public interest
ADVOCACY CENTRE

Submission to Transmission Loss Factors rule change

17 July 2019

Level 5, 175 Liverpool Street, Sydney NSW 2000
Phone: 61 2 8898 6500 • Fax: 61 2 8898 6555 • www.piac.asn.au

About the Public Interest Advocacy Centre

The Public Interest Advocacy Centre (PIAC) is an independent, non-profit legal centre based in Sydney.

Established in 1982, PIAC tackles barriers to justice and fairness experienced by people who are vulnerable or facing disadvantage. We ensure basic rights are enjoyed across the community through legal assistance and strategic litigation, public policy development, communication and training.

Energy and Water Consumers' Advocacy Program

The Energy and Water Consumers' Advocacy Program (EWCAP) represents the interests of low-income and other residential consumers of electricity, gas and water in New South Wales. The program develops policy and advocates in the interests of low-income and other residential consumers in the NSW energy and water markets. PIAC receives input from a community-based reference group whose members include:

- NSW Council of Social Service;
- Combined Pensioners and Superannuants Association of NSW;
- Ethnic Communities Council NSW;
- Salvation Army;
- Physical Disability Council NSW;
- St Vincent de Paul NSW;
- Good Shepherd Microfinance;
- Affiliated Residential Park Residents Association NSW;
- Tenants Union;
- Solar Citizens; and
- The Sydney Alliance.

Contact

Miyuru Ediriweera
Public Interest Advocacy Centre
Level 5, 175 Liverpool St
Sydney NSW 2000

T: (02) 8898 6525
E: mediriweera@piac.asn.au

Website: www.piac.asn.au

Public Interest Advocacy Centre

@PIACnews

The Public Interest Advocacy Centre office is located on the land of the Gadigal of the Eora Nation.

Contents

1. Introduction

As noted in our submission to the AEMC's Coordination of Generation and Transmission Investment 2019 review,[1] the current regulatory framework is designed to deliver efficiency of incremental investment to a centralised generation and transmission system which has already been 'built out'. The transformation the NEM is currently going through is not incremental – it is a step change.

What is needed is a planning and investment framework which delivers efficiency for strategic, whole-of-system investments in order to ensure this transformation is delivered in a timely and cost-effective manner. This is the challenge PIAC sees as central to the work the AEMC and ESB are doing through a number of workstreams.

Without such a framework, we expect to see the cumulative impact of individual generation and transmission investments diverging from the optimal system-wide outcome with:

- Inefficient generation investment – in terms of the sizing of new generators; their location and impact on the network; the cost to connect each individual generator including those otherwise efficient investments which do not occur; decisions regarding the refurbishment or decommissioning of existing generators; and the geographic and fuel source diversity of the generation fleet as a whole.

- Inefficient network investment – in terms of the shallow connection assets to connect new generation; the deeper assets required to connect the new generation to major load centres; the interconnection of major load and generation regions to make the most of fuel diversity and maintain reliability of supply; and the ability to maintain system security and stability.

- A lack of coordination between generation and network meaning consumers may have to pay twice for the same problem to be attempted to be solved by both a generation and network investment.

- Missed opportunities to exploit economies of scale and scope.

- A longer and more expensive transition to a low- or zero-emissions energy sector.

Ultimately, this leads to increasing pressures on consumers through the wholesale and network components of their electricity bills as well the impacts of climate change.

PIAC has identified three objectives that the regulatory framework for delivering centralised generation and transmission must deliver, especially in the current context of the NEM's transformation and affordability challenge. We use this as a framework for assessing the need and priority of any reforms to the current framework and the merit of any solutions proposed. The framework must:

---

1 PIAC, Submission to COGATI Access and Charging consultation paper, April 2019, pp 1-3.

1. **IDENTIFY** the most efficient system-wide solution – a NEM-wide planning framework that is outcome-focused and solution-agnostic in order to deliver the services consumers want, at a price they are willing to pay.

2. **DELIVER** the solution in a timely and efficient way – allocate responsibility and incentives to those parties that have the capacity to manage the various risks and deliver the entirety of the modelled benefits (in both time and cost), ultimately to consumers.

3. **RECOVER COSTS** for the delivered solution in the fairest and most equitable way – those who benefit from a given investment should also pay for that investment.

2. Adani Renewables rule change proposal

In this context, any reforms to the treatment of transmission loss goes to the second and third objectives above: allocating responsibilities and incentives; and recovering costs in an equitable way.

While we agree with the rule change proposal that the treatment of transmission losses should be reviewed, we are not sure of the merit of the model proposed by Adani Renewables and encourage the AEMC to consider alternate solutions.

We also note that any changes to Marginal Loss Factors (MLFs) or transmission losses more broadly must follow and complement the overarching reforms to the generation and transmission frameworks such as those currently being developed through the AEMC's COGATI review.

3. AEMC's assessment framework

3.1 Splitting settlement and operational application of MLF

We highlight the distinction between the treatment of transmission losses for financial settlement and their treatment for physical dispatch or operation. To an extent the operational and settlement MLFs are interlinked. In the short term, any change in settlement sends a financial signal which influences a generator's market offers and therefore physical dispatch. In the longer term, MLFs influence a generator's revenue stream and therefore the profitability (or not) of any given investment.

However, because generators cannot instantaneously respond to fluctuations in MLFs, settlement and operational values can be decoupled to an extent. This can be used as a tool to achieve policy goals, such as incentivising efficient investment in generation projects through improving certainty of future returns.

3.2 What do we want to achieve through MLFs?

Therefore, considering any change to the existing MLF framework depends on the policy goal the framework is intended to achieve – in particular the trade-off, if and where needed, between driving efficiency in the operating and investment timescales.

PIAC and others have noted that the MLFs that apply to individual generators have been changing at a faster rate than earlier in the NEM. As the MLF is calculated for each connection point in the transmission network and not apportioned according to a causer-pays principle, there is limited incentive (or signal) for connecting parties to reduce their impact on the MLF of other participants. This is reflected in the concerns raised by Adani Renewables in their rule change proposal.

Risks should be allocated so that those who have a reasonable capacity to manage them also have an incentive to manage them. Many generators who have already connected or are looking to connect to the NEM (for instance, solar and wind generation) have limited options for managing the risk of unexpectedly low or fluctuating MLFs. The main decision such generators make with respect to MLFs is *locational* and hence at the investment stage, not operational.

As such, PIAC suggests the AEMC focus on providing certainty in the financial treatment of transmission losses as a means of delivering efficiency.

4. Alternate models to consider

In addition to the potential changes to MLF discussed in the consultation paper, PIAC notes two other potential models.

The first model was designed for a new energy zone that is purpose-built to accommodate new generation connections. However, we note it could be applied more broadly. The second was proposed as a change to the MLF regime in general and could apply to generators connecting to the transmission network anywhere in the NEM.

4.1 An 'insurance product' for MLFs in an energy zone

As noted in a number of processes including the 2019 COGATI review, PIAC has developed a model for sharing the risk and cost recovery for the speculative, generation-leading transmission investment in an energy zone. As part of this model, our approach to MLFs is to offer connecting generators the option of an 'insurance product' in the form of an annually fixed MLF schedule with a ceiling and floor, defined by the following parameters:

- there could be a schedule of MLFs determined at the time an energy zone was planned, based on AEMO's forecast MLFs for each connection point;
    - in the first instance, MLFs would be calculated as currently, based on a historical weighted average and projected forward on the basis of anticipated future load flow patterns;
    - the schedule would place a floor and a ceiling on MLFs for any given year and utilisation level;
- there could be a 'side constraint' or limit on annual MLF changes for any given year; and
- there would be a sunset period (for example, 10 years) for each REZ, after which the MLF arrangements would revert to those for the transmission network as a whole.

This model should be applied in different ways that support the insurance product being available and valued for generators connecting within an energy zone. The ceiling/floor schedule could be

compulsory for all generators within an energy zone, or merely optional. Potentially, the schedule should be available to generators outside an energy zone.

In determining the merit order for generators (and hence dispatch) AEMO would apply the unbounded MLFs, which more closely reflect real physical variables and therefore the true cost of energy produced.

The rationale for this approach is presented below.

Capacity of generators to respond to risk, and investment certainty

Risks should be allocated so that those who have a reasonable capacity to manage them, also have an incentive to manage them. As previously discussed, some generators (solar and wind) have very limited options for managing the risk of unexpectedly low or fluctuating MLFs. The main decision such generators make with respect to MLFs is *locational*, not operational.

Exposing such generators to potentially volatile MLFs adds uncertainty to the generator's revenue stream and does not add a signal for more efficient or responsive generation on a day-to-day basis. It therefore makes sense to offer such generators a risk-management option.

Under a 'ceiling/floor' MLF schedule, as under current arrangements, intermittent generators would have an incentive to locate in areas where they predict transmission will be relatively unconstrained. These MLFs would still be based on the best available information about future constraints as incorporated into AEMO forecasts. However, in the event of major and unexpected divergence from these forecasts, generators would be protected from exposure to a risk they cannot control, as changes in physical MLFs depend on the behaviour of other generators, loads and on the transmission network. This would provide some certainty for investors in generation projects.

It is important that incentives are symmetric. While the MLF floor would protect generators from unexpectedly low MLFs, the ceiling would also mean they forego the chance of windfall gains in the event that MLFs are unexpectedly high. The reduction in risk is not only a 'protection' for generators – it is an adjustment in the spread of expected returns.

Another way to conceptualise risk allocation under the 'ceiling/ floor' schedule is as a smoothing within the generation fleet in the energy zone, so that the level of risk is somewhat equalised between participants compared to current arrangements where early connectors face significantly more risk. We consider this appropriate, since that the ability of generators to respond to changing MLFs does not depend on when they connect.

4.2 Locking in MLF for a period

In our submission to the AEMC's 2017 COGATI directions paper, we proposed a potential model for providing a stronger investment signal for generator connection through the MLF described below.[2]

[2] PIAC, Submission to the Coordination of Generation and Transmission Investment discussion paper, May 2018, pp 9-10.

As the MLF is calculated for each connection point in the transmission network and not apportioned according to a causer-pays principle, there is limited incentive (or signal) for connecting parties to reduce their impact on the MLF of other participants. As the transformation continues and more generators connect to the network in more remote locations, the potential volatility in MLF can be expected to increase.

A possible way to address this is to introduce a system which better signals the impact that a single connecting party has on loss factors, as illustrated in Figure 1.

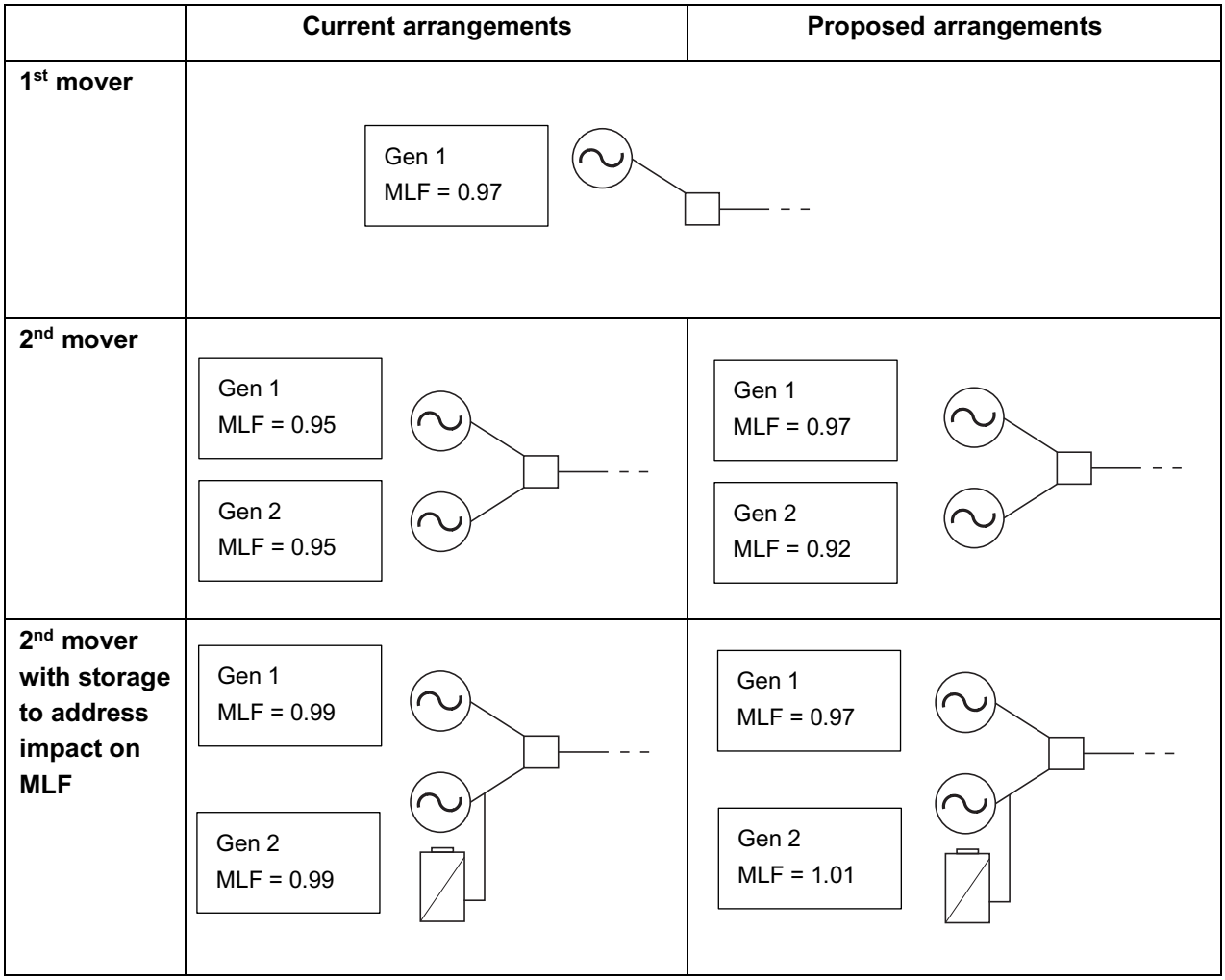

Figure 1 An alternative method for allocating the impact on Marginal Loss Factor (MLF) from incremental connections

Connecting parties could have their MLF 'locked in' by AEMO for a standard period of time – allowing the party greater certainty of its future revenue. The necessary design decisions would include determining an appropriate sunset period for this.

If a new party were to connect nearby and affect the local MLF (as in the second row of the diagram above), this change would be borne by the second party alone rather than being spread across both parties. This provides a much stronger signal to each connecting generator to minimise their impact on overall loss factors, such as by incorporating storage.

Importantly, this signal works both ways – a connecting party that improves the MLF in the area sees the full benefit of their decision rather than it being diluted by being shared by existing parties (as in the third row of the diagram above).

While these MLFs would still be based on the best available information about future constraints as incorporated into AEMO forecasts, there would need to be mechanisms to 'reopen' the MLFs in the event of major and unexpected divergence from these forecasts.

Once the determined period of time has elapsed, the MLFs are no longer 'locked in' and the revised loss factor at the connection point is applied to both parties.

As noted previously, some generators have very limited options for managing the risk of unexpectedly low or fluctuating MLFs. Therefore, exposing such generators to potentially volatile MLFs adds uncertainty to the generator's revenue stream and does not add a signal for more efficient or responsive generation on a day-to-day basis.