



Minutes

Meeting Title:	Cost Allocation Review Working Group (CARWG)
Date:	21 March 2023
Time:	1:00pm – 3:05pm
Location:	Microsoft TEAMS

Attendees	Company	Comment
Dora Guzeleva	Chair	
Oscar Carlberg	Alinta Energy	
Daniel Kurz	Summit Southern Cross Power	
Jake Flynn	Collgar Wind Farm	
Noel Schubert	Small-Use Consumer Representative	
Mark McKinnon	Western Power	
Genevieve Teo	Synergy	
Paul Arias	Shell Energy	
Donna Todesco	AEMO	
Tessa Liddelow	Shell	
Cameron Parrotte	Woodside	
Toby Price	AEMO	Observer
Tom Geiser	Neoen	Observer
Nathan Ling	Neoen	Observer
Grant Draper	Marsden Jacob Associates (MJA)	Presenter
Peter McKenzie	MJA	Presenter
Stephen Eliot	Energy Policy WA (EPWA)	
Shelley Worthington	EPWA	

Apologies	From	Comment
Jason Froud	Synergy	
Tom Froud	Bright Energy	

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1	<p>Welcome and Agenda</p> <p>The Chair opened the meeting at 1:00pm.</p>	
2	<p>Meeting Apologies/Attendance</p> <p>The Chair noted the attendance as listed above.</p> <p>The Chair noted the competition law obligations of CARWG members.</p>	
3	<p>Minutes of CARWG Meeting 2022_11_29</p> <p>The minutes of the CARWG meeting held on 29 November 2022 were accepted as a true and accurate record of the meeting.</p> <p>Action: The CARWG Secretariat is to publish the minutes of the 29 November 2023 CARWG meeting on the Coordinator's website as final.</p>	<p>CARWG Secretariat</p>
4	<p>Action Items:</p> <p>The Chair noted that there were no open action items.</p>	
5	<p>Timeline and Purpose</p> <p>Mr Draper noted where the project is on its timeline and indicated that the purpose of the meeting was to get agreement on the recommendations so that the project could move to the detailed design phase.</p>	
6	<p>Feedback from the Consultation Process and Potential Refinements of Methods</p> <p>(a) Frequency Regulation – WEM Deviation Method</p> <p>Mr Draper noted that EPWA had received substantial feedback on the allocation of Frequency Regulation costs, particularly from AEMO.</p> <p>Mr Draper noted that Alinta and Synergy have raised concerns that the proposed method to allocate Frequency Regulation costs does not address the contribution of behind the meter photovoltaic (PV) to frequency deviations.</p> <ul style="list-style-type: none"> Mr Carlberg indicated that Alinta's main concern is that a cost-benefit analysis has not been done to determine that the proposed WEM Deviation Method will have a net benefit. Mr Carlberg noted that the recommendation in the consultation paper was to conduct a cost-benefit analysis before implementing the WEM Deviation Method and considered that this should not be omitted. <p>Ms Guzeleva indicated that AEMO published an update in September 2021 indicating that one of the top priorities should be for Market Participants to receive signals that reflect their contribution to frequency response costs and that, if Market Participants are not given an incentive to improve performance,</p>	

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then Essential System Services (ESS) costs will increase significantly.

- Mr Price agreed with this point.

Ms Guzeleva indicated that there is already evidence of increases in ESS costs and asked if a cost-benefit analysis is really necessary.

- Mr Carlberg suggested that a cost-benefit analysis is necessary if we are considering a two-step process to first use the WEM Deviation Method and then switch to the new NEM Causer Pays Method at a later date, noting the potential implementation costs and that there are competing priority issues in the energy sector.
- Mr Carlberg asked if Semi-Scheduled Facilities will be able to improve forecasting or if we can just get AEMO to do the forecasting.

Mr Draper outlined two options for refining the WEM Deviation Method:

1. measure deviations from linear dispatch targets over 30-minute Trading Intervals (not average of deviation from linear dispatch targets over 5-minute intervals for each 30-minute period, as previously proposed); and
2. use Balancing Market submissions for Semi-Scheduled Generation as the forecast for start and end points for each 30-minute period and measure deviations from a linear dispatch target.

Mr Draper noted the pros and cons of the options and Mr McKenzie presented some modelling results for these options.

Mr Draper outlined the three options for calculating contribution factors under the WEM Deviation Method:

1. Standard Deviation Method – use the standard deviation from the target in a 30-minute period;
2. Summation Method – use the sum of the absolute value of deviations from the target in a 30-minute period; and
3. Maximum Absolute Deviation Method – use the single highest absolute value of deviation from the target in the 30-minute period

Mr McKenzie outlined the modelling results for these options.

Mr Draper indicated that the current recommendation was to use the WEM Deviation Method, using historic SCADA data to set the hypothetic linear target for a 30-minute period, and using the Summation Method to calculate the contribution factors.

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	<p>In response to a question from Mr Price, Ms Guzeleva reminded the CARWG that this method would only apply for Semi-Scheduled Generators, not Scheduled Generators.</p> <ul style="list-style-type: none"> Mr Carlberg asked what a Market Participant can do to minimise variations. <p>Ms Guzeleva indicated that the Cost Allocation Review is about allocating Frequency Regulation costs as a means to reduce volatility, not targeting improved forecasts.</p> <ul style="list-style-type: none"> Mr Carlberg questioned whether we will see installation of batteries at intermittent generator sites to reduce Frequency Regulation as the cost of putting the battery in that location may not be lower than the cost of Frequency Regulation. <p>Ms Guzeleva asked if we also want to provide incentives for improved forecasts.</p> <ul style="list-style-type: none"> Mr Carlberg suggested that using the previous interval may be the best forecast that Market Participants can do, in which case it may be better to give AEMO responsibility for forecasting using this method. <p>Ms Guzeleva indicated that there appears to be three options on how to proceed, as follows, and that EPWA, AEMO and MJA should meet to discuss the options:</p> <ol style="list-style-type: none"> use the WEM Deviation Method, as modified in the slides presented on 21 March 2023; use the WEM Deviation Method using Balancing Market submissions to set the linear dispatch target for Semi-Scheduled Generation; or continue with the current cost allocation method and reconsider the new NEM Causer Pays Method after it has been implemented in the NEM. <p>ACTION: EPWA, AEMO and MJA to meet to discuss the options for allocating Frequency Regulation costs.</p>	<p>EPWA, AEMO and MJA</p>

(b) Contingency Reserve Lower – Potential Changes to the Proposed Allocation Methodology

Mr Draper noted that there is agreement that large new loads in the SWIS will have a significant impact on Contingency Reserve Lower requirements and that the cost allocation method needs to account for this impact.

- Mr Geiser raised concerns with the proposed threshold and suggested that it would be fairer to apply the Runway Method to loads above 150 MW rather than 120 MW.

Mr Draper noted that increasing the threshold to 150 MW only made a small difference, reducing the allocation for large (250 MW) battery energy storage system (BESS) from 48.7% to 44.1%.

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- Mr Geiser noted that Neoen’s concern was not only with the threshold, but also with the methodology, because changing the threshold made little difference as the Runway Method:
 - assigns most of the costs to the largest load;
 - incentivises the largest load to consume less than the next largest; and
 - incentivises assets to operate less efficiently to avoid costs.
- Mr Geiser noted that Neoen’s proposal was intended to spread the costs around, reducing the intensity of the Runway Method for larger loads.
- Mr Geiser noted that there would always be a requirement for a contingency regardless of the size of loads because a transmission line can trip, and suggested that all Contingency Reserve Lower costs should be allocated pro-rata above 100 MW to smooth out costs, with the end result being that the biggest load pays the most and therefore has an incentive to be smaller.
- Mr Geiser noted that there are efficiency benefits to having 200 MW loads and it is not efficient to encourage investment in, for example, aluminum smelters in 99 MW blocks, simply to avoid paying costs.

Mr Draper noted that lowering the threshold would smooth out costs, with more of the costs attributed to other loads across the system, and noted that the Runway Method is used to allocate costs for Contingency Reserve Raise services. Mr Draper noted that it is appropriate for the largest generators to pay the most Contingency Reserve Raise costs and for the same principle to apply to loads.

- Mr Geiser indicated that he has the same concerns with Contingency Reserve Raise, noting that if Neoen were to build a 250 MW battery and the largest other generator is 200 MW, then they would bid below the other generator to avoid costs.
- Mr Eliot noted that what Mr Geiser had requested was what was modelled and presented in the slides.
- Mr Geiser disagreed, noting that the largest unit in his proposal might carry about 27% of the cost rather than 50%, with more costs distributed to smaller units because there is some minimum amount of contingency that is required no matter what. Mr Geiser noted that slide 28 was not represented in the way that he proposed.

Mr Draper noted that, under Mr Geiser’s proposal, smaller loads would get a much higher share of costs to smooth out cost for larger load.

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- Mr Geiser noted that his proposal shifted costs but that it did not resolve the problem created by the binary threshold.

Ms Guzeleva noted that it was clear from the discussion that storage proponents would find it uncomfortable to wear most of the Contingency Reserve Lower costs simply because they happen to be the largest load on the system. Ms Guzeleva noted that the Runway Method for generators has existed for longer than the WEM itself, and the method is based on sound principles, but noted that Mr Geiser did not agree.

- In response to a question from Ms Guzeleva, Mr Geiser noted that, in the NEM, every MW of load pays for its share relative to total load – for example if the total load is 1,000 MW, then a 100 MW load would pay 10%. Mr Geiser noted that the NEM approach was too soft and that the concept of the Runway Method makes sense in terms of allocating a larger proportion than pro-rata.

Ms Guzeleva noted the group was back to the same position (i.e. those that are negatively affected by a proposal have very strong objections to the proposal irrespective of whether the proposal is consistent with the agreed principles).

Ms Guzeleva noted that the size of the largest load will soon increase from 120 MW to over 200 MW, and it was unreasonable to keep the current cost allocation method in place.

Ms Guzeleva noted that we could go with the approach that is used in the NEM or an alternative option for AEMO to assign risk factors to the different types of loads. Ms Guzeleva noted that there have been assertions that a storage facility carries a significantly lower risk than its transmission connection and asked whether it would be fairer to allocate Contingency Reserve Lower costs based on the risk associated with transmission connections rather than the loads, noting that this may have the same effect for facilities behind a single connection point.

Ms Guzeleva asked if there was a way for the AEMO to determine risk factors for facilities based on network connections rather than trying to second guess what the next big load is and have a threshold which could end up been wrong in two or three years' time.

Mr Draper noted that the current proposal was to apply the Runway Method first to the loads and then to the networks.

Ms Guzeleva suggested to only apply the method to the network connections and asked whether that would make any difference.

Mr Draper summarised that Ms Guzeleva was proposing that, as the network tripping is a bigger risk than any BESS, then it may be appropriate to allocate Contingency Reserve Lower Costs based only on the network risk.

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	<p>Ms Guzeleva noted there were two layers, the Facility risk and the network risk, and regardless of how the risk for loads differ, the transmission connection may be the “weakest link”.</p> <p>Ms Guzeleva noted that loads and generation are not currently treated equally – the Runway Method applies to generators but not to loads, and the intent was to try to bring them into some sort of alignment. Ms Guzeleva noted that the point has been made that storage facilities have lower risk of tripping in comparison to generators. Ms Guzeleva asked the CARWG to provide their views.</p> <ul style="list-style-type: none"> • Mr Schubert considered that the Runway Method is reasonable if some of what Mr Geiser had suggested can be adopted and not make it so binary and so onerous on the biggest load. <p>Ms Guzeleva noted that allocating most costs to the largest load is the point of the Runway Method, and it would no longer be the “Runway Method” if something was done to smooth out this effect.</p> <p>Ms Guzeleva asked Mr Geiser to provide EPWA with the calculations for his proposal to make sure that EPWA has a proper understanding of it.</p> <p>Ms Guzeleva asked the CARWG whether the focus should be on transmission risk because loads, especially storage, may not have the same Facility Risk as generators.</p> <p>Mr Draper asked if AEMO had any insight into the comparative risk of tripping between BESS and generators.</p> <ul style="list-style-type: none"> • Mr Price responded that he could look into the statistics, but he expects that there is clearly a higher risk for a mechanically spinning generator versus an inverter. <p>Ms Guzeleva asked if a synchronous generator would have a different risk profile.</p> <ul style="list-style-type: none"> • Mr Price noted that it would depend on the Facility, its location, its control scheme and its protection scheme. • Mr Price indicated that there are different causes of faults for synchronous machines versus asynchronous machines, and that allocation of costs comes down to the fundamentals of fairness around risk allocation. • Mr Price agreed with Mr Geiser that the system requires large batteries, and that the Runway Method may disincentivise a large battery from delivering what the system needs, but it is ultimately the plant configuration that determines its risk to the system. <p>Ms Guzeleva noted that some type of a risk factor assignment may actually be the right way to go, because loads may differ</p>	

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considerably and may have completely different profiles in terms of their forced outages.

- Mr Price noted that the AEMO has to cover the risk of the largest load tripping irrespective of its type.
- Mr Parrotte noted that anything can trip at any point and that AEMO must cover any credible risk.

Ms Guzeleva asked, with regard to storage, if it was the connection or if it was the storage facility that was likely to trip.

- Mr Parrotte noted that this would depend on how the facility was configured and if the battery has one 200 MW connection that could trip at any point.

Ms Guzeleva noted that was exactly what she was referring to and asked if it is the risk of the battery tripping that needs to be covered or the risk of a particular network connection, and noted that Mr Geiser has advised that they have never experienced a battery trip.

- Mr Parrotte indicated that a battery may have a lower risk of tripping than a synchronous generator, but it can trip, so AEMO has to address this risk when it sets the Contingency Reserve Lower quantity.

Ms Guzeleva noted that AEMO has been carrying 70% of spinning reserve and load rejection traditionally and asked what that was based on.

- Mr Parrotte noted that this was because the system responds in other ways when the frequency goes up or down.

Ms Guzeleva asked if that was equally true for loads and generators.

- Mr Price noted that that the 70% multiplier is a simplification of the physics of the system, and that this will be more dynamic in the future, based on load conditions.
- Mr Price indicated that you get a response if either a load or generator trips, and it will not necessarily be symmetrical, but this just means that AEMO would need to purchase more or less of the services (Contingency Reserve Raise or Contingency Reserve Lower).

Mr Draper noted that AEMO needs to cover any credible risk and questioned if the probability of the battery having a forced outage is zero.

- Mr Price noted that AEMO considers any single Facility with a single connection point to be a credible contingency, irrespective of whether they have ever tripped. Mr Price noted that the only time there would be lower risk was if there were two totally distinct Facilities with separate connections that may have been aggregated, because they

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	<p>share the same loss factors, and AEMO would not consider it credible that they would both trip at the same time.</p>	
	<p>Ms Guzeleva asked Mr Price to advise what the requirement for AEMO to determine the Facility risk value means in practice.</p>	
	<p>Ms Guzeleva noted that there were three options:</p>	
	<ul style="list-style-type: none"> • continue with the current cost allocation method; • the existing proposal; and • Neoen’s proposal. 	
	<p>ACTION: Neoen to provide EPWA with the calculations for its proposal to allocate Contingency Reserve Lower costs so that EPWA can make sure that it has a proper understanding of it.</p>	Neoen
	<p>ACTION: AEMO to provide further information on the risk of tripping for loads, batteries and generators.</p>	AEMO
	<p>ACTION: AEMO to advise what a requirement for it to determine the risk factor of a facility would mean in practice.</p>	AEMO

(c) Contingency Reserve Raise –Treatment of Multiple Dispatchable Units under the Runway Method

Mr Draper noted that, if a generator has two units and two separate metering points, then the two units should be treated separately from the perspective of applying the Runway Method because the units are electrically independent.

Mr Draper discussed a proposal for the process that AEMO would follow in assessing multiple dispatchable units (slide 24) and how Facilities would be assigned a Facility Risk Value as either a single aggregated unit or separate dispatchable units.

- Mr Schubert noted that AEMO, and Western Power in some cases, would need to look at each Facility to determine what their Credible Contingency is, noting that they would not only need to take into account whether a Facility had electrically separate control systems or protection systems but also whether the two connection points could actually trip at the same time. Mr Schubert noted there would need to be a process to identify what are credible contingencies for each Facility.

Ms Guzeleva noted that this suggests that AEMO would need to determine the risk on a case-by-case basis.

- Mr Price noted it would be difficult to set a prescriptive process in the rules to assess what a credible risk is. Mr Price suggested that AEMO could be provided a head of power to define a risk quantity but that he would need to discuss this internally within AEMO to see if this would be supported.

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	<ul style="list-style-type: none"> Mr Price and Mr Parrotte noted that this proposal may require facilities to provide AEMO with more information about the facilities – how they are configured, how the control schemes interact and other more detailed engineering inputs. <p>Mr Draper noted that it would be hard to design definitive rules for this but it appeared that much of the focus would be on the other side of the switchboard.</p> <p>Ms Guzeleva noted that implementing this proposal may only require a slight amendment to the 1 October 2023 rules.</p>	
	<p>ACTION: AEMO to advise whether it would support AEMO being given a head of power to define a Contingency Reserve Raise risk factor for facilities with multiple units behind multiple connections.</p>	<p>AEMO</p>
	<p>(d) Market Fees – BESS Cost Recovery</p> <p>Discussion of this agenda item was deferred due to time constraints.</p>	
<p>7</p>	<p>Next Steps</p> <p>The Chair indicated that EPWA would consider next steps as a result of the issues raised.</p>	
<p>8</p>	<p>General Business</p> <p>No general business was discussed.</p>	

The meeting closed at 3:05pm.