

Marginal Loss Factor Discussion Forum

Workshop 2





Recording in progress:

This meeting will be recorded for internal AEMO purposes.



We acknowledge the Traditional Custodians of the land, seas and waters across Australia. We honour the wisdom of Aboriginal and Torres Strait Islander Elders past and present and embrace future generations.

We acknowledge that, wherever we work, we do so on Aboriginal and Torres Strait Islander lands. We pay respect to the world's oldest continuing culture and First Nations peoples' deep and continuing connection to Country, and hope that our work can benefit both people and Country.

'Journey of unity: AEMO's Reconciliation Path' by Lani Balzan

AEMO Group is proud to have launched its first Reconciliation Action Plan in May 2024. 'Journey of unity: AEMO's Reconciliation Path' was created by Wiradjuri artist Lani Balzan to visually narrate our ongoing journey towards reconciliation – a collaborative endeavour that honours First Nations cultures, fosters mutual understanding, and paves the way for a brighter, more inclusive future.

Read our
RAP



Competition and meeting protocol

- AEMO is committed to complying with all applicable laws, including the Competition and Consumer Act 2010 (CCA).
- In any dealings with AEMO regarding the procurement of goods or services (including for Interim Reliability Reserves), all participants agree to comply with the CCA (including the competition law obligations set out below) and this Protocol. Participants must arrange for their representatives to be briefed on competition law risks and obligations.
- **Competition law obligations**
- The CCA prohibits anti-competitive conduct, including:
 - 1. Cartel conduct – arrangements between competitors to: – fix prices – restrict supply or acquisition of goods or services – allocate customers or territories – rig bids. A cartel can be entered into even though competitors never meet or speak directly. This is known as a 'hub and spoke cartel' where a third party facilitates the cartel by passing on information and commitments between competitors. The third party can be liable for this conduct.
 - 2. Concerted practices – other cooperation between competitors with the purpose, effect or likely effect of substantially lessening competition (eg sharing competitively sensitive information with competitors).
 - 3. Any other contract, arrangement or understanding which has the purpose, effect or likely effect of substantially lessening competition.
 - 4. Any conduct by a company with market power which has the purpose, effect or likely effect of substantially lessening competition.
- A contravention of the CCA can result in significant penalties, including criminal sanctions for cartel conduct (including jail terms for individuals).

Competition and meeting protocol

Participants in AEMO discussions must:

- ensure that discussions are limited to the matters contemplated by the agenda for the discussion
- make independent and unilateral decisions about their commercial positions and approach in relation to the matters under discussion with AEMO
- immediately and clearly raise an objection with AEMO or the Chair of the meeting if a matter is discussed that the participant is concerned may give rise to competition law risks or a breach of this Protocol.

Participants in AEMO meetings must not discuss or agree on the following topics:

- which customers they will supply or market to
- the price at which Participants will supply
- bids or tenders, including the nature of a bid that a Participant intends to make or whether the Participant will participate in the bid
- which suppliers Participants will acquire from (or the price or other terms on which they acquire goods or services).

Under no circumstances must Participants share Competitively Sensitive Information.

- Competitively Sensitive Information means confidential information relating to a Participant which if disclosed to a competitor could affect its current or future commercial strategies, such as pricing information, customer terms and conditions, supply terms and conditions, sales, marketing or procurement strategies, product development, margins, costs, capacity or production planning.

Agenda

1. Introduction & context reminder

2. Reflections on workshop 1

3. Strawman process

4. Short list

1. Investment stability objective
2. Global re-opening
3. Glide paths
4. Quarterly diurnal MLFs
5. Influencing PPA structures

5. Long list & other proposals

6. The tribe has spoken

7. Next steps

Context reminder

Consultation on Forward-looking Transmission Loss Factor Methodology

PUBLISHED: 12/12/2024

| MARKET | STAGE | CONVENOR | INITIATED | ACCEPTING SUBMISSIONS? |
|-----------------------------|--------------|----------|------------|------------------------|
| National Electricity Market | Draft Report | AEMO NEM | 09/07/2024 | No |

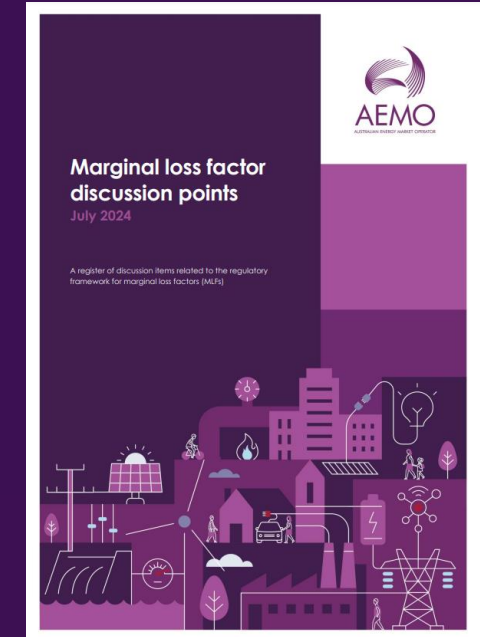
Timeline

- ✓ Consultation paper published
5 July 2024
- ✓ Submissions due on consultation paper
2 August 2024
- ✓ Draft report published
23 Sep 2024
- ✓ Submissions due on draft report
22 Oct 2024
- ✓ Final report published
12 Dec 2024

Matter under consultation

The National Electricity Rules (NER) require AEMO to calculate and publish, each year, inter-regional loss factor equations and intra-regional loss factors. AEMO has developed the Forward-looking Transmission Loss Factor (FLLF) methodology (often referred to as the Marginal Loss Factor (MLF) methodology) to set out the process by which these factors are determined. Within the scope permitted by the NER, AEMO can amend the FLLF methodology by following the standard rules consultation procedure described in NER 8.9.2.

Stakeholder feedback through pre-consultation workshops and consultation paper submissions



Workshops

- AEMO is *considering* further investigation of potential changes to marginal loss factor (MLF) frameworks without being limited by the current National Electricity Rules (NER) or Wholesale Electricity Market (WEM) Rules
- The purpose of these workshops is to gather stakeholder perspectives and insights about where, how and why change could occur, and its relative importance to stakeholders
- Workshop 1 was relatively abstract. Workshop 2 is more concrete (more on this later).

Workshop 1 reflections

Appetite for change

Issue: What scale of change to the MLF calculation approach is desirable for market participants?



What we asked



What scale of change to the MLF framework is desirable?



What are the main drivers for change to MLF frameworks?



How should we consider possible reform across east and west coast markets? [AEMO did not receive substantive comment on this question]



What we heard

- There were many different views about whether change should be incremental or substantial, and many different reasons as to why a certain level of change is desirable (examples below)
- Incremental change was preferred because of aversion to large MLF swings and possible PPA re-opening
- Substantial change was preferred because current process was considered volatile and outdated
- Many stakeholders, even those with different preferences about the nature of framework change, considered that reducing MLF uncertainty and volatility was the main driver for change



Interpretation and implications

- Substantial framework changes may face a material degree of opposition
- Reform measures that target volatility and uncertainty would likely experience most stakeholder support

Timing parameters

Issue: Do the timing parameters that currently underpin MLF calculations support the best outcomes for consumers?



What we asked



Compared to current process, is a more dynamic or a more stable calculation preferred?



What we heard

- Many stakeholders preferred timing parameters leading to more stable MLF calculations, though the preference was not unanimous
- Ideas discussed included diurnal and quarterly MLFs and how to deal with year-on-year weather changes (e.g. rain-drought cycle)
- Stakeholders were interested in the impacts of changing various timing dimensions both in terms of how they'd affect the calculation (e.g. how would weather cycles be reflected?) and in terms of implementing a change (e.g. how would bidding systems need to be updated?)



Interpretation and implications

- The preference for stability is aligned with the view that volatility and uncertainty are key issues with the current process
- Development of concrete proposals for timing parameters may enhance discussions

Calculation philosophy

Issue: Would a change to the MLF calculation philosophy, currently underpinned by minimal extrapolation, improve outcomes for consumers?



What we asked



What sort of issues with the current calculation could be addressed by an alternative philosophy, and why would an alternative philosophy help?



What we heard

- The handling of battery storage (a growing section of the market) was identified as a weakness in the current calculation
- The main alternative calculation approach raised was to develop market models that did not use a minimal extrapolation philosophy to capture battery behaviour
- Separate to workshop 1, MLF methodology consultation submissions expressed the view that completely replacing minimal extrapolation with an alternative market modelling philosophy (e.g. in the style of the ESOO) would reduce MLF uncertainty



Interpretation and implications

- AEMO agrees that there are likely to be better ways to capture battery storage behaviour than current process (which assumes persistence)
- There are specific drivers of battery behaviour (e.g. state of charge and cycling limitations) that make batteries more difficult to incorporate into existing process than other supply sources
- To manage the resource impact, AEMO will first explore whether uncertainty can be reduced or battery treatment can evolve without fundamental change to the calculation approach (minimal extrapolation) for all supply sources
- AEMO notes that there are degrees to which the calculation approach could deviate from minimal extrapolation, and the calculation approach could have elements of different calculation philosophies

Possible reform area 3

Market mechanism

Issue: Are forward-looking MLFs a suitable locational signal for the NEM & WEM?



What we asked



What factors should be considered in deciding how to account for losses?



Are there alternative market mechanisms that AEMO ought to consider?



What we heard

- Presentation of this topic was briefer than planned during the workshop, and stakeholders were encouraged to contact AEMO with further ideas
- A perspective was raised that MLFs are more volatile than average loss factors (ALFs) and ‘overcharge’ regional generators
- A question was asked as to whether it was sensible to use MLFs in dispatch and ALFs in settlement
- Other than brief discussion of ALFs, AEMO received no other feedback or suggestions for alternative market mechanisms to MLFs either during or after the workshop

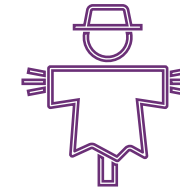


Interpretation and implications

- AEMO considers that using ALFs would be a substantial departure from the marginal pricing principles that underpin NEM and WEM design
- AEMO notes that proposals to introduce ALFs and, with similar effect, change intra-regional settlement residue distribution were examined by the AEMC in the Adani Renewables rule changes completed in 2020 – though AEMO acknowledges the NEM has evolved since then
- No majority industry interest in a specific alternative to the current market mechanism has yet emerged

Strawmen

Strawman Process



Guided Democracy

Why have strawmen?

- Workshop 1 major change discussion needed more structure
- Levelling attendee understanding
- Critiquing the same thing
- Simultaneous reflection on upsides and downsides

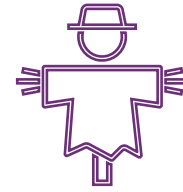
How did we determine strawmen?

- Biggest criticism is investor risk due to short and long-term MLF volatility
- Broad ideas from stakeholders and AEMO experts
- Turned ideas into tangible strawmen, assuming away implementation details
- Short list of five seem most prospective
- Secondary list of those that seem less beneficial or realistic

What will we do with feedback on strawmen?

- Discussion is welcome, today and after
- Feedback today will be collated through a structured preference indication
- Test of stakeholder interest, NOT an AEMO commitment
- A basis to argue for internal resource allocation
- Some may be investigated, with observations published
- Following that, may progress toward implementation

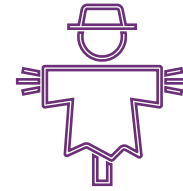
Strawman 1: Investment stability objective



- The current Rules say methodology must make annual MLFs as accurate as possible
 - No opportunity to balance this against commercial risks
- The Rules could instead list stability as a competing objective alongside accuracy
 - AEMO would have to find a balance when consulting on methodology
- This proposal brings no certainty of change
 - Might introduce a new risk of AEMO's judgement

This proposal may work best combined with others, e.g. strawman 3: glide paths

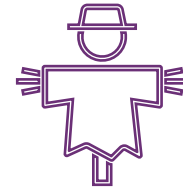
Strawman 2: Global re-opening power



- Rules limit circumstances where MLFs can be revised mid-year
 - Sometimes to detriment of others, e.g. Callide C outage
- Rules could permit broad re-opening when initial conditions change dramatically
 - Upon AEMO's judgement
- More accurate, potentially of benefit to generators, but less certain
- There are operational and commercial impacts of mid-year change

Revisions are limited to **single connection points** with material changes in capacity compared to initial studies

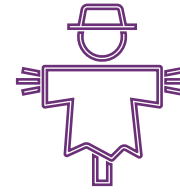
Strawman 3: Loss factor glide paths



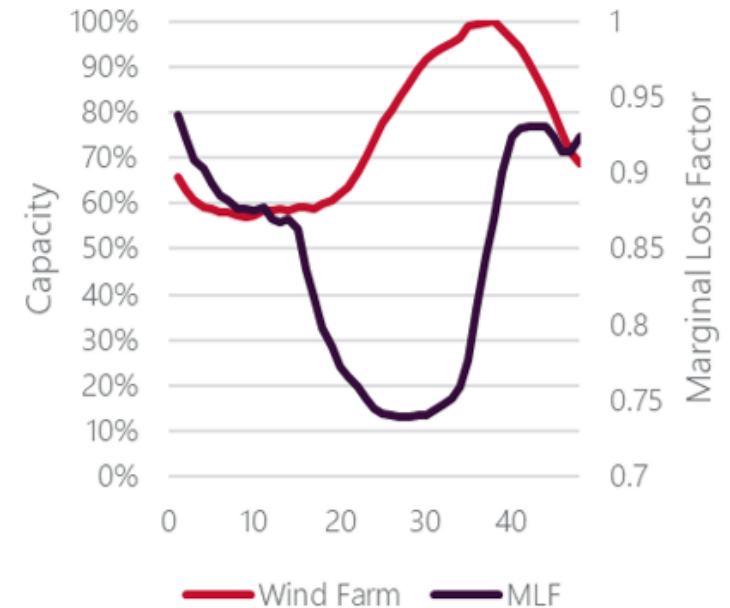
- Limit how much a MLF can change in a year
- Constrain to, say +/- 0.05/ year for CPs with no capacity change
- Creates a “worst case” for short-term
 - No help for long-term decline
- Accuracy will be lower
 - Neighbourhood anomalies

If combined with strawman 1, AEMO could judge threshold and when to apply

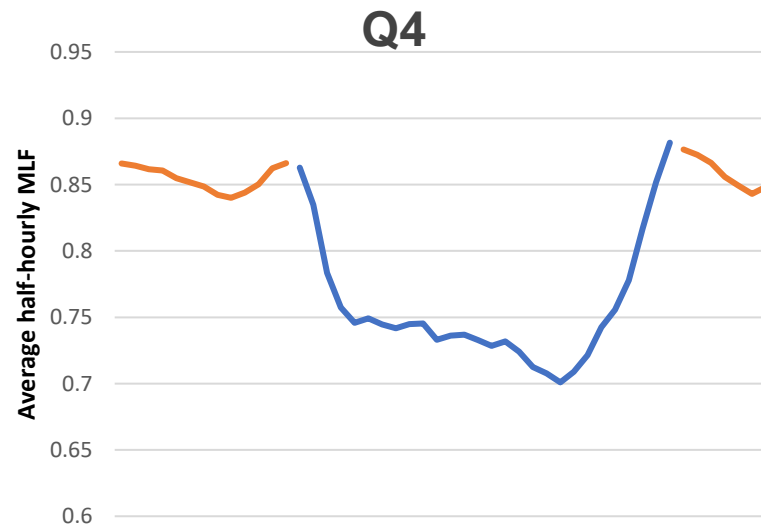
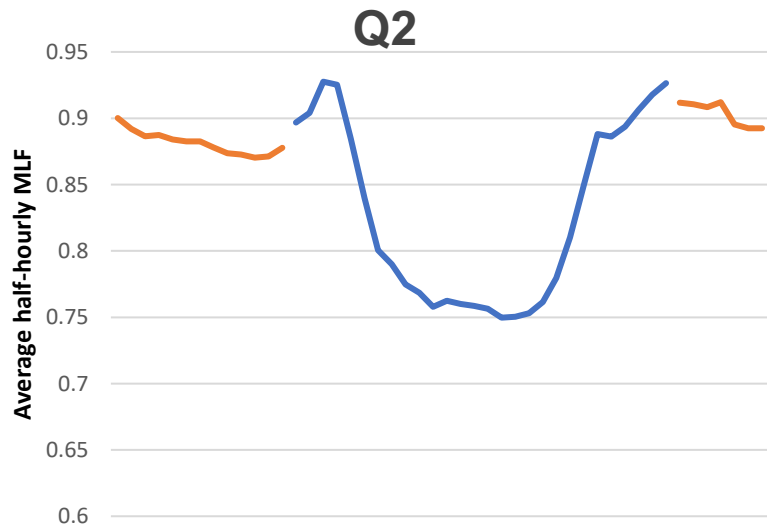
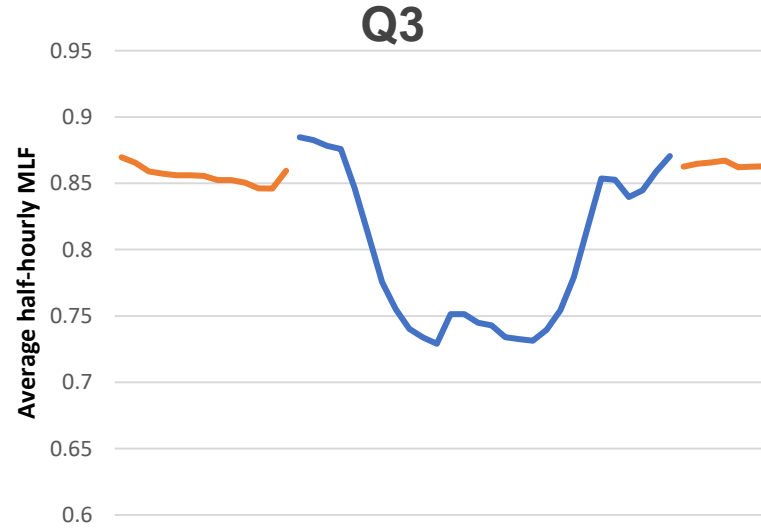
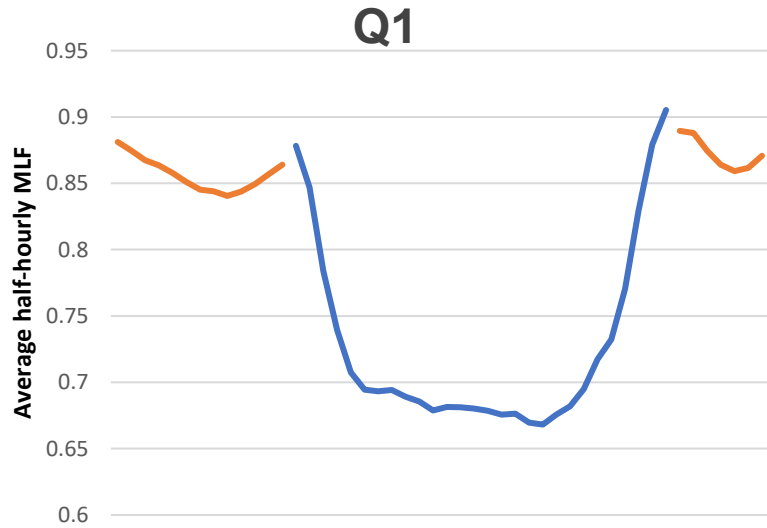
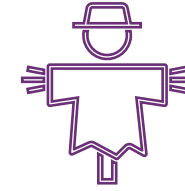
Strawman 4: Quarterly diurnal loss factors



- 8 load-weighted average MLFs across year
 - Day/night, published ahead of the quarter
- More accurate for remote windfarms or VRE with storage
- Same annualised volatility as status quo
- Major implementation challenges of multiple MLFs in the day
 - Impacting bidding systems, potentially commercial arrangements



Strawman 4: Quarterly diurnal loss factors



- Example wind farm
- Daytime (blue) arbitrarily defined as 6:00AM – 8:00PM in all quarters

Strawman 5: Reallocated PPA risk



- Standard commercial practice for power purchase agreements (PPAs) is for developer to wear MLF risk
 - Makes sense when seller is more sophisticated than buyer (e.g. large customer)
- Governments could instead absorb MLF risk and underpin VRE capacity
 - Sophisticated buyer – assessing network exposure ahead of contracting, and pooling multiple sites
 - Better placed to pre-assess and absorb MLF risk
- Doesn't assist existing capacity

AEMO can only lobby/explain this proposal to governments as it is outside the NER

Longlist

1. Forward “market” modelling vs “minimal extrapolation”

To remove historical noise and keep ahead of changing system, but

- No immediate way to implement
- Unlikely to make much change
- The concepts are merging

2. Real-time loss pricing

Using a network model, MLFs disappear, replaced with realtime loss-adjusted prices at each node, effectively 100% accurate

- Huge project with many implications (good & bad) beyond losses
- Solution seems oversized to the problem, no evident support

Longlist

3. “Average” loss factors

Apply $\sqrt{\text{MLF}}$. No residue accrues (likely deficits)

- Inconsistent with common-clearing price marginal dispatch
- Weakens locational incentive and dispatch efficiency
- Big wealth transfer
- Rejected previously for these reasons

4. Longer-term MLFs

Calculate MLFs every year for, say, Year + 3

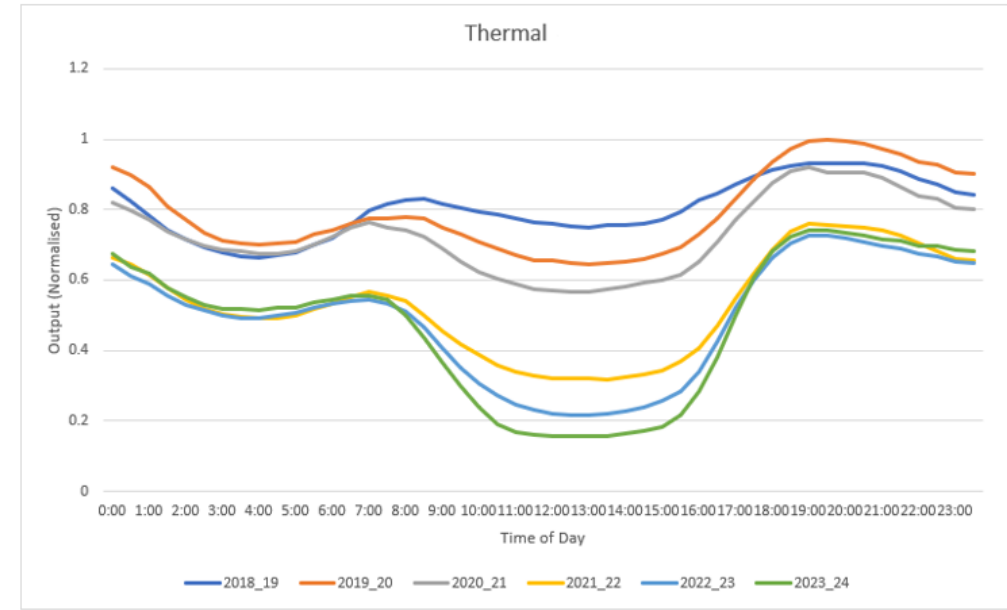
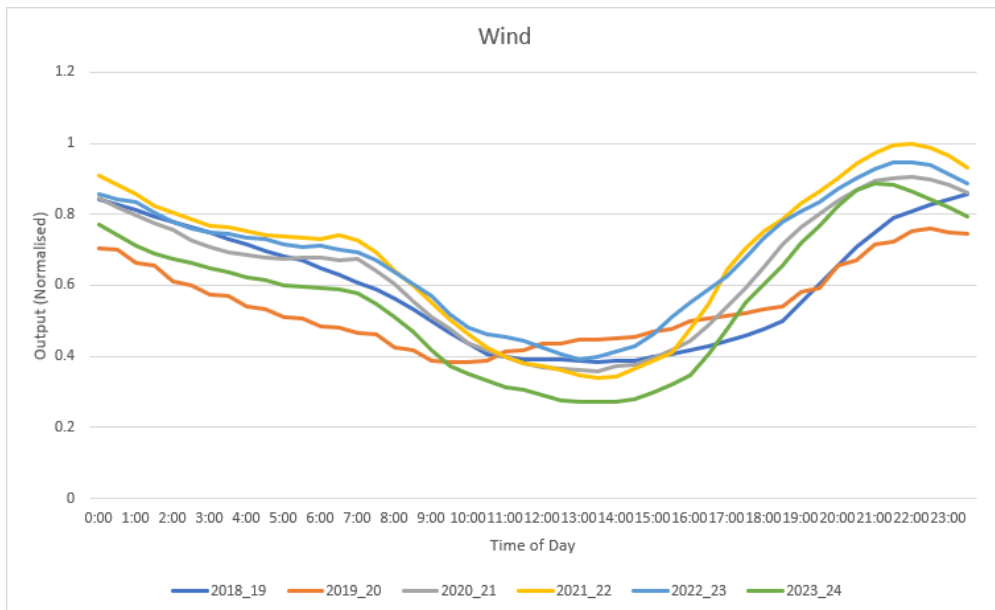
- Year +1 and +2 not recalculated
- More notice, but serious inaccuracies

Longlist

5. Multiple historical reference years

Extrapolate from several historical generation years rather than one to smooth out historical noise

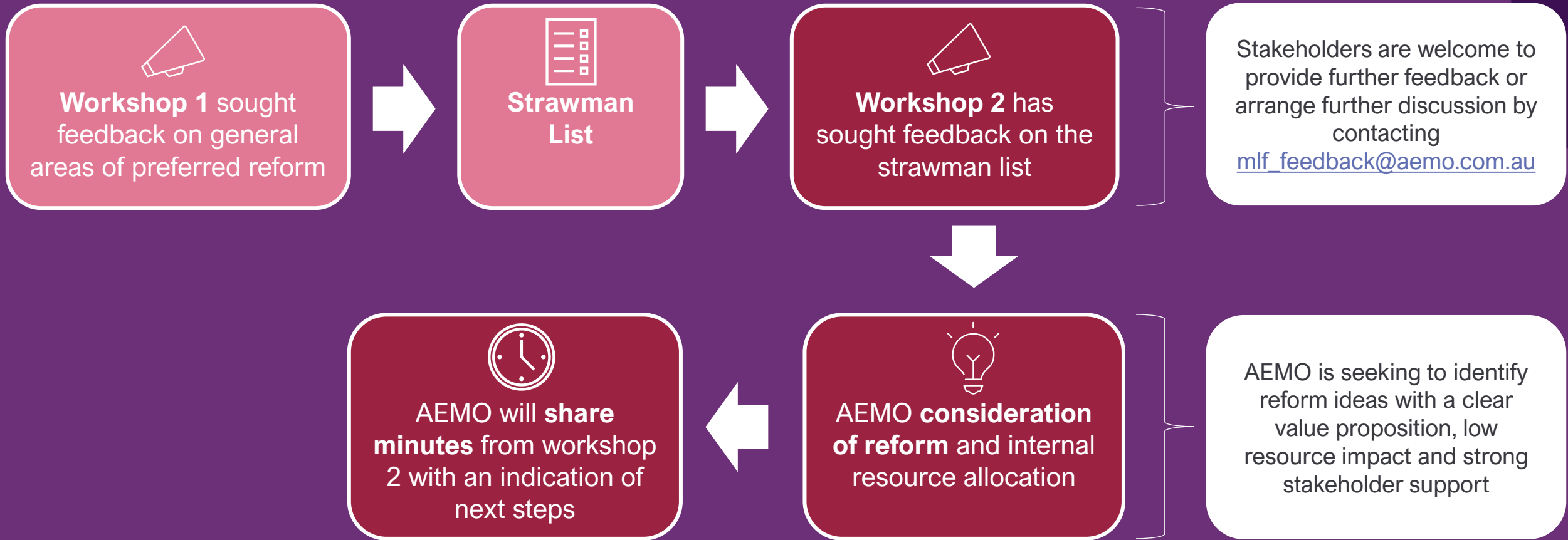
- Methodology already manually adjusts for major one-offs, such as drought
- Having done this, historical noise not a major cause of MLF volatility
- Would slow capture of trends, leading to inaccuracy



The tribe speaks

- Where do you want AEMO analysis directed?
 - Forced choice
 - Can pick from longlist (noting AEMO's initial view)
- Instructions
 - Visit [slido.com](https://www.slido.com) and enter code **#MLF**
 - When you sign into slido, please use the same name you used to register for the event
 - Please make two votes for your preferred (separate) options
 - We will ignore any votes for “anonymous” or names we don't recognise
- As noted, votes are an input to take to our management, not a commitment

Next steps





For more information visit

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