Rule change proposal – Integrating ESS (grid-scale) into the NEM

Why make a change?

NEM experiencing fundamental change
Changing generation mix including more renewables
Storage as a VRE and grid support, and arbitrage
Growing number of two-way flows at connection points

Demand for ESS is growing

A **regulatory framework** that needs to transition to what we see now and the future

The **need** to accommodate ESS more efficiently and remove

What currently happens for ESS? (1)

Registration

Person registers in different categories (e.g. Generator or Customer) and classifies different assets (e.g. scheduled, semi-scheduled and market load)

Non-energy recovery and intervention mechanisms, **TUoS** and participant fees

Operation

- Separate treatment of generation (export) and load (import)
- Two unlinked dispatchable unit identifiers (DUIDs)
- Two MLFs (one for import and one for export)
- Metering arrangements vary, a minimum of one NER compliant metering installation, allocate two NMIs

Can participate in **all NEM markets**

Context - current issues (1)

The need to transition

- Increasing numbers of ESS, range of technology types
- Increasing numbers of connection points with bi-directional flows
- A mix of technology types behind a connection point

Lack of clarity and interpretive risk

- Registration and participation arrangements are unclear and rely on supplementary documentation
- TUOS/ DUOS arrangements

Costs of operating ESS

- Potential for simultaneous dispatch of load and generation or unexpected outcomes
- More complicated IT arrangements
- Difficulty in analysing market data from two separate DUIDs

Context - current issues (2)

Technical requirements

- Technical requirements for ESS may need to be symmetrical, e.g. ramp rates
- Insufficient information being provided on energy limited plant

Specific to hybrids

- Lack of NER clarity on registration and participation results in challenges applying NER rights and obligations leading to bespoke arrangements
- Challenging with performance standards applying based on registered participant category, instead of on assets
- Challenges measuring the energy flows from different technology types

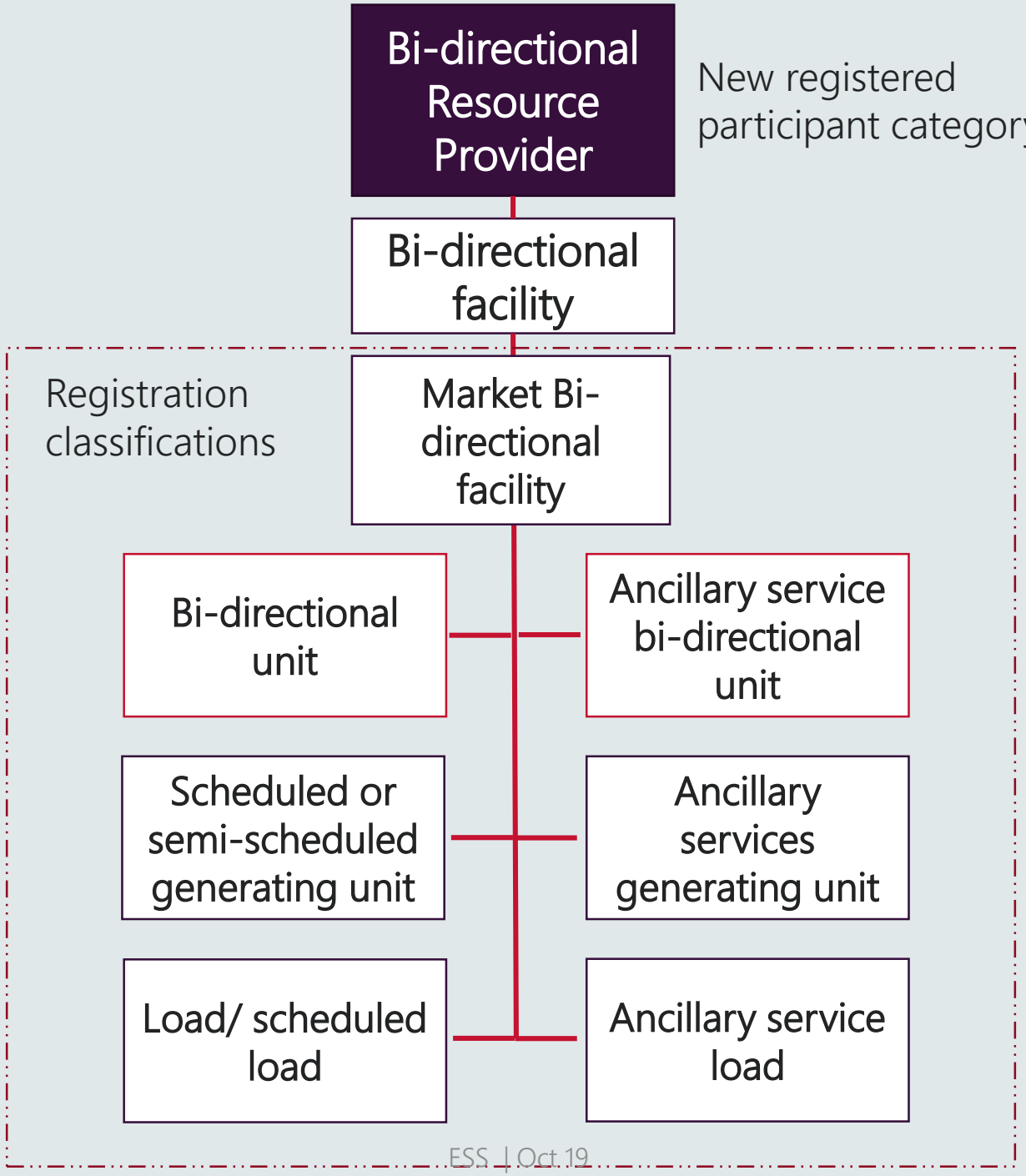
Non-energy cost recovery

- There are inconsistencies with recovery from other registered participant categories – use of net meter data and currently based on registered participant category
- SGA not prohibited from classifying ESS, the consumption is treated as auxiliary supply

Key areas – ESS rule change proposal

1. Define ESS (bi-directional unit) and create a new registration category (Bi-directional Resource Provider)
2. ESS in central dispatch – single bid for ESS with continuous operation and two bids where non-continuous operation band exists
3. Exempt bi-directional facilities or assets within. 'Exempt' ESS could be classified by a Market Small Generation Aggregator
4. Integrate Bi-directional Resource Provider and ESS into the NER including capturing required operational data for business processes and IT systems
5. Appropriate recovery of fees, charges and recoverable amounts, clarify NER TUOS and DUOS arrangements
6. Drafting changes to integrate the Bi-directional Resource Provider and bi-directional units simplify and consolidation of drafting

ESS proposal (1)



ESS proposal (2)

Bi-directional Resource Provider: bi-directional facility

- Stand-alone ESS
- ESS and generating unit/system
- ESS and load
- ESS, generating unit/system and load
- Load and generating unit/system (also ESS needing to operate with 2 DUIDs)

Define ESS (bi-directional unit)

Plant that has the capability to both:

- **consume** electricity to **convert into stored energy**; and
- convert stored energy to **produce electricity**,

together with all related equipment essential to its functioning as a single entity.

Fees and charges

- **Non-energy cost recoveries and Participant fees and charges:** typically, based on consumed and sent out electricity for a Bi-directional Resource Provider and SGA
- **TUOS** not charged **and DUOS charged on** consumption

ESS proposal (3)

Metering
Existing obligations apply. SCADA data required for each asset with a bi-directional facility

Settlements and Prudentials Existing requirements to apply

Network losses and constraints
- Existing network losses would apply – typically 2 MLFs for consumption and production
- Existing constraints to apply

Existing NER **compliance obligations** of scheduled plant to apply

Performance standards based on assets, instead of registered participant category

ESS proposal – drafting changes and existing ESS

- Key drafting changes to:
  - Integrate ESS and simplify drafting to facilitate greater understanding of the NER
  - Replace technology specific terms, e.g. generate
  - Clarify where it is a type of asset instead of quantity of flow, e.g. load
- New terms and restructured terms:
  - Consumption, production and sent out electricity replacing load and generation concepts
  - Dispatch bid replacing dispatch offer
- Chapter 3 non-energy cost recovery provisions re-drafted to integrate proposed policy position and to simplify further
- Existing ESS are unchanged
- If an existing ESS operator wishes to be registered and participate they will need to apply to do so. AEMO will consider a minimal fee

NEO and benefits

- Improved understanding through clear NER requirements for ESS and ‘hybrids’
- Single registration and participation model:
  - Less complicated registration and participation arrangements
  - Reduces set-up and operational costs involved in operating less complicated bidding system
  - Reduces the risk of managing conflicts associated with two dispatch bids
- Less complicated IT arrangements
- Improved market information for better decision-making
- Better estimation of energy limited plant – improves market and reliability information
- Clarified TUOS and DUOS arrangements – improves investor certainty and operational efficiency
- Drafting changes – facilitates ESS and Bi-directional Resource Provider to reflect bi-directional flows. Incidental changes to improve NER clarity, consistency and streamline the NER to improve understandability and correct for errors. Eliminates interpretive risk and time consuming clarifications and debating arising