Government of **Western Australia**
Energy Policy WA

Meeting Agenda

Meeting Title:	Cost Allocation Review Working Group (**CARWG**)
Meeting Number:	2022_05_09
Date:	Monday 9 May 2022
Time:	1:00 PM to 2:30 PM
Location:	Online, via TEAMS.

Item	Item	Responsibility	Type	Duration
1	Welcome and Agenda	Chair	Noting	5 min
2	Meeting Apologies/Attendance	Chair	Noting	5 min
3	Project Scope and Timeline	Marsden Jacob	Decision	5 min
4	Stakeholder Engagement Plan	Marsden Jacob	Noting	5 min
5	Approach to Policy Assessment	Marsden Jacob	Discussion	30 min
6	Early Finding from Policy Assessment Analysis	Marsden Jacob	Discussion	30 min
8	Next Steps	Chair	Discussion	5 min
9	General Business	Chair	Discussion	5 min
	Next Meeting: 14 June 2022 (TBC)			

Please note this meeting will be recorded.

Government of **Western Australia**
Energy Policy WA

WEM Cost Allocation Review

Cost Allocation Review Working Group (CARWG)

9 May 2022

Presenter: Grant Draper, Marsden Jacob Associates

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

Title: Agenda

1	Project scope/timeline
2	Stakeholder engagement plan
3	Our approach to Policy Assessment
4	Early findings from Policy Assessment analysis

Project Scope

Objectives

Develop methods to align the allocation of market fees and ESS costs with the causer-pays principle, to the extent practicable and efficient.

Guiding Principles

1. Meet the Wholesale Market Objectives (i.e., economic efficiency, safe and reliable, technology neutral, encourage competition, minimise long term costs, and encourage energy efficiency);
2. Be cost-effective, simple, flexible, sustainable, practical, and fair;
3. Provide effective incentives to Market Participants to operate efficiently to minimise the overall cost to consumers;
4. Use the causer-pays principle, where practicable and efficient.

Fees and Charges in Scope

Market Services

- Market Fees to recover AEMO's costs for its market operation services, system planning services and market administration services;
- System Operation Fees to recover AEMO's costs for its system operation services;
- Regulator Fees to recover the Economic Regulation Authority's (ERA) costs for its monitoring, compliance, enforcement and regulation services; and
- Coordinator Fees to recover the Coordinator's costs for the Coordinator's functions under the WEM Rules plus the costs and expenses for the Chair of the MAC.

Co-optimised ESS Services

- From 1 October 2023, there will be co-optimised ESS:
  - Regulation services
    - Regulation Raise
    - Regulation Lower
  - Contingency Reserve services
    - Contingency Reserve Raise
    - Contingency Reserve Lower, and
  - Rate of Change of Frequency (RoCoF) control service.

Other ESS

- System Restart service; and
- Non-Co-optimised ESS (NCESS)

Out of Scope

- Response that is mandated under the minimum standards in the technical rules (for example droop response);
- Matters covered by the Reserve Capacity Mechanism Review (for example, changes to peak demand or reductions of load as a result of the Individual Reserve Capacity Requirement);
- Cost allocation matters recently considered by the Energy Transformation Taskforce that have resulted in recent changes to the WEM Rules, such as changes to the runway method (apart from any known issues) or the RoCoF cost recovery method in Appendix 2B of the WEM Rules.

Timeline

Steps/Tasks	Duration/Timing
Project Initiation	
Inception Meeting with EP WA	Completed
Initial CARWG Meeting	9 May 2022
Initial Meeting with MAC	17 May 2022
Step 1 – Policy Assessments	
Literature review of the methodologies to allocate Market Fees and ESS costs in other jurisdictions.	Mid-April to Mid-May 2022
In consultation with the MAC Working Group, assess whether, and to what extent, the current allocation method for the Market Fees and for the costs for each of the ESS are aligned with the causer-pays principle and, if not, whether they should be.	Mid-May to Mid-June 2022
Step 2 – Practicability Assessments	
In consultation with the MAC Working Group, for the fees and costs that are not aligned, or not fully aligned, with causer-pays principle: • Identify the options that can be practically and efficiently applied in the WEM to allocate the Market Fees and each ESS cost; • Assess each option against the guiding principles; • Model the impact of each of the options on Market Participants; and • Recommend a preferred option for the allocation of the Market Fees and each ESS cost.	July-August 2022
Step 3 – Methodology Development	
Develop the details of the cost allocation methodologies in consultation with the MAC Working Group	September-October 2022
Develop and publish a consultation paper on the design for the allocation methodologies and seek stakeholder comments.	November-January 2023
Develop publish an information paper on the detailed design for the allocation methodologies.	March 2023
Step 4 – Formal Rule Change	
Develop one or more Rule Change Proposals for consideration by MAC, and approval by the Coordinator and Minister.	April 2023

Shareholder Engagement Plan

Market Advisory Committee

It is a requirement under clause 2.5.1C of the WEM Rules, that the Coordinator consult with the Market Advisory Committee (MAC) before commencing the development of a Rule Change Proposal.

Stakeholder engagement will primarily occur through briefing and feedback sessions with CARWG and with the MAC.

Proposed Briefing and Feedback Session Dates

Topic	CARWG Meeting Date	MAC Meeting Date
Policy inception	9 May 2022	17 May 2022
Policy assessment	14 June 2022	28 June 2022
Methodology development		
Detailed cost allocation methodology	6 September 2022	20 September 2022
Consultation paper – findings and options	29 November 2022	13 December 2022
Information paper – preferred approach	Late February 2023	Mid March 2023
Rule change proposal submitted to MAC	Early April 2023	Mid April 2023

Policy Assessment Approach

A potential framework for determining cost allocation

1. What is the nature of the good or service that is being provided?
2. What are the costs of providing that service and what are the key driver of those costs?
3. Whose actions (causer) are influencing cost drivers and affecting the total cost of providing those services?
4. Who is bearing the costs or is the beneficiary of changes to the total cost of providing these services?
5. Can the causer be charged for any detriment that results from their actions?
6. If the causer cannot be charged easily, can the beneficiary be charged?
7. If the causer or beneficiary can be charged, how much should they pay? Equity and efficiency considerations are important here.
8. If the above cannot be easily charged, can we allocate costs broadly across industry and customers to recover costs (e.g., industry levies)?

Notes: Adapted from frameworks developed by IPART NSW for Local Land Services and Rural Water Services.

Applying the framework

1. What is the nature of the goods and services being provided

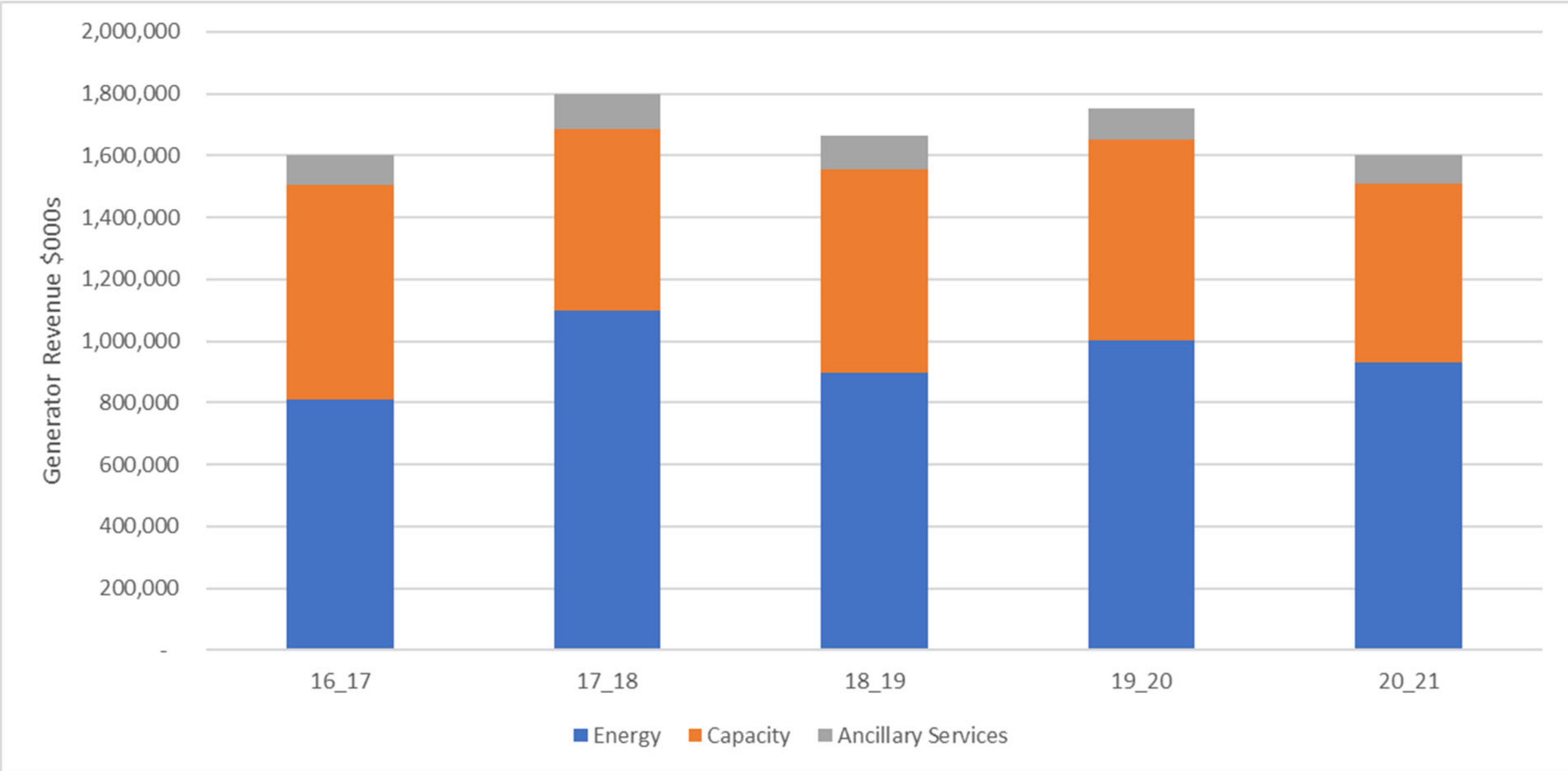
- Services covered by the Market Fees – developing and implementing rules and procedures; designing, implementing, operating and maintaining systems and processes to facilitate wholesale trade in electricity, Capacity Credits and ESS; market surveillance; monitoring effectiveness of the market and managing market evolution.
- Services covered by the ESS fees – maintaining power system within technical operating limits needed to keep it safe and stable. Parameters of system security include frequency and voltage stability; and physical properties such as system strength and inertia.

2. What are the costs of providing that service and what are the key driver of those costs

- Market Fees only represent 0.5% of the annual bill for a residential customer (calculated by Marsden Jacob).
- ESS costs represent around 6% of total wholesale costs (see next slide).
- While demand for ESS will increase given increases in intermittent generation in the SWIS (i.e. regulation and RoCoF), it is likely that future increases in energy storage in the SWIS will increase competition in Frequency Control ESS (FCESS) markets and unit prices could fall (Marsden Jacob has calculated that FCESS costs could fall by 50% from current levels).

Importance of Ancillary Service Payments in the WEM

(June 2021 dollars)



Source: Marsden Jacob Analysis 2022

Key Drivers of Costs

Drivers of WEM Services Costs:

- Operating and maintaining AEMO staff, systems and procedures.
- Implementation of new WEM rules, procedures, processes and systems due to energy transformation. Energy transformation includes:
  - Integration of large-scale intermittent generation and storage into WEM;
  - Enable DER (via aggregators) to participate in WEM mechanisms (i.e. ESS, energy and capacity markets);
  - Integration of electric vehicles into electricity networks and wholesale markets.

Drivers of ESS Costs

- The many drivers of the need for Frequency Control ESS is discussed on the next slide.

Drivers of Frequency Control ESS

Frequency Control	Description
Regulation (Raise and Lower)	Because the costs of frequency control regulation services (both Raise and Lower) are caused by unexpected (but relatively small) deviations between actual demand and supply and forecasts, the costs are usually recovered from all Wholesale Participants: 1) Scheduled and Semi-Scheduled Generators; 2) Scheduled Loads (i.e., pumping/charging for storage); and 3) Wholesale Market Customers. On a causer pays basis, those participants with the highest deviations from forecast should pay the most.
Contingency Raise	Because it is loss of supply that is the most likely cause of the need for Raise Contingency services, the costs of enabling Frequency Control Contingency Raise Services are recovered from all generators – or, more accurately: 1) Scheduled Generators; and 2) Semi-Scheduled Generators. In the NEM, Non-Scheduled Generators and smaller generators connected to distribution systems or behind the meter are exempt. If these generators are contributing to the loss of supply, on a causer pays basis they should be attributed contingency raise costs.
Contingency Lower	Because it is sudden drops in consumption (e.g., trip of a large load) that is the most likely cause of the need for Lower Contingency services, the costs of enabling frequency control contingency lower services are recovered from all loads – i.e., those seen by the AEMO in the wholesale market. This includes: 1) Wholesale Market Customers which includes retailers and large loads; and 2) Scheduled Loads (i.e., pumping/charging for storage). The sudden drop in grid consumption could also be caused by utilisation of behind the meter storage and generation.

RoCoF

Frequency Control	Description
RoCoF	• Primarily, to restrict the RoCoF to below a certain level (minimum RoCoF requirement), • Substitute for Contingency Reserve raise – the more inertia there is in the power system at any given point in time, the less contingency reserve raise is required. This new service is required because, as the amount of synchronous generation on the power system reduces, the expected RoCoF when a contingency event occurs will increase. This can potentially result in cascading trips for generators and potential damage to generating units and under-frequency load shedding if not addressed. Generation and network facilities are important drivers for the requirement for a RoCoF Control service. To incentivise generators and network facilities to improve their ride-through capability and reduce their exposure to the costs of the RoCoF Control service, it is reasonable to allocate a proportion of the costs to them. Potentially, large industrial and commercial loads can also benefit from improved ride-through capability and therefore it makes sense to allocate RoCoF costs to them as well. On a causer pays basis, it is appropriate for network operators, generators and loads to contribute to RoCoF cost recovery.

Identifying Causers and Beneficiaries

3. **Whose actions (causer) are influencing cost drivers and affecting the total cost of providing those services?**

4. **Who is bearing the costs or the beneficiary of changes to the total cost of providing these services?**

Identifying causers and beneficiaries

Agency, organisation of class of user	Enforced or Voluntary Participants	Enabler of Market & ESS	Causer of Market & ESS	Beneficiary of Market & ESS
Commonwealth Government			Commitment to zero net emissions by 2050. Provides subsidies to behind the meter and large-scale renewable generation technologies that has required considerable reform of WEM and increased ESS requirements.	
WA Government		Initiated formation of WEM and set WEM objectives.	Commitment to zero net emissions by 2050 Government policy can impact market operations and require WEM Rule changes.	Long term safe, secure and reliable supply of electricity for consumers Shareholder representative of state-owned energy utilities (i.e., Western Power and Synergy).
Energy Policy WA (Policy and Rule Changes)		Implements government policy and makes WEM rule changes.		

Agency, organisation of class of user	Enforced or Voluntary Participants	Enabler of Market & ESS	Causer of Market & ESS	Beneficiary of Market & ESS
Regulation Authority (ERA)		Approves the setting of market fees and allocation of costs.		
AEMO		Market and system operator.		
Market Participant that controls energy producing facilities exceeding 10 MW and/or loads	Enforced participant class.		Provider and user of services in the market and can initiate rule changes.	Can earn profits from trade in WEM mechanisms.
Owners of energy producing systems >5MW and ≤10 MW	Can apply for exemption, otherwise must register as Market Participant. Can be a voluntary participant.		Provider and user of services in the market and can initiate rule changes.	Can earn profits from trade in WEM mechanisms.
Owners of energy producing systems <5 MW	Can be a voluntary participant.		Provider and user of services in the market and can initiate rule changes.	Can earn profits from trade in WEM mechanisms.

Agency, organisation of class of user	Enforced or Voluntary Participants	Enabler of Market & ESS	Causer of Market & ESS	Beneficiary of Market & ESS
Market Participant with loads (former Market Customer class)	Retailers and large customers are enforced participants.		Provider and user of services in wholesale markets and can initiate rule changes.	Retailers can earn profits from trade in the WEM, while large-customers can purchase reliable, secure and competitively priced power.
Market Aggregators (i.e., virtual energy producing system operators)	Voluntary participants.		Provider and user of services in the market and can initiate rule changes.	Can earn profits from trade in WEM mechanisms. Profits will be shared with Final Customers, Embedded storage/generators or Microgrid owners.
Transmission Network Service Providers	Network operator class.	WEM requires information from TNSP to ensure power system reliability and security. Provides connections for market participants (loads, generation and storage).	Configuration of the network and network outages impacts wholesale market operations (e.g., thermal losses, thermal and non-thermal network constraints) and wholesale market costs.	TNSPs are an indirect beneficiary. An investment in generation or storage facilitated by the wholesale market can relieve a network constraint and defer network CAPEX (and vice versa).
Distribution Market Operator (DMO)	Enable market operators to aggregate loads/DER to trade in wholesale markets.			

Agency, organisation of class of user	Enforced or Voluntary Participants	Enabler of Market & ESS	Causer of Market & ESS	Beneficiary of Market & ESS
Distribution Network Service Providers	Network operator class.	WEM requires information from DNSP to ensure power system reliability and security. Provides network connections for final customers and distribution connected facilities.	Distribution connected storage assets owned by a DNSP can impact wholesale market operations.	DNSPs are an indirect beneficiary. An investment in behind the meter technologies in response to wholesale market signals (peak energy prices and/or ancillary services) can cause a need for additional CAPEX (or vice versa).
Final Customers			End-use appliances and DER can drive changes in grid demand which impact market operations and require necessary rule changes to ensure a reliable and secure power system.	Direct beneficiaries through WEM services on-sold to them by retailers. Direct beneficiaries through provision of WEM services via retailers/aggregators.
Embedded Generation /Storage Owner/Operators			Operation of facilities can impact grid demand and network configuration.	Direct beneficiaries through provision of WEM services via retailers/aggregators.
Microgrid Owner/Operators			Operation of facilities can impact grid demand and network configuration.	Direct beneficiaries through provision of WEM services via retailers/aggregators.

Summary on identify causers/beneficiaries

- All formal wholesale market participants are both causers and beneficiaries of WEM services. Hence, there is some justification for allocating market and ESS costs to market participants on the basis of causer and beneficiary pays principles.
- Many other organisations or groups of users that are not formal participants in the WEM are also causers and/or beneficiaries. This includes Embedded Storage/Generation owners, Microgrid owner/operators, Final Customers, TNSPs and DNSPs and the WA State Government.
- Ultimately, Final Customers, embedded generators and owners of microgrids will incur WEM costs or earn net revenue from the provision of WEM services by Market Participants. However, the way in which WEM service costs are passed through by multiple parties to Final Customers, embedded generators and owners of microgrids can have equity and efficiency concerns.

Can we charge causers or beneficiaries? Should they be charged?

5. **Can the causer be charged for any detriment that results from their actions?**
6. **If the causer cannot be charged easily, can the beneficiary be charged?**
7. **If the causer or beneficiary can be charged, how much should they pay?**
   - This decision will be impacted by equity and efficiency considerations. For example, would the levying of the charge result in actions by parties to reduce the impact of their actions and would the benefits of their actions exceed the costs to society. If the levying of the charge is not likely to have significant efficiency consequences, should we still allocate costs to those participants that are causing the costs to be incurred?
8. **If the above cannot be easily charged, can we allocate costs broadly across industry and customers to recovery costs (e.g., industry levies)**

Should governments be allocated costs based on "causer pays" principles

IPART[a] hierarchy to determine who should fund a service:

1. Impactors or risk creators (causers);
2. Beneficiaries; and
3. Taxpayers.

Cost allocation practices were modified later so that only efficient costs were recovered from causers and/or beneficiaries.[b] Any legacy costs (i.e., those costs not attributable to groups 1 and 2 and not efficient) should not be recovered from causers or beneficiaries.

This suggests a case for industry levies to recover these legacy costs.

Sources: (a) Independent Pricing and Regulatory Tribunal of New South Wales, Review of funding framework for Local Land Services NSW, Other Industries — Final Report, March 2014

(b) Frontier Economics, Review of WaterNSW Cost Shares, A report prepared for IPART, December 2016

Early findings from Policy Assessment

Literature Review

As part of the preparation of the Policy Assessment report we shall undertake a comprehensive literature review of methodologies used to allocate Market Fees and ESS costs in other jurisdictions.

This includes the following jurisdictions:

- the WEM;
- the NEM (National Electricity Market) Australia;
- The National Electricity Market of Singapore (NEMS);
- the California Independent System Operator (CAISO) in California, USA;
- Electricity Reliability Council of Texas (ERCOT), USA;
- the Pennsylvania, New Jersey, and Maryland (PJM) Interconnection, USA;
- I-SEM, Ireland; and
- UK electricity market.

For each jurisdiction, we provide an overview of the following:

- Market design and key market mechanisms (i.e., energy market, capacity market, ancillary service markets).
- Proportion of market operator fees and ancillary service charges recovered.
- Current cost allocation method for fees and ancillary services.
- Burden of the current cost allocation on different classes of users – generators, loads, storage providers, hybrid facilities, aggregators, and network operators. How much of the cost burden falls on final customers/DER?
- Key considerations in the development of those methods.
- Recent or planned changes to cost allocation methods and justification for the change.
- Emphasis on user pays or beneficiary pays principles in the development of cost allocation methods.
- Emphasis on economic efficiency in the development of cost allocation methods (including cost to implement user pays cost recovery).
- Emphasis on convention or precedent in the development of cost allocation methods, i.e., easy to understand cost of implementation is low and efficiency losses by not adopting causer pays are low.
- Applicability of other jurisdictional approaches to the WEM, given the “capacity and energy” market design of the WEM.

Energy Transformation

Internationally electricity markets are transforming from a centralized system of large fossil fuel (coal and gas) generation towards a decentralized power system that includes:

- Large-scale wind (onshore and offshore) and solar farms (i.e., intermittent generation sources).
- Installation of grid connected storage facilities (both transmission and distribution connected) to firm power supplies from intermittent generation sources. This includes pumped hydro, compressed air energy storage and battery systems.
- ‘Behind the meter’ or Distributed Energy Resources (DER), which includes rooftop and ground mounted solar, battery systems and electric vehicles; the latter also has the capability to export power to the grid.
- Moving from single directional flow systems (i.e., generation, transmission, distribution and finally end use) to bi-directional flow systems (i.e., behind the meter solar array to grid and grid to home or business), upgrades to networks are required to ensure the safe and secure supply of power.

Consequences for this study

- The service and nature of grid supplies is changing. Electricity markets will have to move to 'gross' definitions of energy demand and supply given the increasing importance of DER. These resources will increasingly need to be dispatched and controlled by system operators and, on a causer or beneficiary pays basis, will increasingly be attributed market and ESS costs.
- Intermittent generation and storage have high fixed costs and low variable costs, implying that energy and ancillary service markets that are reliant on unit variable costs ($/MWh) to determine market or service prices will under-recover investment costs. Capacity mechanisms, or out-of-market contracts (Cfd's) will be required to fund the difference.
- Increasingly, power systems will have to recover costs through charging practices based on capacity utilisation (kVA, kW), and the type and number of customer connections to power grids (i.e., single directional meter, bidirectional meter, voltage level, etc). Energy unit charging ($/MWh) will become less significant.

Discussion Points

MAC Issues

1. If grid demand is reducing due to growth in behind the meter demand, should we be levying charges based on gross or underlying demand?

   Ofgem (UK) recommended that Balancing Service Use of System (BSUoS) charges should be recovered from "final demand" and not from transmission-connected generation from 2021:

   > *"charging balancing services charges for demand on the basis of gross demand at the Grid Supply Point so that suppliers cannot reduce their liability for balancing services charges by contracting with Smaller Distributed Generators (and exporting on-site generation)."*
   >
   > Ofgem, Targeted charging review: decision and impact assessment, 21 November 2019, p. 163.

MAC Issues cont’d

2. Allocation of fees between generators and retailers

   AEMO undertook a comprehensive review of NEM fee structures in 2020 in part due to the need to accommodate new technologies and new participants that were not being charged in the current fee structure. Many issues concerning user versus beneficiary pays principles were raised in this review, including:

   - With declining operational consumption in many NEM regions, charging based on $/MWh may no longer be an appropriate cost allocation driver. While most stakeholders supported the existing charging mechanism of $/MWh, others supported a change to a per connection point charge ($/NMI) or a combination of both variable and fixed rates.
   - Some participants wanted to extend NEM fee recovery to Network Service Providers.
   - Recovery of major transformational initiatives undertaken by AEMO (e.g., Five Minute Market Settlement, DER integration, Energy Consumer Data Right etc) could be based on recovery from either market customers only, DER resources (based on beneficiary pays principle), and/or existing market participants.

Future NEM Fee Structures

While many of the fee structures will remain the same until 2023, the fee structures would be changed to ensure all beneficiaries contributed to market costs:

- Increase the percentage attribution of core NEM allocated costs to Generators, MNSP, SGAs and MASPs/DRSPs from 1 July 2023, reflecting an increased level of involvement with the revenue requirements for AEMO's core NEM activities;
- From 1 July 2023, the percentage attribution of the core NEM allocated costs to Market Customers will reduce and the Market Customer tariff be amended from $/MWh to a combination of $/MWh and $/NMI on a 50/50 allocation so that there is some consideration of demand elasticity to a volume tariff, reflection of the differences between small and large customers, and to reflect the fact the bulk of AEMO's costs are fixed;
- Introduce a separate allocation of the core NEM function costs to TNSPs and to DNSPs from 1 July 2023, to reflect the extent of their involvement with AEMO's core NEM activities, based on energy consumed; and
- For transformational initiatives, allocate costs directly to relevant participants, where reasonably practicable.

Notes: Managed Network Service Provider (MNSP), Small Generation Aggregators (SGAs), Market Ancillary Services Provider (MASP), and Demand Response Service Provider (DRSP).

Source: AEMO, Electricity Fee Structures, Draft Report and Determination, A draft report and determination on electricity fee structures to apply to Participant fees from 1 July 2021, November 2020.

Close