive for hybrid facilities?**
- **Does RCM component consideration of each technology provide more /or less incentive for hybrid facilities?**
- **Is there a misalignment between treatment of hybrid facilities between the RCM and RTM?**

Discussion questions

- **Hybrid facilities should be able to participate dynamically and stack value, whereby the one Facility is able to provide or offer multiple services (‘value stacking’)**
- **However, that’s not the same as one Facility getting paid multiple times for providing the one service (‘double dipping’).**
- **Are the following examples of value stacking or double dipping?**
  - ESR and Load hybrid facility, only ESR with CC. If the Facility were to reduce IRCR consumption while using ESR output to serve local load is that value stacking or double dipping?
  - A hybrid facility with intermittent generation, ESR and DSP. Is any generation or ESR output during the period of DSP dispatch value stacking or double dipping?
  - Any other examples of value stacking or double dipping?
- **Can we as a group define the difference between value stacking and double dipping for hybrids containing loads in various scenarios?**

Constrained Access for Loads

NAQ Overview

The NAQ framework serves two purposes

1. it establishes a process for determining the network capacity, in MW, available to a capacity provider for the purpose of determining the Capacity Credits that can be assigned to the facility up to the amount of its Certified Reserve Capacity (CRC) for a Reserve Capacity Cycle; and
2. it provides investment certainty for capacity providers that contribute to the reliability of the system, by establishing a priority order for the assignment of Capacity Credits to facilities, with a facility's priority status subject to adjustment only in specific circumstances.

- **The NAQ was primarily designed with a focus on generation capacity**
  - Loads are considered by their effect on network congestion, i.e., higher local demand more NAQ, lower local demand less NAQ
- **The NAQ provides locational signals for the level of network capacity for generation**
  - Perhaps it's a natural extension of this to consider how the NAQ could be modified to provide locational signals for loads placement

Without the NAQ generation capacity would have difficulty connecting

- **In addition, to the pervious two purposes the NAQ served another purpose – an alternative to the Western Power's CAG connection process (not to be confused with DSOC)**
  - New generation capacity in the WEM had difficulty getting network access and difficulty connecting
  - And in some extreme cases preventing connection all together
- **When the NAQ was designed this was primarily considered a generation problem however, it's emerging that large/block loads may face similar difficulty with network access**
- **A constrained connection framework such as the NAQ for loads may speed up the connection process for loads and allow for more generation capacity NAQ**

Constrained load connection framework

To facilitate connection of new large loads a new (and optional) framework that grants loads constrained network access maybe required

The purpose of a constrained load connection framework is two fold:

1. **Speed up the connection process for loads**
2. **Reducing the cost of the connection, both for the load and for the overall system.**

Some elements of the required framework could include:

- WP modelling the network and granting loads constrained access on the basis of network congestion
- Loads to be curtailed down when the network is congested, possibly during peak demand, network outages, or generation outages “interruptible contract”
- Providing any participant that funds network augmentation or signs an “interruptible contract” with some ‘NAQ like’ priority and terms for access

Discussion questions for constrained load access

- **A load can fund a network augmentation, how can the funder receive the full benefit of the augmentation in a constrained load access environment?**
  - If additional load or generation can now connect or receive additional access due to the augmentation should (and if so how) the funder benefit from this?
  - If WP upgrades the network should the constrained loads be *upgraded* to unconstrained or remain constrained?
- **How are constrained or interruptible contract loads to be considered in system planning?**
  - Can interruptible loads be thought of as a ‘firm’ DSM and lead to lower capacity requirements, for example?
  - What’s the desirable level of load visibility to maximise system benefit?
- **Who is better placed to curtail the constrained loads?**
  - WP to curtail as part of network planning and congestion management?
  - AEMO to curtail as part of RTM optimisation, peak demand reduction, NCESS?

Discussion Questions

To be prioritised at the meeting

Participation in the RCM

- How could DSR be used to provide minimum load services?
- What are the alternative options for considering the minimum availability hours for DSR?
- The dynamic baseline design can assist with DSR participation however, there could be some challenges with double counting?
- Is the 2 hour notice period too much of a limitation on demand reduction available to loads?
- What network constraints are preventing customers from providing minimum load services?

Participation in the STEM

- **Is allowing DSR participation in the STEM worth exploring further?**
  - Could it increase competition and/or liquidity?
  - Could DSR participation in STEM provide a new ‘product’ to manage short-term outages?
  - Can DSR be considered as supply?
  - Can DSR be considered as an element of consumption?
- **If the STEM rules preventing DSR participation were removed do other barriers remain?**
  - Is the STEM design fundamentally not suitable or attractive to DSR?

Participation in the RTM

- **Are there currently any incentives for loads to register in any of these categories in the RTM?**
- **What are the barriers?**
- **Will the RTM facilitate participation as DSPs?**
- **Do the relevant WEM Rules present barriers that will reduce possible DSP participation?**

ESS Participation

- Will the ESS markets facilitate the participation of DSR?
- Do the relevant WEM Rules present any barriers to the participation of DSR?
- Do any relevant WEM Procedures present any barriers to the participation of DSR?
- Are there any incentives that can be provided to encourage the participation of DSR (eg by signing participants up to load shifting programs)?
- What enablers (technologies etc) are required for demand side participants to extract maximum value?
- Who will provide those enablers? (i.e leave it to retailers, or develop regulations?)