



Minutes

Meeting Title:	Cost Allocation Review Working Group (CARWG)
Date:	7 June 2022
Time:	1:00pm – 3:00pm
Location:	Microsoft TEAMS

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

Apologies	From	Comment
Jason Froud	Synergy	
Hana Ramli	MJA	

Item	Subject	Action
1	Welcome and Agenda The Chair opened the meeting at 1:00pm. The Chair provided feedback from the MAC meeting on 17 May 2022, noting that the MAC: <ul style="list-style-type: none">reaffirmed the scope of the Cost Allocation Review;	

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	<ul style="list-style-type: none"> asked the CARWG to assess the causes and beneficiaries on a more granular level; and steered the CARWG to focus on the existing product suite. 	
2	<p>Meeting Apologies/Attendance The Chair noted the attendance as listed above.</p>	
3	<p>Minutes of CARWG Meeting 2022_05_09 Draft minutes of the CARWG meeting held on 9 May 2022 were distributed in the meeting papers on 2 June 2022. The CARWG accepted the minutes as a true and accurate record of the meeting.</p> <p>Action: CARWG Secretariat to publish the minutes of the 5 May 2022 CARWG meeting on the CARWG web page as final.</p>	<p>CARWG Secretariat (07/06/2022)</p>
4	<p>Action Items The paper was taken as read.</p>	
5	<p>Jurisdictional Review – Step 1(a) Mr Draper restated the objectives and guiding principles for the review and noted that the policy assessment will consider the beneficiary-pays principle in addition to the causer-pays principle.</p> <p>Mr Draper noted that the causer-pays and beneficiary-pays principles sometimes align but this is not always the case.</p> <p>Mr Draper outlined the proposed Cost Allocation Hierarchy (Slide 7) and noted that:</p> <ul style="list-style-type: none"> costs should first be allocated to causers of the costs because incentivising the causers to minimize the overall cost of delivering a service will create the greatest opportunity for efficiencies; beneficiaries should be allocated costs where causers cannot be identified or where causers cannot react to the price signal that is provided; and direct beneficiaries should be allocated costs before indirect beneficiaries. <p>Mr Draper noted that the review will be limited to cost allocation approaches that can be implemented through the WEM Rules and will not consider options like government levies.</p> <p>Mr Draper recapped the jurisdictional review and indicated what services are provided in each jurisdiction, how they are defined, and how costs are recovered in each jurisdiction (slides 10-15).</p>	

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- Mr Draper noted that MJA did not find an equivalent to Rate of Change of Frequency (**RoCoF**) control services in the other jurisdictions.
- Mr Draper provided a qualitative assessment of the adherence of the current methods to allocate Market Fees and Essential System Services (**ESS**) in the Wholesale Electricity Market (**WEM**) to the causer-pays principle (slide 12).
 - Regarding Contingency Raise services, Mr Arias noted that AEMO procures more spinning reserve amounts due to PV penetration and the flow on effects of inverter failures, and that there was a difference between who is causing the need for these additional reserves and who is paying for them.
 - Mr Draper agreed there was a divergence between the two.
 - Mr Campbell asked about the size of the deviations from the inverter trips.
 - The Chair noted that AEMO procured 70-100 MW of additional spinning reserve on a temporary basis to address tripping of DER caused by disturbances from another contingency event.
 - Mr Carlberg asked whether this is a network design issue rather than the generators on those networks causing the problem.
 - Mr Draper suggested that the approach to allocate RoCoF services has low adherence to the causer-pays principle because the costs are allocated to those that cannot ride through events, not to those that cause the need for the service.
 - The Chair suggested that the current RoCoF allocation method may not have low adherence to the causer-pays principle in comparison to other services because it allocates costs to loads, network operators and generators, and enables the parties that can demonstrate they can ride through events to avoid paying costs.
 - Mr Draper asked whether loads, network operators and generators were the actual causer.
 - The Chair suggested that that network operators may be a causer of the need for RoCoF services because they can introduce

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measures to ride through an event and not cause additional problems, thereby reducing the amount of service that AEMO needs to procure. The Chair noted that all three groups could cause AEMO to procure a particular RoCoF service to ensure system security and that the current approach goes some way to recognize that all three groups contribute.

- Mr Schubert noted that increasing ride through capability is a solution and suggested that we might be mixing causers and beneficiaries.
- Ms White noted that EPWA’s previous work with Mertz Consulting led to allocating the cost to the three groups on the basis that all three were causers, so it may be worth reviewing the Mertz study.
- Mr Parrotte noted that inertia is only needed if a generator trips, which is the cause. Inertia could also be required to counter a large load tripping.
- The Chair noted that there is evidence that the size of what AEMO procures, and the overall cost can be reduced by loads, generation and networks introducing measures to make sure they can ride through events.
- Mr Parrotte noted that a frequency movement occurs if a large generator or load trips and that inertia can help counter the effects. The amount of the inertia service needed will be reduced if equipment is designed to be able to ride through the event, but inertia is only required due to loss of a big generator or load.
- Mr Schubert asked whether intermittent generators could be viewed as the cause of the need for inertia because the increase in intermittents is pushing inertia out of the system.
- Mr Ong noted that there are methods in the National Energy Market (**NEM**) to allocate System Restart and Network Support Ancillary Services cost to the benefiting region through a Regional Benefit Factor calculation.
- The Chair noted the Cost Allocation Review is to focus first on the cost allocations that the Taskforce did not fully consider.

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6	<p data-bbox="300 259 1134 331">WEM Alignment with the Causer Pays Principle – Step 1(b)</p> <p data-bbox="300 342 1126 488">Mr Draper asked for feedback on nine observations about whether the allocation of costs for Market Fees and each ESS should be aligned with causer- or beneficiary-pays principles.</p> <p data-bbox="300 499 1121 719">Mr Draper noted that the WEM is at forefront on provision of some of these services because of its high renewable penetration, so MJA was often unable to take learnings from other jurisdictions, in which case MJA reverted to determining the merit of using the causer-pays or beneficiary-pays principle for each service.</p> <p data-bbox="300 730 1118 837">Observation 1 – Market Services – allocating costs to Market Customers based on connection costs is consistent with the causer-pays principle (Slide 19)</p> <ul data-bbox="300 848 1139 2018" style="list-style-type: none"> <li data-bbox="300 848 1139 1182">• Mr Draper noted that AEMO’s cost are largely fixed, so Market Fees are not a function MWh, so charging Market Fees on a per MWh basis is not consistent with the causer-pays principle. As a result, the NEM now splits AEMO’s costs equally between per MWh and per connection (NMI) charges. However, the NEM did not fully adopt per NMI charges due to equity concerns about the impact of such an approach on smaller retailers. <li data-bbox="300 1193 1139 1339">• Mr Draper noted that the UK has moved to charging fees on a gross MWh basis, but that this may not be practical in the WEM because metering is not available to provide the necessary data. <li data-bbox="300 1350 1139 1458">• Mr Draper suggested that moving more to a per NMI basis for Market Fees would be closer to the causer-pays principle. <li data-bbox="300 1469 1139 1576">• Ms White indicated that she does not think it would be fair or equitable to charge Market Fees on a per NMI basis. Mr Carlberg agreed with Ms White. <li data-bbox="300 1588 1139 1854">• Mr Parrotte noted that the Distributed Energy Resources (DER) Register could be used to determine gross MWh. The Chair noted that this would be an approximation because gross MWh would also depend on how those installations behave. Mr Carlberg indicated that he did not mind the suggestion of using the DER Register as an approximation. <li data-bbox="300 1865 1139 1928">• Mr Schubert commented that a combination of per NMI and MWh Market Fees seems reasonable. <li data-bbox="300 1939 1139 2018">• The Chair noted that there is a need to justify all of recommendations in accordance with the guiding 	

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principles, first on the basis of whether the recommended approach reflects the causer-pays principle, and second, whether it sends an effective signal for Market Participants to behave in a certain way.

Observation 2 – Market Services – AEMO’s market and system fees are set to recover total budgeted costs of services provided (Slide 20)

- Mr Draper noted that allocation of AEMO’s costs is not based on efficient pricing principles (i.e. not based on the marginal cost of supply) because Market Participants cannot react to price signals to consume more or less of AEMO’s services. Instead, Market Fees are a cost recovery mechanism, so it makes more sense to pass these costs directly to loads on either a per NMI basis, or on a split between per MWh and per NMI. Mr Draper asked if there is any point of levying Market Fees on generators.
- Mr Draper noted that the suggestion is to charge Market Fees to market customers, retailers or aggregators based on the on their number of NMIs or based on a combination of NMIs and grid MWh.
- The Chair noted that the ERA sets AEMO’s revenue requirement in WA and that generators are better able to participate in the regulatory process, whereas retailers would simply pass these costs on to their customers.
- The Chair noted that the suggestion is to simplify Market Fees by only charging them to customers, but then to complicate the fee structure by charging on a per MWh and per NMI basis and asked why there should be a per NMI charge.
- Mr Campbell commented that a per NMI charge may fail the fairness test because AEMO’s workload increases with the size of the market. Mr Campbell noted there may be a case for using both of these factors because size is important for fairness.
- Mr Parrotte noted that some of AEMO’s work relates to the number of NMIs but that AEMO does not even know about some of the NMIs.
- Mr Campbell noted that he prefers the per MWh approach.
- Mr Draper noted Ofgem’s argument that, since market participants cannot ration their use of the market operator’s services in response to price signals, it is more efficient to charge the costs to beneficiaries, so

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	<p>the fees should be charged to consumers. How to charge consumers – on a per MWh and/or per NMI basis – is another issue.</p> <ul style="list-style-type: none"> • The Chair noted the simplest approach would be to maintain the current allocation method because AEMO would not incur costs to change its systems and market participants would not need to change their contracts. • Ms White noted that it is important to think about transitional arrangements – first around equity, and second around the impact of policy changes on PPAs. Mr Arias agreed with Ms White on the importance of considering the contractual arrangements, which can distort how costs are passed to customers. • Mr Arias noted that fees allocated to generators are then passed on through three or four different hands before they reach the final customer, who are the ultimate beneficiaries of the market. Charging these fees to customers on a per MWh basis properly allocates these costs. • Mr Ong asked for a table that outlines the allocation options and the advantages and disadvantages of each option in comparison to the current arrangements. Mr Draper indicated that this would be part of the practicality assessment in the next step of the review. • The Chair noted that generation would need to be curtailed or plant would need to be cycled if DER is not integrated with the WEM and asked who the beneficiary is from such integration. The Chair suggested it is generation and not DER that benefits from the integration. • Mr Campbell noted the benefit from integrating DER into the market is meant to be lower costs and improved security and reliability. • Mr Arias noted that consumers benefit from DER, or they would not invest in PV, and it is this investment that causes costs to the market, so DER should bear burden of these costs. • The Chair agreed that consumers are benefiting from the installing PV, but they are not benefiting from AEMO integrating DER into the market. The Chair noted that DER integration into the market benefits a number of parties because it maintains security of supply and reduces impact on the rest of the market participants. 	

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	<ul style="list-style-type: none"> <li data-bbox="300 248 1136 510">• Ms White commented that she did not think the issue is opposing the integration of DER into the market, but that DER is a beneficiary because the integration enables its participation in more markets, and everyone should pay for the infrastructure, and hence it ought to be paying for the cost of that integration (e.g. system build). <li data-bbox="300 521 1093 629">• Mr Carlberg suggested that DER are excluded from the current fees allocation because they avoid the current per MWh charges. <li data-bbox="300 640 1136 1429">• Mr Draper noted that customers with DER reduce their consumption and are therefore charged a lower percentage of AEMO costs than a customer without DER, and that this is the source of the inequity. <ul style="list-style-type: none"> <li data-bbox="355 797 1109 869">○ This is why the UK is moving to charge market fees based on gross MWh rather than grid MWh. <li data-bbox="355 880 1136 1066">○ Mr Draper indicated that a per NMI charge partially addresses this inequity because DER customers would make a larger contribution under such an approach than if fees are only charged on a per MWh basis using grid MWh. <li data-bbox="355 1077 1136 1429">○ Mr Draper suggested that: <ul style="list-style-type: none"> <li data-bbox="411 1122 1109 1229">▪ the fairest approach would be to allocate Market Fees using a per MWh charge based on gross MWh; <li data-bbox="411 1240 1136 1348">▪ the next fairest approach is a combination of a per NMI charge and a per MWh charge based on grid MWh; and <li data-bbox="411 1359 1098 1429">▪ the least fair approach is a per MWh charge using grid MWh. <li data-bbox="300 1440 1114 1592">• The Chair noted that the NEM is moving to allocate AEMO fees to wholesale market participants. Mr Draper acknowledged this but indicated that there does not appear to be efficiency reasons to do this. <li data-bbox="300 1603 1136 1756">• Mr Schubert noted WACOSS' view is that not charging costs to DER will 'socialise' the costs to all customers, which is not fair for vulnerable customers who cannot afford PV. <li data-bbox="300 1767 1082 1874">• Mr Parrotte noted that there is an argument that a DER customer using the same kWh as a non-DER customers is causing more costs for AEMO. 	
	<p data-bbox="300 1877 991 1917">Observation 3 – Regulation Service (Slide 21)</p> <ul style="list-style-type: none"> <li data-bbox="300 1928 1136 2042">• Mr Draper noted that: <ul style="list-style-type: none"> <li data-bbox="355 1973 1136 2042">○ as demonstrated by the causer-pays methodology in the NEM, it is possible to measure the 	

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	<p>contribution of causers' frequency deviations and to set charges in the WEM to incentivise causers to minimise such deviations; and</p> <ul style="list-style-type: none"> ○ the current method to allocate Regulation services in the WEM is based on grid MWhs, which does not provide the correct price signals and may incentivise customers to use energy in a way that imposes more Regulation costs. ● Mr Draper indicated that consideration should be given to applying a causer-pays methodology in the WEM. This could be adopting the approach in the NEM or a new approach that AEMO is currently investigating. ● Mr Ong provided some commentary: <ul style="list-style-type: none"> ○ the NEM methodology is based on dispatch targets in comparison to the four second SCADA data; ○ the AEMC has recognised that the NEM methodology is backwards looking over a month, so it is considering a new method that could look at generators' inaccuracies at a closer time frame; and ○ a conceptual 'tolerance' method is being investigated based on the tolerance formula that AEMO distributed to CARWG members, via the CARWG secretariat, by email on 3 June 2022. ● The Chair indicated that MJA should develop the options, along with the pros and cons for each option, for consideration by the CARWG before MJA models the options. ● Mr Schubert noted the NEM methods seem very complicated. ● Mr Flood sought to clarify whether we should use deviation from the ideal or from GPS. <ul style="list-style-type: none"> ○ Ms White noted that, given the decision to have a 'grandfathered' GPS framework, the comparison needs to be against the registered GPS, not ideal. 	
	<p>Observation 4 – Contingency Reserve Raise (Slide 22)</p>	
	<ul style="list-style-type: none"> ● Mr Draper noted that the proposed runway method appears to be a good methodology in terms of allocating costs. Mr Draper asked whether this is to be further considered. ● The Chair noted that consideration will need to be given at some point to the equity issues for aggregated sites where, depending on whether they 	

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are connected to the network at one point or more points, they will suffer larger consequence. The Chair asked MJA to only look at isolated issues that have been determined to be a problem.

Observation 5 – Contingency Reserve Lower (Slide 23)

- Mr Draper noted that this service is a function of the size of the load and that a runway allocation method could be developed to apply to loads, analogous to the approach for Contingency Reserve Raise. Mr Draper sought guidance on whether to pursue this option.
- Ms White noted that:
 - one of the benefits of applying the runway method for Contingency Reserve Raise is that it creates a locational signal for generators to avoid creating bigger contingencies, but that there will be less of a locational signal for loads; and
 - it may be very complex to create a runway method for Contingency Reserve Lower given the number of loads and hence the cost of implementation likely outweighs any benefits.
- Mr Campbell noted smelters are the large loads and are really not dispatchable, so it would be sensible to use a simpler approach.
- Mr Draper agreed that MJA should focus on a simpler approach.
- Mr Parrotte noted the market for Contingency Reserve Lower is about 1/10 of the size of the market for Contingency Reserve Raise.
- The Chair noted there are already very strong incentives for loads to avoid tripping.
- Mr Carlberg commented that he doubted this service would drive behavioral change.
- Ms White questioned if a runway approach would only apply to dispatchable loads.
- Mr Schubert noted there more solutions to the problem will become available in future and that batteries could be part of the solution and part of the problem.
- Mr Frood noted that a trip could be a grid issue.
- The Chair suggested that Contingency Reserve Lower should be a lower priority issue that can be considered later if there is time.

Observation 6 – RoCoF (Inertia) (Slide 24)

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	<ul style="list-style-type: none"> Mr Draper noted that the current methodology is to allocate 1/3 of costs to each of loads, network operators and generators, and to enable parties that can ride through events to avoid payment of cost, and that this method is consistent with the beneficiary-pays principle. The Chair suggested RoCoF has been recently addressed by the Taskforce and should be a lower priority. Mr Carlberg asked how the ride through of loads is assessed and if AEMO can provide a forecast of how often and how much it thinks this RoCoF service is going to be triggered/paid. The Chair noted AEMO has a procedure for parties to apply to AEMO and for AEMO to assess whether they have ride through capability. Ms White observed that Western Power and most (if not all) generators will have ride through capability, so loads will be allocated most RoCoF costs in practice. The Chair noted that the quantum of the service is unknown. The Chair asked AEMO to advise if it can assess how much RoCoF service it will procure at the start of the market, and if so, to provide an assessment. Ms White noted that the Taskforce's technical study suggested that Contingency Reserve Raise volumes are expected to decrease over time and to be substituted by RoCoF. 	
	<p>Observation 7 – Black Start Services (Slide 25)</p>	
	<ul style="list-style-type: none"> Mr Draper noted that the requirement for black start is not driven by the actions of Market Participants, so allocating black start costs is about recovering costs from beneficiaries. The options are to allocate these costs based on the number of NMIs or based on a combination of NMIs and grid MWh. 	
	<p>Observation 8 – Non-Co-optimized Essential System Services –Voltage Control and Transient and Oscillatory Stability (Slide 26)</p>	
	<ul style="list-style-type: none"> Mr Campbell noted that voltage control tends to be local, and that transient and oscillatory stability are related to transmission and are not caused by loads. The causer-pays principle indicates that these costs should be paid by network operators. 	

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	<ul style="list-style-type: none"> The Chair noted that these costs are recovered through network charges and Mr Draper agreed that this was the appropriate. <p>Observation 9 – Non-Co-optimized Essential System Services – Fast Frequency Response (Slide 27)</p> <ul style="list-style-type: none"> Mr Draper noted that the principles that would apply to this service are the same as would apply to Regulation. Mr Campbell noted that this is going to be an ongoing co-optimised service in the NEM and the Chair noted that it is a transitional service in the WEM that is unlikely to continue. Mr Draper noted that, if it were an ongoing service in the WEM, it would be appropriate for its costs to be charged in the same way as Regulation. The Chair noted that how an NCESS service, more generally, should be charged in the future should be discussed as part of the review because it has never previously been discussed, apart from network support services. It would be beneficial to discuss principles for how AEMO might procure and recover these costs for these services. Ms White noted that these are non-network solutions and that we need to be careful not to create incentives for Western Power to underinvest. Mr Parrotte noted that Fast Frequency Response sits between inertia and Contingency Raise (it is faster than Contingency Raise but slower than inertia) and suggested looking at the cost recovery of inertia and Contingency Raise as a guide. The Chair advised not look at the interim service, and instead to think about the longer term Non-Co-optimised ESS and whether we need principles for how these costs are recovered. 	
	<p>ACTION: AEMO is to advise whether it can assess how much RoCoF service it will procure at the start of the market, and if so, to provide an assessment.</p>	<p>AEMO (22/08/2022)</p>
<p>7</p>	<p>Next Steps</p> <p>A table will be prepared as part of step 2 of the review with the options for allocating each cost and assessing the pros and cons for each option.</p> <p>Outcomes from 7 June 2022 CAR Meeting will be presented at the MAC meeting on 28 June 2022.</p>	

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	<ul style="list-style-type: none"> • Any CARWG members that wish to provide additional comments regarding the discussions at the CARWG meeting on 7 June 2022 are to do so by COB Friday 10 June 2022 so that the advice can be provided to the MAC. <p>Mr Draper indicated that the CARWG will move to step 2 of the review (the practicality assessment) at its next meeting, including:</p> <ul style="list-style-type: none"> • options that can be practically and efficiently applied in the WEM to allocate Market Fees and ESS costs; • assessing each option against the guiding principles; and • modelling the impact of each option. 	
8	<p>General Business</p> <p>No general business was discussed.</p> <p>The next CARWG meeting is scheduled for 30 August 2022.</p>	

The meeting closed at 2:50pm.