RCP | Rule Change Panel

Wholesale Electricity Market Rule Change Proposal Submission

RC_2019_03
Method used for the assignment of Certified Reserve Capacity to Intermittent Generators

Submitted by

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1.   **Please provide your views on the proposal, including any objections or suggested revisions.**

Alinta Energy appreciates the opportunity to provide feedback on the proposed reforms to the method for assigning Certified Reserve Capacity to intermittent generators.

Overall, Alinta Energy strongly supports the proposed RLM, considering that it will correct significant errors in the current rules, including how the existing method:

- incorrectly identifies intervals with the lowest capacity surplus;

- values capacity on an individual facility basis, which can overvalue existing facilities and undervalue new facilities; and

- uses ill-defined parameters, making it difficult for asset owners and investors to understand the factors that will influence their capacity revenue.

Alinta Energy considers that it is crucial to correct these errors because wind farms are

expected to be the most cost-effective source of new capacity in the SWIS. Based on current trends, the WOSP predicts that to achieve least cost outcomes over the next decade, WA's increasing electricity demand will be met largely by rooftop solar, with wind farms providing the balance.[1] Consequently, without the proposed reforms to RLM, there is a significant risk that there will be underinvestment in wind capacity, and that the WEM won't deliver least cost outcomes for consumers.

While Alinta Energy strongly supports the proposed RLM overall, it raises the following issues and suggested solutions about discrete aspects of the design for the Rule Change Panel's further consideration. This submission also presents Alinta Energy's views on questions that AEMO and RCP Support raised in consultation on the pre-rule change proposal.

a) Setting the LOLE target

Alinta Energy supports the proposal to estimate the capacity value of the fleet based on a target loss of load expectation that aligns with the reliability standards in the WEM. However, Alinta Energy disagrees that the 4-hour Electric Storage Resource Obligation Duration (ESROD) indicates that the LOLE target for the WEM is 4 hours in 10 years for the following reasons.

Firstly, averting a loss of load event was not the only consideration in selecting the 4-hour ESROD: it was selected because the limited storage duration of storage resources is incompatible with the current 14-hour availability requirement[2] applied to scheduled generators. Compared with the 14-hour requirement, the 4-hour ESROD aims to strike a more appropriate balance between ensuring storage resources contribute to reliability, and allow them enough flexibility, given their limited duration.[3]

Secondly, experience in other jurisdictions suggests that the LOLE target should be higher, for example:

- Ireland employs a linear de-rating method for accrediting batteries based on their output over 6 hours but has a much higher LOLE target of 80 hours per 10 years.

- ERCOT has a much higher LOLE of 24 hours every 10 years, even though it has a more conservative static reserve margin of 13.75% – almost double the WEM's 7.6% margin.

Alinta Energy considers that the 14-hour peak trading intervals, used to determine the fuel requirement for scheduled generators is a more appropriate indicator of the WEM's LOLE target. Unlike the 4-hour ESROD, the 14-hour fuel requirement was

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[1] Energy Transformation Taskforce, *Whole of System Plan*, August 2020 ["Ground Hog Day scenario"].
[2] The 14-hour availability requirement for Scheduled Generators is applied via 4.10.1(e)(v) and 4.11.1(a) of the WEM Rules:
- 4.10.1(e)(v) requires scheduled generators to provide evidence that the facility has sufficient fuel supplies, either through an on or off-site storage facility or delivered through a gas pipeline, to operate continuously for 14 hours (the "Peak Trading Intervals") at maximum output, with one day resupply.
- 4.11.1(a) prohibits AEMO from assigning a Scheduled Generator CRC in excess of its reasonable expectation of the capacity likely to be available for the Peak Trading Intervals.
[3] Energy Transformation Taskforce, *Storage participation in the Reserve Capacity Mechanism*, 26 June 2020 p.10.

selected to maintain reliability by obliging generators to have enough fuel to remain available for the peak trading intervals[4]; and was not designed to accommodate the limited duration of storage capacity. Additionally, it better aligns with the LOLE targets and reserve margins used in the other jurisdictions examined.

b) Determining the Relevant Level as the lower of the full period and median values

Alinta Energy does not support determining the RL_Fleet as the lower of the median of the $Annual\_RL\_Fleet$ values, and the $Full\_Period\_RL\_Fleet$, as outlined in proposed Step 9(d), for three reasons.

Firstly, the ERA's final report states that the purpose of the adopting the median annual relevant level, rather than the average annual relevant level, is to avoid the relevant level being "influenced by extremely large or small capacity value results".[5] However, compared with the average annual relevant level, Alinta Energy considers that the full period relevant level is equally exposed to influence by outlying results for a given year, and more so than the median. Consequently, adopting this value where it is lower than the median risks extremely low values skewing the results and underestimating the fleet's capacity value.

Secondly, part of the rationale behind using the minimum of the full period results and the median was that the median alone may be susceptible to extremely large or small values due to the "small" sample size of five years. However, the rule change proposal increases the sample size from five to seven years (under proposed Step 1(b)), making the median more resilient to outliers and the stated need for the full period results less relevant.

Finally, Alinta Energy considers that taking the minimum of the full period results is inconsistent with the methods used in the SPP, PJM and MISO. As discussed in section 3.2.4 of Appendix 3, these systems use the average of annual estimates to set the capacity value for the fleet of intermittent generators. Unlike the proposed approach, these averages are exposed to both large and small values, whereas proposed Step 1(b) results in the fleet's capacity value only being exposed to small values. This is because Step 9(d) requires that the full period results only be used where it is lower than the median of the annual capacity values.

Considering the potential for the proposed Step 9(d) to underestimate the fleet's capacity value, the increased sample size, and the methods applied in the SPP, PJM and MISO systems, Alinta Energy recommends that Step 9(d) is amended so that the RL_Fleet is the median of the $Annual\_RL\_Fleet$ values.

c) Determining the relevant level for each facility group

Alinta Energy considers that determining the relevant level for each facility group introduces complexity and potential issues. Consequently, Alinta Energy recommends that the Rule Change Panel consider whether this step, which was added following the ERA's draft report, is necessary.

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[4] Under the glossary of the WEM Rules, the peak trading intervals refer to the trading intervals in the14 hour period between 8 AM and 10 PM.
[5] ERA, *Relevant level method review 2018 - Capacity valuation for intermittent generators: Final report*, March 2019, p.62.

To aid consideration, Alinta Energy suggests sensitivity analysis is conducted to test the relative difference between the capacity values produced with and without this step. Alinta Energy recommends weighing this difference and its perceived improvement to the accuracy of facilities' relevant levels, against the following issues Alinta Energy perceives:

i)   Volatility and sensitivity to withdrawals

Section 1.5 in Appendix 4 notes that the "proposed method for allocating the fleet capacity value to facility classes will cause unnecessary variation in the results" and likely to be "highly variable and sensitive to changes in the generation mix". While the proposal notes that the draft amending rules aim to offset this volatility by using the full-period technology group results, Alinta Energy suggests that including the step to determine facility group capacity values still increases the likelihood that withdrawals will significantly impact results, and necessitate the RLM being re-run.

ii)   Risk that adjustment to wind and solar facility classes is incorrect

The proposed method for determining the capacity value of facility classes assumes that the sole reason for any difference between the fleet capacity value and the sum of the facility class capacity values will be the correlation of wind and solar facilities. However, Alinta Energy considers that correlations between other facilities may influence this difference and that annual reviews would be required to ensure that wind and solar facilities are not being unfairly penalised for other sources of correlation in the fleet.

Alinta Energy suggests that another reason for the difference between the fleet's and the sum of the facility groups' capacity values may be the different way the two values are calculated. The current proposal calculates the fleet capacity using the median of annual results, whereas the facility group values are determined using full period results. Consequently, there appears to be a risk that wind solar resources will be penalised even where their correlation is not the cause of the difference between the fleet's and the sum of facility groups' capacity values.

iii)   Interaction index may not represent profiles of all the facilities within a faciltiy group.

Given the small sample size of wind farms in the SWIS, and the potential variety in their profiles, there is a risk that some wind farms may not be responsible for any of the facility group's correlation with the solar facility group, and bear a disproportionate discount to its Relevant Level.

iv)   Complexity and transparency

Incorporating facility group capacity values into the RLM adds numerous steps and concepts to the RLM, increasing complexity and potentially making it unnecessarily difficult for market participants and prospective investors to scrutinise the various factors that will influence the CRC of their facilities or potential investments.

Alinta Energy's views on questions raised by AEMO and RCP Support

<u>Concern that RLM would not reflect available capacity during POE10 intervals</u>

According to the rule change proposal, AEMO and RCP Support raised concerns that the proposed RLM would not reflect intermittent generators' available capacity during 1 in 10 peak demand periods; and suggested that intermittent generators' output be scaled to replicate how intermittent generators' output is impacted during these periods. [6]

Alinta Energy does not share these concerns, nor support adjusting intermittent generators' output in this way for the following reasons.

Firstly, this would require the RLM to incorporate highly fraught and arbitrary forecasts: the RLM would need to predict the conditions where the POE10 forecast is likely to materialise, and then estimate what the output of wind and solar facilities would be, given these conditions. The data presented in the proposal shows that these conditions, and their impact on the output of intermittent generators cannot be reliably predicted.

Alinta Energy considers that the proposed method is preferable to forecasting a generator's output in POE10 intervals because it does not seek to predict an arbitrary set of circumstances, and then forecast the output of generators under these circumstances. Instead, it recognises that capacity can be required to maintain reliability in a variety of situations, and values intermittent generators based on their available capacity during such high system stress periods, using historical data across all trading intervals.

Another benefit of the proposed RLM compared to AEMO and RCP Support's suggestion is that it would not rely on static assumptions about what the conditions will be in a POE10 scenario. If the RLM was amended to try and predict intermittent generators' output based on these assumptions, it could cause errors where peak demand conditions change, and these assumptions become incorrect. This is crucial considering how increasing rooftop solar has, and how emerging DER technologies like batteries and EVs could, significantly alter the periods when the POE10 demand forecast is expected to materialise.

Finally, Alinta Energy considers that the RLM should be consistent with both components of the planning criterion. If the RLM simply attempted to value intermittent generators based on their output in conditions when the POE10 forecast is expected to materialise, then it would ignore their contribution to the second component of the planning criterion, which is concerned with how a generator reduces expected unserved energy over a capacity year. Alinta Energy considers that the proposed RLM would address both parts of the planning criterion because it values intermittent generators both on their expected contribution to reliability during high stress, peak demand events, and throughout a capacity year.

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[6] p.29, Appendix 3 of the Rule Change Proposal.

<u>Transparency</u>

In the 17/11/2020 MAC meeting, AEMO asked whether market participants considered the proposed RLM was transparent.

Alinta Energy considers that proposed method will improve transparency in the following ways.

Firstly, it removes the K and U parameters. These constant parameters appear to be ill-defined and their relevance to the capacity value of facilities is not clear to market participants.

Secondly, the proposed method allows market participants and prospective investors to predict the capacity value of their facilities more easily.

Thirdly, the proposed method is more clearly resilient to changes in the SWIS; whereas the current method can result in unexpected impacts to facilities' CRC. This is because it does not correctly identify periods when capacity is most valuable, nor account the contribution of other intermittent generators in the system when assigning CRC to a given facility.

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2.   Please provide an assessment whether the change will better facilitate the achievement of the Wholesale Market Objectives.

(a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system.

Alinta Energy considers the proposed RLM will more accurately forecast the capacity value of intermittent generators in the SWIS.

This will improve efficiency by:

-   avoiding under or over-procurement of capacity; and

-   ensuring that investors are not incorrectly disincentivised from investing in wind facilities. The WOSP predicts that investment in wind capacity is required for the SWIS to achieve least cost outcomes over the next 20 years.[7]

This will also improve reliability by sending investors more precise signals about what capacity is required to ensure there is enough supply to meet demand in the SWIS.

Alinta's proposal to apply a LOLE target of 14 hours will help the rule change proposal better achieve this objective because a facility's relevant level and the price signal ultimately sent to investors will be more consistent with the reliability standards in the WEM. By comparison, the 4-hour LOLE target is more likely to understate the level of capacity in the SWIS, and overstate the need for investment, which could lead to over-procurement.

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[7] Energy Transformation Taskforce, *Whole of System Plan*, August 2020.

Alinta's proposal to determine the *RL_Fleet* as the median of the *Annual_RL_Fleet* values will similarly mitigate the risk that the current RLM over-incentivises investment in capacity. As discussed, Alinta Energy considers that the current proposal to determine the *RL_Fleet* as the lower of the median of the *Annual_RL_Fleet* values, and the *Full_Period_RL_Fleet*, unnecessarily exposes the *RL_Fleet* to being skewed by low values and understating the fleet's capacity value. This would cause the reserve capacity price to be higher than the efficient level.

(b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors.

Alinta Energy considers that the proposed method will improve competition among generators in the SWIS by removing the barrier to entry that the current method presents.

ERA's analysis shows that the current method may overvalue existing generators and undervalue new generators because it assesses facilities individually, without properly accounting the contribution of other facilities.

By assessing the capacity value of the fleet of intermittent generators simultaneously, the proposed RLM corrects this issue and levels the playing field for new generators, improving competition.

The proposed RLM will also encourage competition by allowing prospective investors to forecast the capacity revenue of potential investments more easily.

(c) to avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions.

The ERA's analysis shows that the current method does not correctly identify the intervals where capacity is the most valuable to the system's reliability, and does not properly account the contribution of new facilities when assessing the value of existing facilities. The proposed method aims to correct these errors and thereby remove the resultant discrimination against certain technologies.

The proposed method will avoid discrimination against intermittent generation technologies relative to scheduled generators by assessing the fleet's capacity value more accurately.

As discussed in part (a) of this section, Alinta Energy considers that its proposals to:
- apply a LOLE target of 14 hours; and
- determine the *RL_Fleet* as the median of the *Annual_RL_Fleet* values
will further improve the accuracy of the RLM. This would enhance the rule change proposal's achievement of this objective.

(d) to minimise the long-term cost of electricity supplied to customers from the South West interconnected system.

By more accurately valuing wind and solar capacity, the proposed method avoids the risk that current method incorrectly disincentivises investment in these technologies, which are expected to be the most cost-effective sources of generation over the next two decades.[8]

As discussed in part (a) of this section, Alinta Energy considers that its proposals to:
- apply a LOLE target of 14 hours; and
- determine the *RL_Fleet* as the median of the *Annual_RL_Fleet* values

will further improve the accuracy of the RLM. This would enhance the rule change proposal's achievement of this objective.

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3.   Please indicate if the proposed change will have any implications for your organisation (for example changes to your IT or business systems) and any costs involved in implementing these changes.

Alinta Energy anticipates that the proposed change will have negligible costs and operational implications for its organisation.

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4.   Please indicate the time required for your organisation to implement the change, should it be accepted as proposed.

Alinta Energy could implement this proposal immediately after it is accepted.

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[8] Energy Transformation Taskforce, *Whole of System Plan*, August 2020.