29 July 2019

John Pierce
Chairman
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Submitted online: www.aemc.gov.au

Dear Mr Pierce

Transmission Loss Factors – Consultation Paper

Origin Energy Limited (Origin) welcomes the opportunity to provide comments on the Australian Energy Market Commission's (AEMC) Transmission Loss Factors Consultation Paper.

It is clear the changing composition of the generation mix and rate at which new investment in renewable generation is occurring has created some challenges with respect to the application of the current transmission loss factors framework. A key concern from Origin's perspective is the sometimes significant year-on-year variability in marginal loss factors (MLFs) and uncertainty this creates for both existing and prospective generators. There are also questions around the extent to which the locational signals provided by MLFs are being considered (or able to be considered) by prospective generators.

Given these concerns, a key first step for the AEMC in considering this rule change should be to determine the underlying factors that have contributed to investments being made that are potentially inconsistent with prevailing locational signals. In Origin's view, two factors that may be contributing to this dynamic are: a potential disconnect between generation project developers and the ultimate operators of a facility; and a general lack of transparency around the status of prospective generation projects and their potential network impacts.

It is noted the AEMC is separately consulting on three rule changes that relate to improving the transparency of new projects in the NEM, which includes a requirement to allow new project developers to register as intending participants. In assessing the merits of the Adani proposal (or any broader changes to the loss factor framework), the AEMC should first ascertain the extent to which the transparency issues identified in the aforementioned rule changes are impacting MLFs.

A further issue to consider is whether the current methodology for forecasting MLFs remains fit for purpose. At this stage it is not clear whether the accuracy of MLF calculations is a material issue in practice. However, there are elements of the Australian Energy Market Operator's (AEMO) Forward Loss Factor Methodology that could give rise to inaccurate MLFs and therefore inefficient market outcomes. We understand AEMO intends on reviewing the Forward Loss Factor Methodology and support that initiative. An assessment of the accuracy of MLF calculations and identification of potential areas for improvement (if any) by the AEMC would assist with guiding that process.

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Where changes to the MLF framework itself are contemplated, it is important the AEMC remains cognisant of both the overarching objectives of applying transmission loss factors, as well as the key indicators of an efficient loss factor framework, which we consider to be:

- the accuracy of the loss factor signal;
- the transparency/predictability of the framework; and
- the level of certainty provided to existing/prospective participants.

Having regard to this framework, Origin does not support Adani Renewables' proposal to move to an average loss factor (ALF) methodology. Such a change would be inconsistent with the marginal pricing framework that underpins the NEM's energy only market design and is unlikely to address concerns around variability, given that on a proportional basis, variability is unlikely to be improved. We also do not agree it would be appropriate to allocate 50 per cent of intra-regional settlement residues to generators, noting any over-recovery should go back to the parties who funded it (i.e. consumers).

Further analysis of the trade-offs associated with the alternate options presented in the Consultation Paper is ultimately required before we can fully assess their appropriateness. Options that would fundamentally undermine the robustness of loss factor signals in pursuit of greater certainty would need to be carefully considered. While a move toward more frequent calculation of MLFs is also unlikely to address concerns around their variability/predictability.

Origin has provided comment on these issues in Attachment 1. If you wish to discuss any aspect of this submission further, please contact Shaun Cole at shaun.cole@originenergy.com.au or on 03 8665 7366.

Yours Sincerely,

Steve Reid
Group Manager, Regulatory Policy

1. Identifying the underlying factors that are challenging the application of the current MLF framework

As noted by the AEMC, the NEM is evolving. Investment in renewable generation is occurring in more peripheral areas of the grid that are remote from demand centres and less well supported by transmission infrastructure (i.e. in areas where the transmission infrastructure may not have been initially designed to support large injections of generation). It has also been observed that generation of similar types has co-located in similar areas, which creates further challenges for transmission infrastructure. Further, the speed at which investment is occurring is unprecedented, with renewable generators able to be built relatively quickly in comparison to the construction of large coal or gas-fired plant.

The outworking of this has been an emerging trend of highly variable and declining MLFs across the NEM. This has created significant uncertainty for both existing and prospective market participants. It also heightens the risk of new generation locating in sub-optimal areas of the grid due to an inability to adequately consider/predict changes in MLFs.

A key question that should be considered by the AEMC in light of the above, is what are the factors that have contributed to investments being made that are potentially inconsistent with prevailing MLF signals. In Origin's view, two factors that could potentially be contributing to this dynamic are:

- a potential disconnect between generation project developers and the ultimate operators of a facility – it is possible insufficient regard is being given to the impact of transmission losses on the economic viability of a generation project during the initial development phase, where the primary factor driving site selection may be access to the associated fuel resource (e.g. wind); and

- a general lack of transparency around the status of prospective generation projects and their potential network impacts – where a developers ability to assess the potential impact of its prospective generator is impeded, or there is a lack of visibility around other prospective projects, this could lead to inefficient investment decisions such as generators co-locating in the same area to their own detriment from a loss factor perspective.

Regarding the latter, it is noted the AEMC is separately considering three rule changes that relate to improving the transparency of new projects in the NEM. This includes a requirement to allow new project developers to register as intending participants. Such a change would provide developers with access to key information (e.g. network modelling data) relevant to site selection. It would also provide the broader market with greater visibility of the outlook for future generation investment. To the extent a lack of transparency is identified as key factor contributing to the investment decisions being observed, this should factor into the AEMC's decision making around the merits of the transparency rule changes and the extent to which reform of the MLF framework itself is required.

A further issue to consider is whether the current methodology for forecasting MLFs remains fit for purpose. At this stage it is not clear whether the accuracy of MLF calculations is a material issue in practice. However, there are elements of AEMO's Forward Loss Factor Methodology that could give rise to inaccurate MLFs and therefore inefficient market outcomes. This includes the reliance on:

- historical generation/load data that may not be reflective of future output, noting there is scope for some adjustment of the underlying data (i.e. for MLFs that apply in 2019/20, load/generation data is based on 2017/18 actuals);

- estimation of new generating unit output, which is based on shaping/scaling data from similar units already in operation; and

- assumptions around the timing and characteristics of new connections, which can be difficult to accurately predict ahead of time.

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We understand AEMO intends on improving the level of transparency around MLF calculations and reviewing the Forward Loss Factor Methodology. An assessment of the accuracy of MLF calculations and identification of potential areas for improvement (if any) would assist with guiding AEMO's review process.

2. Ensuring consistency with the objectives of applying loss factors and key indicators of an efficient framework

The overarching objectives of applying transmission loss factors in the NEM are to provide locational signals to existing and prospective generators/loads and facilitate economically efficient dispatch, accounting for loss impacts. However, the extent to which a framework delivers against these objectives in practice is ultimately a function of the following key indicators:

- the accuracy of the loss factor signal;
- the transparency/predictability of the framework; and
- the level of certainty provided to existing/prospective participants.

In assessing whether changes to the existing loss factor framework are appropriate therefore, the AEMC should consider both the alignment of any such changes with the overarching objectives, as well as any resultant impact on the key indicators.

Average loss factors and reallocation of intra-regional settlement residues

Having regard to this framework, Origin does not support Adani Renewables' proposal to move to an average loss factor (ALF) methodology. Such a change would be inconsistent with the marginal pricing framework that underpins the NEM's energy only market design. It is also unlikely to address concerns around variability, noting that on a proportional basis, variability is unlikely to be improved.

ALFs would also change relativities between different connection points and weaken locational signals. This is due to the fact the application of ALFs not only improves the loss factors associated with high-loss generators, but also reduces the relative benefit afforded to low-loss generators. Consider the simplified example below, which demonstrates the different outcomes that could occur between two generators with varying bid prices and loss factors. Given marginal losses always exceed average losses by a factor of two, the merit order of Generators 1 and 2 is altered by the application of ALFs, to the detriment of the generator that has a positive impact on loss minimisation (Generator 2).

Table 1: Illustrative example of the impact of ALF and MLF frameworks on generator bid relativities

	ALF	MLF	Bid price ($/MWh)	ALF adjusted bid ($/MWh)	MLF adjusted bid ($/MWh)
Generator 1	0.95	0.90	30	31.58	33.33
Generator 2	1.02	1.04	35	34.31	32.99

Origin also does not support the proposal to allocate 50 per cent of intra-regional settlement residues to generators. Given any over recovery is funded by consumers, it is appropriate the residue is passed back to that group through transmission network service providers (TNSPs). Similarly, in the event of under-recovery (i.e. a negative settlement residue), funds should continue to be recovered from customers through TNSPs.

Alternate options for consideration

The Consultation Paper has highlighted a range of other options that could potentially be applied to address concerns with the current framework. It is clear based on an initial high-level assessment of these options that there are trade-offs associated with each (see Table 1 below).

Table 2: High-level assessment of alternate reform options

Option	High-level assessment
Grandfathering E.g. Assign a fixed MLF to existing generators (potentially for their remaining life).	Grandfathering would improve the level of certainty afforded to generators and better incentivise prospective generators to consider the potential impact of their site-selection of transmission losses. However, such an approach would significantly diminish the accuracy of loss factor signals and potentially lead to inefficient dispatch outcomes.
Collar and cap E.g. Apply a band within which all MLFs must sit, or limit maximum potential changes.	This approach would provide generators with an additional degree of certainty relative to the current framework by reducing the level of variability in MLFs year-on-year. It would also provide for more accurate loss factor signals in comparison to grandfathering, since the resultant MLFs would not be fixed indefinitely. Relativities between the MLFs of different generators would still be changed though, meaning dispatch efficiency and locational signals would be weakened to some degree.
Less frequent calculation E.g. Apply MLFs for multiple financial years.	Less frequent calculation would reduce the level of short-term variability. However, given changing market dynamics, generators could still be exposed to a significant adjustment in MLFs at the end of the fixed period, meaning the underlying issue of variability may not be materially improved. The accuracy of MLFs would also be reduced by less frequent calculation.
Use of multiple loss factors E.g. Peak / off-peak, or seasonal MLFs.	The application of multiple loss factors such as peak/off-peak MLFs would likely improve the accuracy of MLFs, since generators would receive loss factors that better reflect their different generation patterns. Further analysis is required to determine whether this approach would improve the level of certainty for generators – while generators may experience lower levels of variability in off-peak MLFs, peak MLFs could still vary considerably year-on-year.
More frequent calculation E.g. Increase the calculation frequency so that MLFs apply for a shorter period.	More frequent loss factor calculation would increase the accuracy of MLFs. However, the level of predictability and certainty afforded to generators would likely be weakened relative to the existing framework, depending on the frequency of calculation. To this end, we do not believe the accuracy benefits of more dynamic options such as real-time MLFs would outweigh the additional market complexity and uncertainty created.

While further analysis of these trade-offs is ultimately required before we can fully assess their appropriateness, Origin would caution against adopting any option that would fundamentally undermine the accuracy of loss factor signals in pursuit of delivering additional certainty. A move toward more frequent calculation of MLFs is also unlikely to address concerns around their variability/predictability.