



Meeting Agenda

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|------------------------|---|
| Meeting Title: | Cost Allocation Review Working Group (CARWG) |
| Meeting Number: | 2022_06_07 |
| Date: | Tuesday 7 June 2022 |
| Time: | 1:00 PM to 2:30 PM |
| Location: | Online, via TEAMS. |

| Item | Item | Responsibility | Type | Duration |
|------|--|----------------|------------|----------|
| 1 | Welcome and Agenda | Chair | Noting | 2 min |
| 2 | Meeting Apologies/Attendance | Chair | Noting | 2 min |
| 3 | Minutes of Meeting 2022_05_09 | Chair | Noting | 2 min |
| 4 | Action Items | Chair | Discussion | 2 min |
| 5 | Jurisdictional review – Step 1(a) | Marsden Jacob | Discussion | 15 min |
| 6 | WEM Alignment with the Causer Pays Principle – Step 1(b) | Marsden Jacob | Discussion | 60 min |
| 7 | Next Steps | Chair | Noting | 2 min |
| 8 | General Business | Chair | Discussion | 5 min |
| | Next Meeting: 30 August 2022 | | | |

Please note this meeting will be recorded.



Minutes

| | |
|-----------------------|---|
| Meeting Title: | Cost Allocation Review Working Group (CARWG) |
| Date: | 9 May 2022 |
| Time: | 1:00pm – 2:30pm |
| Location: | Microsoft TEAMS |

| Attendees | Company | Comment |
|---------------------|---|---------|
| Dora Guzeleva | Chair | |
| Oscar Carlberg | Alinta Energy | |
| Tom Frod | Bright Energy | |
| Rebecca White | Collgar Wind Farm | |
| Noel Schubert | Small-Use Consumer Representative | |
| Mark McKinnon | Western Power | |
| Jason Found | Synergy | |
| Genevieve Teo | Synergy | |
| Paul Arias | Bluewaters Power | |
| Edwin Ong | AEMO | |
| Cameron Parrotte | Woodside | |
| Grant Draper | Marsden Jacob Associates (MJA) | |
| Andrew Campbell | MJA | |
| Hana Ramli | MJA | |
| Stephen Eliot | Energy Policy WA (EPWA) | |
| Shelley Worthington | EPWA | |

| Apologies | From | Comment |
|-----------|------|---------|
| None | | |

| Item | Subject | Action |
|----------|--|--------|
| 1 | Welcome and Agenda The Chair opened the meeting at 1:00pm and invited the attendees to introduce themselves. | |

| Item | Subject | Action |
|----------|--|--------|
| | <p>The Chair reminded CARWG members of the guiding principles for the Cost Allocation Review (section 2.2 of the Scope of Works) and, in particular, noted that:</p> <ul style="list-style-type: none"> • the cost allocation methodologies must be cost effective, simple, flexible, sustainable, practical and fair; and • the ‘causer pays’ principle will be applied where practicable and efficient so that the cost allocation methodologies incentivise Market Participants to minimise overall costs to consumers. | |
| 2 | <p>Meeting Apologies/Attendance</p> <p>The Chair noted the attendance as listed above.</p> | |
| 3 | <p>Project Scope and Timeline</p> <p>Mr Draper reviewed the project scope (slides 3-5), which is to align the allocation of Market Fees and Essential System Services (ESS) costs with the causer pays principle.</p> <ul style="list-style-type: none"> • Ms White sought clarity on the ESS costs that are out of scope because they were recently reviewed by the Energy Transformation Taskforce. The Chair indicated that: <ul style="list-style-type: none"> ○ the Scope of Work highlights what the Taskforce had previously considered, which will not be reconsidered, including the full runway method for allocating Contingency Raise services and Rate of Change of Frequency (RoCoF) Control service; ○ the Taskforce did not look at allocating costs for Regulation Raise and Lower, so this is in scope; and ○ for the Market Fees, the review will look at the costs recovered under AEMO’s allowable revenue, not at costs recovered elsewhere in the market, such as existing application fees. • Ms White noted that the Taskforce substantially looked into allocation of costs for Regulation services but that there were implementation problems related to the lack of five-minute metering until 2025. <ul style="list-style-type: none"> ○ The Chair indicated that the CARWG should consider data requirements after determining the best cost-reflective and efficient allocation methodologies, and implementation may need to be delayed if five-minute settlement is required. ○ Mr Draper indicated that the team would contact Ms White to discuss the Taskforce’s work on allocation of Regulation service costs. <p>Mr Draper reviewed the timeline for the project (slides 6-7).</p> | |
| 4 | <p>Stakeholder Engagement Plan</p> <p>Mr Draper reviewed the stakeholder engagement plan (slides 7-9) and noted that EPWA has emphasised stakeholder engagement and that the WEM Rules require the Coordinator to consult with the MAC before</p> | |

| Item | Subject | Action |
|------|---|--------|
| | <p>developing a Rule Change Proposal. Stakeholder engagement will be primarily through CARWG and MAC.</p> <p>Mr Draper provided a revised schedule for CARWG meetings. No CARWG members indicated concerns with the revised schedule.</p> | |
| 5 | <p>Approach to Policy Assessment</p> <p>Mr Draper provided an overview of the approach to policy assessment (slides 10-11):</p> <ul style="list-style-type: none"> • Mr Draper noted that the causer pays concept has always been implicit in the Wholesale Electricity Market (WEM) but there has never been an explicit framework for how it should be applied. • The only explicit cost allocation framework that MJA has identified was developed by the Independent Pricing and Regulatory Tribunal (IPART) (NSW) around allocation of local government water costs. Mr Draper reviewed this framework (slide 11). • Mr Draper noted that the literature indicates that the causers and beneficiaries are often the same party if there are no externalities, but they can be also quite different. The allocation methodology can be considered once the causers and beneficiaries are identified, at which point consideration needs to be given to economic efficiency, incentives and equity. • Mr Carlberg asked whether cross-subsidies should be considered in formulating the allocation framework. <ul style="list-style-type: none"> ○ The Chair noted that there are clear cross-subsidies where flat fees and charges are used – such as for Regulation services or Market Fees, and to an extent cross-subsidies are also embedded elsewhere, such as in the allocation of RoCoF Control costs. ○ Mr Carlberg, responded that the biggest cross-subsidies are in the Market Fees and Regulation services, and in relation to Distributed Energy Resources (DER), because DER can get around Market Fees. Mr Carlberg clarified that he wants to focus first on the biggest cross-subsidies. ○ The Chair asked CARWG members to provide examples of where the Market Fee or ESS cost allocations are not sending the appropriate signals and where the causer pays principle should apply. ○ The Chair indicated that the CARWG should first focus on Market Fees and Regulation services but can shift this focus if it determines that there are bigger cross-subsidy issues. ○ Ms White agreed with having an eye on cross-subsidies, particularly in relation to transmission connected participants subsidizing DER, noting there is an intent to have DER pay some costs under the causer pays principles, via aggregators participating in the WEM. The Chair indicated that this issue will be considered. | |

| Item | Subject | Action |
|-----------------|---|---|
| | <ul style="list-style-type: none"> ○ Mr Schubert noted that the Cost Allocation Review is about improving the allocation of costs to causers or beneficiaries, but there might be other parties that could help reduce costs if they are adequately incentivised to do so. Mr Schubert suggested that there is an opportunity to introduce incentives to third party 'enablers' who could reduce overall costs. ○ The Chair agreed that, when we consider passing costs through to a causer, it is important to account for any benefits that the causer creates in reducing costs elsewhere. ○ Mr Froud noted that all cost will be paid by either electricity users or taxpayers, and one of the ongoing challenges is managing the cross-subsidy between users and taxpayers. The Chair reminded the CARWG members that they can only recommend changes to the WEM Rules. ○ Mr Parrotte noted that the CARWG should not get into the space of defining ESS. Mr Parrotte also noted that, in designing an approach to cost allocation, it is important to not put incentives in place to avoid costs which in turn may result in worse overall market outcomes. ○ Mr Draper provided an example – allocating fees and charges based on grid (or net) energy rather than gross energy provides an incentive for parties to install behind the meter technology. ● Mr Draper noted that, based on the IPART framework, if we cannot easily charge the causer or beneficiary, then we would spread costs across all market participants and customers. | |
| | <p>ACTION: CARWG members are to advise EPWA by email of any examples where the Market Fees or ESS cost allocations are not sending the appropriate signals and where the causer pays principle should apply.</p> | <p>CARWG members (before the next CARWG meeting)</p> |
| <p>6</p> | <p>Early Findings from the Policy Assessment Analysis</p> <p>Mr Draper provided an indication of the relative significance of Market Fees and ESS costs (slides 12-13) – Market Fees represent only about 0.5% of total costs and ESS costs about 6%.</p> <ul style="list-style-type: none"> ● The Chair pointed out that the current thinking is that ESS costs will increase as a percentage of total costs with increased penetration of DER and renewable electricity generation, more generally. ● Mr Draper and Mr Campbell agreed but suggested that increased storage penetration may dampen the increase in Regulation, Contingency Reserve Raise and Contingency Reserve Lower. ● Mr Froud asked whether synchronous condensers could also provide ESS services. The Chair noted that synchronous condensers are compensated to an extent through network charges and Mr Parrotte noted that they can also receive compensation through RoCoF Control services. | |

| Item | Subject | Action |
|------|---|--------|
| | <p>Mr Draper provided an indication of the drivers for WEM services costs (e.g. AEMO's costs) (slide 14).</p> <ul style="list-style-type: none"> • Mr Arias commented that business-as-usual (BAU) operations vs. large scale reforms potentially have different beneficiaries and asked about separating the allocation of these two types of costs. • Mr Draper indicated that AEMO tracks these costs and that it is in scope to consider what is BAU vs. programs to improve the overall efficiency of the market. • In response to a question from the Chair, Mr Arias indicated that his question does not relate to ESS costs, only whether it is appropriate to target reform costs via Market Fees when the reforms have distinct beneficiaries. • The Chair noted that the intent is to identify the causers and beneficiaries of costs and it is recognised that they may not be the same people. For example, policies that drive DER integration may benefit more than just DER participants, so we need to identify all of the causers and beneficiaries. • Mr Parrotte noted that AEMO did a lot of work in its latest revenue submission on the costs for the individual reform tasks and agreed with Mr Arias that there is a difference between BAU and the reforms, and between the causers and beneficiaries. | |
| | <p>Mr Draper provided an indication of the drivers for ESS costs (slides 15-16) and noted that:</p> <ul style="list-style-type: none"> • Regulation services are caused by unexpected deviations between actual and forecasted supply and demand so, based on the causer pays principle, these costs could be allocated to parties with the largest deviations. However, this may not be implementable, so it may be necessary to allocate these costs to everyone. • Contingency Raise services deal with the loss of a generator or storage facility, and these costs are typically allocated to generators (noting that one of the potential gaps that needs to be considered is whether smaller non-scheduled generators contribute to the need for these services but do not directly bear these costs); • Contingency Lower services are typically about a drop in consumption, so these costs are typically allocated to loads; and • RoCoF Control services are about inertia, which can be impacted by generators and network facilities, as well as by users in terms of ride through capability, so all participants can impact RoCoF Control services. <p>The Chair noted that RoCoF Control costs are currently split equally between generators, users and the network operator, and that this arrangement is not cost reflective, but it is a new arrangement that was implemented by the Taskforce, so it is not a priority.</p> <p>Mr Parrotte also noted that we do not yet know the value of the RoCoF Control service, so we do not yet know if it is a priority.</p> | |

| Item | Subject | Action |
|------|--|--------|
| | <p>Mr Draper outlined the preliminary work to identify the causers and beneficiaries of market services and ESS (sides 17-24).</p> <ul style="list-style-type: none"> • Mr Draper pointed out that all Market Participants are both causers and beneficiaries of market services and ESS to some extent, so there is some justification to allocate Market Fees and various ESS costs to each of them. However, there are other parties that are also causers or beneficiaries that are not formal Market Participants and cannot be attributed charges, such as embedded storage or generation owners, microgrid owners, final customers, Distribution Network Service Providers, Transmission Network Service Providers and the State Government. • Mr Draper asked all CARWG members to review the table in slides 18-21 and provide comments on whether anything is incorrect or missing. The Chair reminded the CARWG members to keep comments to issues that can be practically addressed under the WEM Rules. • Ms White considered the table was useful but suggested that the identification of causes and beneficiaries may need to be more granular. Ms White also suggested that, while Government will not inject funds into the market, it would still be useful to capture where Government reforms drive market costs and benefits, particularly in the DER space. Mr Schubert agreed with Ms White. • Mr Froud pointed out that the focus should not only be on the costs of Government policy but also on the benefits from these policies. • Mr Draper noted that IPART's hierarchy would first allocate costs to causers, then to beneficiaries and then, as a last resort, to taxpayers (which would be across all Market Participants). • The Chair noted that the CARWG is to identify the parties that can impact market services or ESS costs and allocate costs to those parties, where this can be done under the WEM Rules. The CARWG is not to try to shift costs to Government. • Mr Froud agreed that the CARWG's scope should be limited to issues that can be addressed under the WEM Rules and noted that it would be out of scope to recommend changes to electricity retail tariffs or for government to commit to paying costs. <p>Mr Draper advised that MJA is reviewing cost allocation methods in other jurisdictions and provided some early feedback from its review on two issues:</p> <ul style="list-style-type: none"> • If grid demand is reducing due to growth in behind the meter generation, should charges be levied based on net or gross demand? <ul style="list-style-type: none"> ○ Mr Draper indicated that Ofgem (UK) uses a bundled service for Balancing Services Use of System (BSUoS) charges, and that they are moving to a definition of gross demand to capture behind the meter technology. | |

| Item | Subject | Action |
|-----------------|---|---|
| | <ul style="list-style-type: none"> • With declining operational consumption, should Market Fees be charged on a different basis? <ul style="list-style-type: none"> ○ The National Energy Market (NEM) is: <ul style="list-style-type: none"> ▪ moving away from only a \$/MWh charge to both \$/MWh and \$/NMI charges; ▪ changing the allocation of fees (e.g. Wholesale Participants to be allocated 55.9%, Market Customers to be allocated 26.6% and TNSPs to be allocated 17.5% of AEMO direct costs); and ▪ looking to allocate costs for transformational projects to specific parties (including market customers, DER resources and/or existing market participants). | |
| | <p>ACTION: CARWG members are to review the tables in slides 18-21 and provide comments on whether anything is incorrect or missing.</p> | <p>CARWG members (prior to the next CARWG meeting)</p> |
| <p>7</p> | <p>Next Steps</p> <p>The Chair thanked CARWG members for their participation and encouraged members to email any information to EPWA regarding cost allocation in other jurisdictions (e.g. in the NEM).</p> <p>The Chair noted the CARWG meetings will continue as per the agreed schedule.</p> | |
| <p>8</p> | <p>General Business</p> <p>No general business was discussed.</p> <p>The next CARWG meeting is scheduled for 7 June 2022.</p> | |

The meeting closed at 2:30pm.



Agenda Item 4: CARWG Action Items

Cost Allocation Review Working Group (**RCMRWG**) Meeting 2022_06_07

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|----------|--|
| Shaded | Shaded action items are actions that have been completed since the last MAC meeting. |
| Unshaded | Unshaded action items are still being progressed. |
| Missing | Action items missing in sequence have been completed from previous meetings and subsequently removed from log. |

| Item | Action | Responsibility | Meeting Arising | Status |
|------|---|----------------|-----------------|--|
| 1 | CARWG members are to advise EPWA by email of any examples where the Market Fees or ESS cost allocations are not sending the appropriate signals and where the causer pays principle should apply. | CARWG members | 2022_05_09 | <p>Open</p> <p>EPWA received comments from Rebecca White (Collgar) on 27 May 2022 and forwarded these comments to CARWG members on the same day.</p> <p>EPWA has not received any other responses from CARWG members as of 1 June 2022.</p> |
| 3 | CARWG members are to review the tables in slides 18-21 (from CARWG_2022_05_09) and provide comments on whether anything is incorrect or missing. | CARWG members | 2022_05_09 | <p>Open</p> <p>EPWA has not received any responses from CARWG members as of 1 June 2022.</p> |



Government of Western Australia
Energy Policy WA

WEM Cost Allocation Review: Policy Assessment

Presentation to Cost Allocation Review Working Group (CARWG)

7 June 2022

Grant Draper, Marsden Jacob Associates

Working together for a
brighter energy future.

Agenda

Purpose of the Policy Assessment

Causer-Pays and Beneficiary-Pays Principles

Agenda Item 5: Jurisdictional Review – Step 1(a)

Agenda Item 6: WEM Alignment with the Causer / Beneficiary Pays Principle – Step 1(b)

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; and
4. Use the causer-pays principle, where practicable and efficient.

Timeline

| Steps/Tasks | Duration/Timing |
|---|---------------------------|
| Step 1 – Policy Assessments | |
| (a) Literature review of the methodologies to allocate Market Fees and ESS costs in other jurisdictions. | Mid-April to Mid-May 2022 |
| (b) 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: <ul style="list-style-type: none"> 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 |

Purpose of Policy Assessments (Step 1)

- a) Literature Review of the methodologies to allocate Market Fees and ESS costs in other jurisdictions.
- b) In consultation with the CARWG, 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.*

* Have extended this to consider beneficiary-pays principle as well.

Causer-Pays and Beneficiary-Pays Principals

Causer-Pays

- Under the causer-pays principle, a determination must be made on how “impactors” or “causers” affect the provision of services and the costs of the services that are allocated to those causers.
- In relation to frequency control, those who cause imbalances in the electricity grid should bare the costs of services provided by market participants that aim to address those imbalances.
- For example, a sudden increase in an electrical load can cause a reduction in system frequency.

Beneficiary-Pays

- Under the beneficiary-pays principle, a determination must be made on who benefits from the provision of a service and allocate the cost of service to those beneficiaries.
- The ultimate beneficiary of a wholesale electricity market that provides secure, reliable and affordable electricity are final customers.
- However, there are numerous other beneficiaries in the electricity value chain, which includes: wholesale market participants (i.e., retailers, aggregators and generators), embedded storage/generation owners, microgrid owner/operators, TNSPs and DNSPs.

Cost Allocation Hierarchy

1. **Impactors or risk creators – at the top of the hierarchy are those causing an adverse impact (for instance, degrading the environment) or creating a risk.**
 - a. The parties are best placed to control the demand for services.
 - b. The cost of the activity should be allocated to the impactor(s) or risk creator(s) in proportion to their contribution to the impact or risk created, where it is efficient and cost effective to charge them.
2. **Beneficiaries – second in the hierarchy are beneficiaries where it is either not practical to charge the impactor or risk creator or there is no adverse impact or risk created:**
 - a. Where the direct beneficiary captures sufficient benefits to meet the costs of the activity, indirect beneficiaries should not pay.
 - b. Where the direct beneficiary is unable to capture sufficient benefits to meet the cost of the activity, the direct beneficiary should pay up to the point where benefits equal costs. The indirect beneficiary should pay the residual to meet the cost of the activity for the additional benefits, where it is efficient for them to do so.

Jurisdictional Review - Step 1a

Methods of allocating Market Fees and ESS Fees across jurisdictions

Jurisdictions in Scope

Reviewed the following jurisdictions:

- Wholesale Energy Market (WEM), Western Australia
- National Energy Market (NEM), Eastern Australia
- National Electricity Market of Singapore (NEMS)
- California Independent System Operator (CAISO), United States
- Electricity Reliability Council of Texas (ERCOT), United States
- Pennsylvania, New Jersey, and Maryland (PJM) Interconnection, United States
- Integrated Single Electricity Market (I-SEM), Ireland
- Great Britain (National Grid)

Service Equivalents Across Jurisdictions

| WEM | NEM | NEMS | CAISO | ERCOT | PJM | I-SEM | GB (Transgrid) |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------|--|--|
| Market and System Services (Market Fee) | | | | | | | |
| AEMO Market Services | NEM Service | EMC Service | Grid Management | System Administration | Control Area Administration | Transmission System Operator (TSO) | Electricity System Operator (ESO) Internal |
| System Operation | | | | | Market Support Service | | |
| Economic Regulation | No equivalent service | No equivalent service | No equivalent service |
| Market Rule Changes | No equivalent service | No equivalent service | No equivalent service |
| Frequency Control Essential System Services (typically co-optimised with Energy Market) | | | | | | | |
| Frequency Regulation Raise | FCAS Regulation Raise | Regulation | Regulation Up | Regulation Up | Regulation | Synchronous Inertial Response Fast Frequency Response (FFR) | Response |

Service Equivalents Across Jurisdictions Cont'd

| WEM | NEM | NEMS | CAISO | ERCOT | PJM | I-SEM | GB (Transgrid) |
|--|--|--|--|--|--|--|---|
| Contingency Reserve Raise | Contingency FCAS Raise | Reserve | Spinning Reserve Non-Spinning Reserve | Responsive Reserve Non-Spinning Reserve | Primary Reserve: Synchronised Non-Synchronised Day Ahead Scheduling Reserve | Primary Operating Reserve Secondary Operating Reserve Tertiary Operating Reserve | Fast Reserve Operating Reserve Short Term Operating Reserve |
| Contingency Reserve Lower | Contingency FCAS Lower | | | | | | |
| RoCoF | No equivalent service | No equivalent service | No equivalent service | No equivalent service | No equivalent service | No equivalent service | Bundled into BSUoS |
| Other Essential System Services (not co-optimised with energy market) | | | | | | | |
| System Restart Services | System Restart Ancillary Service | Black-Start capability | Black Start Service | Black Start Services | Black Start Service | Black Start | Black Start |
| Non-Co-optimised ESS | Network Support and Control Ancillary Services | Reactive Support and Voltage Control Service | Voltage Support | Voltage Support | Reactive Service and Voltage Control | Steady State Reactive Power | Reactive Constraint (Voltage) |

Wholesale Electricity Market (WEM)

| Service | Cost Recovery Method | Causer Pays Adherence |
|---|---|--|
| Market and System Operator | Charge on Grid MWh for Market Participants | Medium <ul style="list-style-type: none"> Partially excludes other causers such as DER and full excludes Network Operators. |
| Essential System Services (Ancillary Services) | | |
| Frequency Regulation | Loads and intermittent generators (Grid MWh). | Low <ul style="list-style-type: none"> Frequency regulation costs are not driven by Grid MWh consumed or generated. Other causers are excluded such as scheduled generators and DER. |
| Contingency Regulation | Modified runway method to allocate costs to generators. | High <ul style="list-style-type: none"> More of the costs allocated to the largest generator operating in a trading interval. This is consistent with causer pays methodology. |
| Contingency Reserve Lower | Allocated to loads based on Grid MWh. | Medium <ul style="list-style-type: none"> Costs allocated across all loads which includes large commercial and industrial loads who are the major causer of the requirement of this service. |
| Inertia | Loads, network operator and generators. | Low <ul style="list-style-type: none"> Costs split evenly between beneficiaries, which provides incentives for participants to improve 'ride-through' capability of equipment. |

National Electricity Market (NEM)

| Service | Cost Recovery Method | Causer Pays Adherence |
|---------------------------|---|---|
| Market Operator | Mixture of fixed and variable charges on participants (includes aggregators) and network operators. | Medium <ul style="list-style-type: none"> • However, still includes variable charges even though these costs do not vary with usage or demand. |
| Ancillary Services | | |
| Frequency Regulation | Causer pays methodology to determine contribution factors for loads and generators. | High |
| Contingency Reserve | Grid MWh for loads and generators | Medium |

Other Jurisdictions

| Jurisdiction | Service | Cost Recovery Method | Causer Pays Adherence |
|--------------------|---------------------------|--|--|
| NEMS (Singapore) | | | |
| | Market Operator | Fixed and variable fees on market participants. | High |
| | Ancillary Services | | |
| | Regulation | Loads and first 10 MW of each generation facility being dispatched. | Medium |
| | Reserve | Variant of runway model to calculate costs for each dispatchable facility. | High <ul style="list-style-type: none"> • Most costs allocated to largest generator in operation. |
| CAISO (California) | | | |
| | Market Operator | Unbundled grid management charge on service users (\$ per MWh). | Low |
| | Ancillary Services | Unit charge on load serving entities. | Low |
| ERCOT | | | |
| | Market Operator | Unit charge on Qualified Scheduling Entities based on load. | Low |
| | Ancillary Services | | |
| | Regulation | Unit charge on load serving entities. | Low |
| | Reserve | Unit charge on load serving entities. | Low |

Other Jurisdictions

| Jurisdiction | Service | Cost Recovery Method | Causer Pays Adherence |
|---|---------------------------|---|---|
| PJM (Pennsylvania, New Jersey and Maryland) | Market Operator | Unit charges on transmission users. | Medium |
| | Ancillary Services | | |
| | Regulation | Unit charge on Load serving entities. | Low |
| | Primary Reserve | Unit charge on Load serving entities. | Low |
| I-SEM (Ireland) | Market Operator | Part of TUoS tariff (unbundled) on transmission users (generators and loads). | Medium |
| | Ancillary Services | | |
| | System Services | As above. | Medium |
| National Grid (Great Britain) | Market Operator | Part of BSUoS Charge | Low <ul style="list-style-type: none"> • Uses beneficiary pays principle. Allocated to customer's gross demand. |
| | Ancillary Services | Part of BSUoS Charge | Low <ul style="list-style-type: none"> • Uses beneficiary pays principle. • Allocated to customer's gross demand. |

Conclusions from Jurisdictional Review

- **Market Fees** – The NEM has made significant inroads to achieving causer-pays (included more ‘causers’ of costs, such as network users and aggregators). However, the NEM still has a high dependence on Grid MWh charging, which is not a cost driver for AEMO fees.

AEMO’s approach falls short of Great Britain’s approach to charge customers based on gross demand, which ensures that DER contributes to cost recovery.

Ofgem’s approach accepts that pricing of market services is about cost recovery and not sending efficient price signals to change behavior (i.e., to encourage transmission users to use less market services). On this basis, Ofgem conclude there are not good efficiency arguments for levying charges on Market Participants. Charges should simply be levied on ultimate beneficiaries of the service or Gross MWh to reduce complexity and remove other distortions in the market.

- **Regulation Services** – the NEM uses a causer-pays methodology to determine contribution factors for allocating costs. This provides incentives for participants to reduce variability in generation and/use.
- **Reserve Raise** – Singapore and the WEM use the runway methodology to allocate costs to generators, which is consistent with causer-pays approaches.
- **Reserve Down** – the WEM allocates costs to loads given that they are likely to be causer of the requirement for this cost (loss of load). However, the major causer of the requirements for this service are large industrial and commercial loads (i.e., loss of a large load which causes system frequency to rise rapidly), who under a causer pays methodology, would pay a higher proportion of costs compared to smaller users. In the future, loss of battery recharging could be a significant requirement for this service.
- **Inertia** – the WEM has a formal unbundled RoCoF service which allocates costs to generators, loads and network operators (1/3 cost attribution for each customer class) which is consistent with the beneficiary pays principle.

WEM Alignment with Causer-Pays or Beneficiary-Pays – Step 1(b)

Observations on Application of Cost Recovery Methodology

We have made nine (9) observations on whether Market Fee and ESS cost allocation should be based on causer or beneficiary-pays principles in the WEM, considering practices and proposals in other jurisdictions (where relevant).

In some instances, there is little guidance on the application of causer- or beneficiary-pays from other jurisdictions (for example, inertia and contingency reserve lower) and we have referred to the basic principles of cost allocation methodologies to develop our 'observation'.

Market Services

Observation 1

Allocating costs to Market Customers (who represent final customers) based on connection costs is consistent with the Causer-Pays Principle.

- Splitting the charge between Gross MWh and connection charges would help address equity concerns about the burden of fixed connection charges on smaller users.
- Can use Grid MWh data if Gross MWh data is not readily available.
 - Even though this provides added incentives for DER and energy efficiency (i.e., reduce Grid MWh further), these efficiency losses are expected to be low given the level of Market Fees relative to other value chain costs (e.g., wholesale, network, retail charges and margin etc.).

Market Services

Observation 2

AEMO market and system fees are set to recover total budgeted costs of services provided. It is not based on efficient pricing principles of incremental costs of supply (or marginal costs of supply) required to send price signals to Market Participants to consider reducing the use of AEMO services.

- Levying market fees is unlikely to deter most market participants from continuing to require use of services provided by AEMO (could for some small users).
- In fact, we probably need to increase the use of AEMO services, since greater collaboration between AEMO, network operators, generators and aggregators is required as part of the market reforms that are needed to ensure that we have a secure and reliable power system and continued decarbonisation of the system.
- Market Fees are a cost recovery mechanism, with market efficiency not being its primary purpose.
- It may be simpler and more equitable to recover all Market Fees from loads (via Market Customers and Aggregators).
- Otherwise, AEMO fees allocated to generators then must be passed through to off takers (e.g., retailers) via wholesale contracts and then passed through to final customers via retail electricity bills. In the case of transmission companies, AEMO fees allocated to them then must be included in network access arrangements and then passed onto network users. This “double handling” of AEMO fees is unnecessary from an efficiency perspective.

Regulation Service

Observation 3

As demonstrated with the causer-pays methodology in the NEM, it is feasible to measure the contribution of causers' frequency deviations and set charges to provide incentives for causers to minimise these frequency deviations in the WEM.

- Charging participants based on Grid MWh (load or generation) is not an appropriate billing determinate and could provide incorrect price signals.
- Increasing DER may reduce a retailer's load.
 - This would reduce the allocation of frequency regulation costs under a unit charging regime, when frequency deviations from that retailer are instead likely to increase because of increased DER penetration in its customer base.

Contingency Reserve Raise

Observation 4

The proposed runway method to allocate Contingency Reserve Raise costs to causers has the potential to increase the efficiency of the WEM if generator dispatch outcomes (e.g., dispatching smaller units) reduce overall wholesale costs (i.e., sum of contingency reserve and energy costs).

- Proposed method does not address the “trip” of a behind-the-meter generator that uses reserves to address the reduction in generation and how this cost should be recovered.

Contingency Reserve Lower

Observation 5

The requirement for the Contingency Reserve Lower service is a function of the size of the potential load that may be lost.

- This is analogous to the way that the largest generator is the causer of the service requirement for the Contingency Reserve Raise
- A runway method could be applied to allocate to allocate Contingency Reserve Lower costs to the largest loads operating in a trading interval.
 - In line with a causer pays approach and the methodology used for the Contingency Reserve Raise.
- This could provide incentives for large loads to utilise energy storage (recharge when load lost) to minimize the requirement for this service.
- The requirement for this service could increase due to increased energy storage in the WEM (recharging).
- Consideration of how network outages (which results in loss of numerous loads) should also be allocated costs would be considered under a causer pays approach. Alternatively, incentives for minimizing network outages can be provided under Network Access arrangements.

RoCoF (Inertia)

Observation 6

Generators, network facilities and large-customers will benefit from improved ride-through capability and should be incentivised to install equipment with better ride-through capability via RoCoF charges.

- Even though these participants are not the causers of lower inertia, they can be incentivised to invest in equipment that can cope with sudden variations in system frequency.
- Cost attribution levels should be determined based on the benefit that each party receives from improving ride-through capability equipment.

Black Start Services

Observation 7

The requirement for black start services is not driven by the actions of Market Participants.

- It would be difficult to identify the causers of system wide failures that create the demand for black start services.
- Given this, black start pricing should be primarily focused on achieving cost recovery from beneficiaries.
- An appropriate billing attribute would be to allocate costs based on:
 - 1) Number of connection points; or
 - 2) A combination of connection points and Grid MWh consumed.

Non-Co-Optimized ESS

Observation 8 – Voltage Control & Transient and Oscillatory Stability

ESS associated with voltage control and transient and oscillatory stability provide for the transmission network to operate at higher capacity (in a similar manner to raising thermal transmission limits). Procured services to assist in these matters include generator operation to provide voltage support or increased stability.

The causers are both loads requiring power to be supplied and generators providing the power, and any transmission issues that require such services. Often these services are provided under network support contracts with the transmission entity (which may be a substitute for network investments).

The above indicates that:

- It is appropriate to recover these costs from loads (beneficiaries), given that the focus of this charge is cost recovery and typically not market efficiency.
- As these services are a substitute for network investments, it may also be appropriate for network operators to recover these costs via network access charges applied to final customers.

Non-Co-Optimized ESS Cont'd

Observation 9 – Fast Frequency Response

- In the NEM, Fast Frequency Response (FFR) refers to the delivery of rapid active power increase or decrease by generation or load in a timeframe of 2 seconds or less, to correct a supply – demand imbalance and assist in managing power system frequency. The FFR service is due to commence in October 2023.
- The requirement for this service is due to a reduction in system inertia due to the anticipated retirement of large synchronous generator units which are not being replaced. New generation will predominately be from inverter connected generation, including large scale solar PV, wind power, batteries and behind-the-meter distributed resources like rooftop solar, that do not provide sufficient inertia to stabilise system frequency.
- In relation to the FFR, the AEMC state¹ “The introduction of FFR services, which operate more rapidly than the existing frequency control services, will provide an additional frequency control option thereby reducing the overall costs of managing power system frequency relative to the status quo or other alternative arrangements.”
- The causer of the requirement for this service is the same as the requirement for frequency control and contingency reserve services (discussed previously). Costs should be allocated to the “causers” of variations in frequency on the same basis.

Note (1) <https://www.aemc.gov.au/sites/default/files/2021-07/Fast%20frequency%20response%20market%20ancillary%20services%20infosheet.pdf>

Next steps

*We're working for
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