

Andrew Splatt
Australian Energy Market Commission
Level 6
201 Elizabeth St
Sydney NSW 2000
Lodged online via www.aemc.gov.au

Dear Mr Splatt

Re: Rule Change Project ERC0262 - Loss factor frameworks

The Environment, Planning and Sustainable Development Directorate (EPSDD) welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) transmission loss factors consultation paper.

The ACT Government has made a legislative commitment to deliver 100 per cent renewable electricity for the ACT, by and from 2020. This commitment is delivered through a number of sources, with approximately 75 per cent coming from the ACT Government's deeds with 10 large wind and solar farms.

Under the terms of these deeds, these large generators provide the ACT Government with all large-scale generation certificates (LGCs) created with respect to their output. The ACT electricity distributor, Evoenergy, pays these generators for their output, based on the difference between the prevailing wholesale price, and the 'strike price' agreed in the deed.

Any potential inefficiencies in the operation of transmission loss factors therefore can impact both the quantity of renewable electricity credited to the ACT, and the price paid by for it.

EPSDD is therefore interested in the opportunity to improve the efficiency of the National Electricity Market through modernising the transmission loss factor framework.

EPSDD considers the current loss factor framework may no longer contribute to the National Electricity Objective (NEO), as it is disproportionately charging certain generators, particularly renewable generators, for more losses than actually occur. EPSDD has proposed solutions that will more effectively credit generators for both the amount and value of electricity they produced. This includes a move away from marginal losses, using an adjustment to loss factors to bring them closer in line with actual losses, and allowing, but not requiring, the Australian Energy Market Operator (AEMO) to set dynamic loss factors.

To further discuss specific details in this submission, please contact Mr Daniel Harding, Senior Director, Energy Markets and Renewables, Daniel.harding@act.gov.au, 02 62077533.

Thank you again for the opportunity to respond to AEMC's transmission loss factors consultation paper.

Yours sincerely,

Geoffrey Rutledge
Deputy Director-General
Environment, Planning and Sustainable Development Directorate

QUESTION 1: IDENTIFYING THE PROBLEM

- a) *Do you agree with the problems identified by Adani Renewables in relation to:*
 - *the current distribution of the IRSR to market customers only*
 - *that the current marginal loss factor methodology produces "inaccurate" results*
- b) *Do these problems have a material impact on the long-term interest of consumers?*
- c) *Do you have other concerns (not identified by Adani Renewables) about the operation and impact of the transmission loss factor framework?*

EPSDD does not agree that the existence of inter-regional settlements residue (IRSR), or its distribution to market customers, necessarily represents a problem, as long as the IRSR is contributed to equitably by all generators. Any transfer of wealth from generators would not be expected to result in a significant change in the retail price of electricity, if it does not preferentially treat any generator or class of generators. Paying the IRSR to generators would decrease the wholesale cost of electricity, and increase the transmission cost of electricity. The net impact is likely to be minimal, and could be positive or negative.

Any such change would significantly impact existing contracts in place with reference to the wholesale price of energy. For example, the generators paid under the ACT Government's contracts for difference would be impacted by a shift of electricity costs from the wholesale component to the transmission component.

EPSDD notes that the AEMO's forecast of losses, like any forecast, will always have some inaccuracy, and in some cases may have significant inaccuracies. EPSDD notes three sources of inaccuracy that can be observed under the current marginal loss factor framework:

- The use of forecast losses, rather than actual losses;
- The use of marginal losses rather than average losses; and
- The use of static, rather than dynamic losses.

However, inaccuracy in the AEMO's loss factor methodology would only have a material impact on the long-term interest of consumers, and therefore contravene the NEO, if it is both significant in its magnitude, and consistent in its direction.

Even large inaccuracies in loss factors do not necessarily influence investment decisions or impact the financials of generators. Market participants can be expected to consider current and historical loss factors in making investment decisions. If the loss factors are accurate on average, then the investment signals remain appropriate.

EPSDD has seen no evidence that the AEMO is consistently making the same error in its forecasts. If such evidence were to surface, EPSDD believes that the appropriate first response would be for the AEMO to use that evidence to improve their forecast methodology. Only if a consistent error is identified, that cannot be fixed through a change to forecast methodology, should the AEMC consider making a rule change to calculate loss factors in real time or retrospectively.

However, EPSDD does have concerns around the loss factor framework, identified below, and believes that the AEMC should make a preferred rule change to address these issues.

Issue: the IRSR is not contributed to equally by all generators.

Even where the AEMO produces perfect forecasts for the calculation of loss factors, the use of marginal and static loss factors would not be expected to impact all generation types equally.

The use of marginal losses means that generators are penalised more severely than the impact of the losses on the market. This occurs because the average loss through a wire is less than the marginal loss. This could be expected to have the biggest impact on generators that have large losses. The current system of loss factor calculations is likely providing too strong a financial penalty for being located on the grid fringe.

As renewable generators are typically located further from load centres, and without built for purpose transmission lines, the use of marginal losses likely impacts renewable electricity generators more than thermal generators.

The use of static loss factors also leads to unequal contributions to the IRSR and inefficient investment and operation decisions. The use of a static, rather than dynamic loss factor does not introduce any error in the quantity of generation credit to all generators (beyond that caused by the use of marginal loss factors). However, a static loss factor results in a change in when each generator is credited with their generation.

For variable generators, the use of a static loss factor will result in the generator being credited for less energy than it actually produced during times of low production, and more energy than it actually produced during times of high production.

Of particular concern is in the case of wind generation in South Australia, where the current framework results in wind generators being under-credited for their generation when wind conditions are calm (when prices are typically high). These generators will similarly be over credited for generation when it is windy (and prices are typically low). The use of static loss factors mean these generators are not recognised for the value of their generation. This results in South Australian wind generators being paid less than they contribute to the market.

EPSDD also notes that the use of static loss factors may not appropriately incentivise generation with anti-correlated generation on the same site. There can be significant benefit to co-locating wind farms with solar as it tends to be windiest at times when it is not sunny. This allows sharing of infrastructure, leading to greater utilisation rates.

EPSDD considers the IRSR may be disproportionately affecting renewable electricity generation. EPSDD considers that steps should be taken to reduce the degree to which renewable electricity generators are disproportionately required to contribute to the IRSR. EPSDD has proposed two changes to the transmission loss factor framework, in response to question 3, which would remove this inefficient over-penalisation of certain generators.

QUESTION 2: PROPOSED ASSESSMENT FRAMEWORK

(a) Do stakeholders agree with the proposed assessment framework?

(b) Are there any additional considerations that the Commission should take into account?

EPSDD agrees with the proposed assessment framework.

EPSDD would expect that the word ‘accurately’ in the framework should be defined as being as accurate as possible not just in aggregate, but for all participant types at all times, as far as reasonably practicable. Over crediting certain generators while under crediting others may be assessed as being accurate on average, but will lead to inefficient investment signals.

EPSDD considers that accuracy should prioritise reducing systematic error, where an error of the same direction is consistently made for the same generator or generator type.

EPSDD expects that accuracy should consider impacts on the quantity of energy credited, as well as impacts on revenue.

QUESTION 3: CHANGING THE TRANSMISSION LOSS FACTOR FRAMEWORK

What improvements do you suggest could be made to elements of the transmission loss factor framework and why? In particular with reference to:

(a) calculating transmission loss factors on a marginal or average basis

EPSDD does not consider the use of marginal losses to be the ideal outcome. It provides a stronger investment signal to minimise transmission losses than is economically efficient. This is because generators are collectively penalised for more losses than actually occur.

EPSDD notes that marginal loss factors are easy to calculate, and are somewhat correlated with the actual loss incurred, although they do result in systematic errors as discussed in our response to question 1.

EPSDD notes that it may be unreasonable to expect the AEMO to forecast actual losses. This calculation may be prohibitively complex, and may not represent an appropriate use of AEMO’s resources.

EPSDD would like to propose a compromise option, which could help to strike an appropriate balance between simplicity and accuracy. One example of a compromise is described below, but there may be more preferable options.

The AEMO could start by calculating marginal loss factors for all generators using the current methodology. The AEMO could then define several virtual nodes for each State, and calculate the actual losses forecast to occur in that virtual node. This would allow the AEMO to calculate the forecast IRSR for that virtual node. The loss factor applied to each generator within that virtual node could be adjusted using a scaling factor, such that the forecast IRSR for that virtual node would be zero. Appropriate choice of virtual node sizing and location would allow AEMO to strike an appropriate balance between accuracy and simplicity. Applying adjustments using smaller nodes would be increasingly accurate, but also increasingly complex.

While such a compromise methodology will not produce exactly the correct answer, it should be more accurate than the current methodology, without being as complex as determining actual losses for each generator.

EPSDD does not support averaging loss factors between connection points. This would decrease accuracy of the loss factor calculation, and would result in inefficient investment and operation of the NEM by removing the investment signal sent by a location specific loss factor.

(b) allocating intra-regional settlements residues

EPSDD offers no view on the appropriate way to distribute the IRSR. Implementing the proposals in this document would result in a reduction in the IRSR, and would remove a systemic issue where the fund is disproportionately paid by certain classes of generators. The question of how the IRSR is distributed may be less important if improvements can be made to the loss factor calculation process.

(e) whether a forward-looking or backward-looking methodology should be used

EPSDD notes that a backward looking methodology would significantly increase the complexity of bidding into the wholesale market, and would act to increase uncertainty for market participants.

EPSDD notes that the use of backward-looking loss factors would improve the accuracy and equity of the loss factor calculation. However, as identified in question 1, EPSDD has not seen evidence that the use of forward-looking loss factors is resulting in significant systematic errors.

At this stage, EPSDD does not believe that a backward-looking methodology is warranted.

Static or dynamic loss factors

EPSDD proposes that the Market Rules should be amended to remove the requirement that the AEMO produce loss factors that apply for a whole financial year. The AEMO should be instead required to publish one or more loss factors, and the associated time period(s) in which they apply, for the next financial year. This should require the AEMO to ensure each connection point has a loss factor in place for the whole financial year.

This would allow, but not require, the AEMO to implement dynamic loss factors. This would enable the AEMO to strike an appropriate balance between the simplicity of having a small number of loss factors, with the accuracy of a larger number. This may result in loss factors applying for broad time periods such as ‘winter nights’, ‘summer days’ and would not necessarily require a separate loss factor for every five minute interval.

(f) if a collar and cap should be applied to transmission loss factors

EPSDD does not support caps or collars. This would represent a move away from the principle of accurately aligning the loss factors with the impact on the market that arises as a result of the losses. There is no cap on the amount of losses that can occur in a wire. This would not meet the NEO, as it may encourage inefficient investment and dispatch.

(g) if grandfathering MLFs should occur.

EPSDD notes the AEMC's commentary on grandfathering, and does not support grandfathering loss factors. This would lead to inefficient investment, closure and operational signals, and would therefore not contribute to meeting the NEO.