Marginal Loss Factor Forum

January 2024

We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

We pay respect to their Elders
Past and present.

Agenda

1. Welcome, introductions and forum objectives (10 min, JL)
2. 2022-23 MLFs: Historical comparison insights (15 min, JM)
3. 2024-25 MLFs: Preliminary outcomes (15 min, DF)
4. MLF Publications and further information (5 min, JM)
5. Other Items (5 min, DF)
6. Forum close (5 min, JM)

Welcome, introductions and forum objectives

James Lindley

Forum Objectives

This forum is intended to support AEMO's objective of improving the transparency of the MLF process, the following topics will be presented:

2022-23 FY Historical Comparison

- Share insights on a comparison between published and historically-modelled MLF outcomes for the 2022-23 FY

Preliminary 2024-25 FY MLF Outcomes

- Share insights on forecast trends and preliminary MLF outcomes for the 2024-25 FY

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.

2022-23 MLFs: Historical comparison insights

Johnny Mangala

Introduction

Methodology for historical comparison

While the historical comparison study has utilised inputs representative of historical outcomes (load/generation), there are limitations when performing historical MLF comparisons:

- A single system normal network model is implemented.
- DC interconnectors in parallel with AC interconnectors operate on a relationship derived from historical outcomes however will not result in exact alignment.
- Historic network outages are not captured in the model.

Drivers of variation

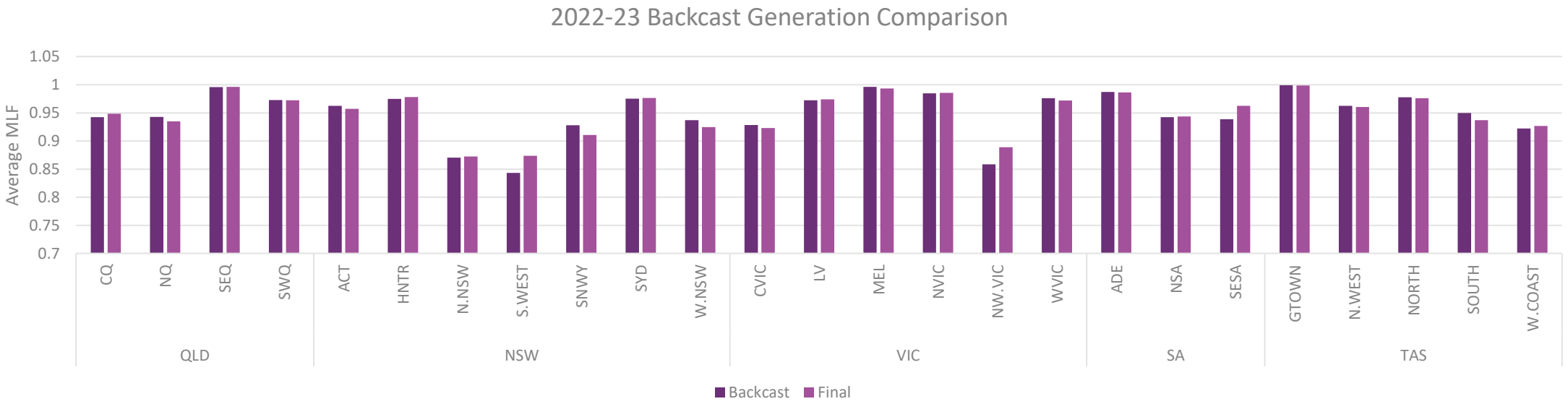
Generator connection/commissioning delays

- Timing of connection, commissioning and subsequently commercial operation of new generation capacity continues to be challenging.

Operational limits

- Several new system normal limits, and revisions to existing limits impacted on both generation and inter-regional transfers.
- Improvements have been made in this space, continues to be difficult to forecast impact of limits up to 15 months in advance.

Regional average MLFs for Generators



New South Wales

- South west MLFs lower than published, primarily due to increased local generation arising from reduced congestion within the area.

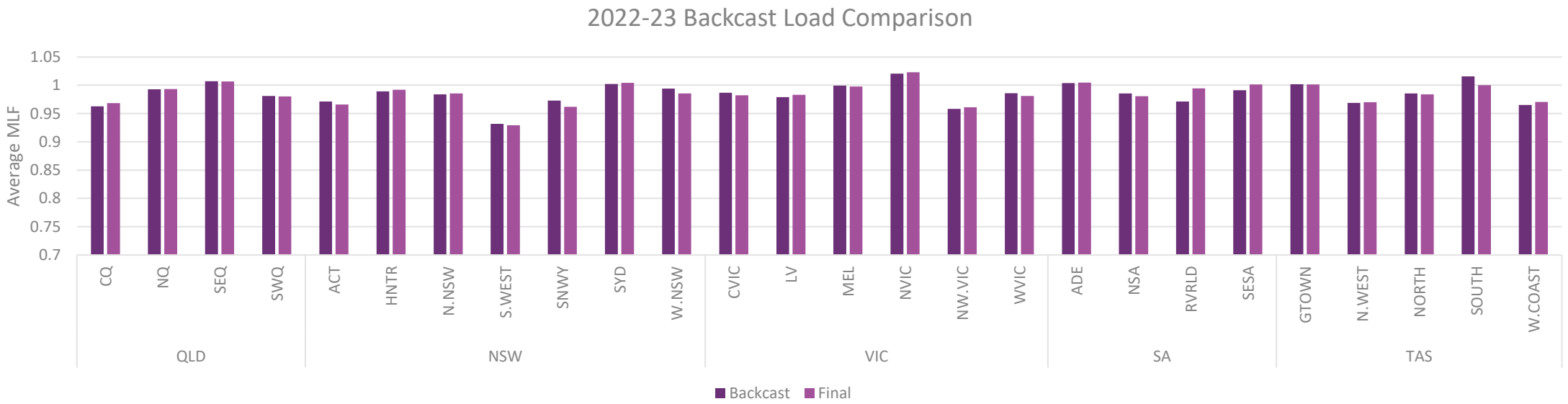
Victoria

- North west MLFs lower than published, primarily due to increased local generation arising from reduced congestion within south west New South Wales.

South Australia

- South east South Australian MLFs lower than published, variation in Heywood flows where exports from South Australia have reduced.

Regional average MLFs for Loads



South Australia

- Riverland MLFs lower than published, primarily due to an increase in Murraylink flows from Victoria.

Preliminary 2024-25 MLF results

Daniel Flynn

Preliminary MLF Methodology

Item	Preliminary	Final
New generation projects	Inclusion based on generator project status in October 2023 Generation Information page. Projects are included where the status is COM, COM* or COM[1].	Inclusion based on generator project status in January 2024 Generation Information page. Projects are included where the status is COM, COM* or COM[1].
Load profiles	Historical load profiles from 2022-23 FY scaled to meet target year forecasts.	Forecast load profiles for 2024-25 FY.
Network model	2023-24 MLF study network model.	Revised network model incorporating future augmentations that are committed and anticipated to be in operation prior to July 2025.
Intra-regional limit management	Intra-regional limits as identified and incorporated into the 2023-24 MLF study inclusive of revisions where applicable.	Intra-regional limits incorporated in the 2024-25 study will be reviewed and altered where required. Additional intra-regional constraints may also be identified and incorporated into the final study. Further revision to the treatment of intra-regional limits may be considered prior to the draft and final determinations.
Inter-regional limit management	Inter-regional limits as per 2023-24 MLF study with exception of Project EnergyConnect and QNI minor.	Inter-regional limits will be revised as required based on limit advice for the 2024-25 FY.

The primary drivers of change in recent years have been variations in,

- Increased semi-scheduled capacity and the associated diurnal impact of output.
- Generator closures.
- Generation shifting from electrically strong to electrically weak sections of network.
- Increased diurnal variation in demand profile as a result of increased rooftop PV penetration.
- Variations in limits and the associated level of congestion.

As generation has been the primary driver of change the preliminary study focused on changes to generation.

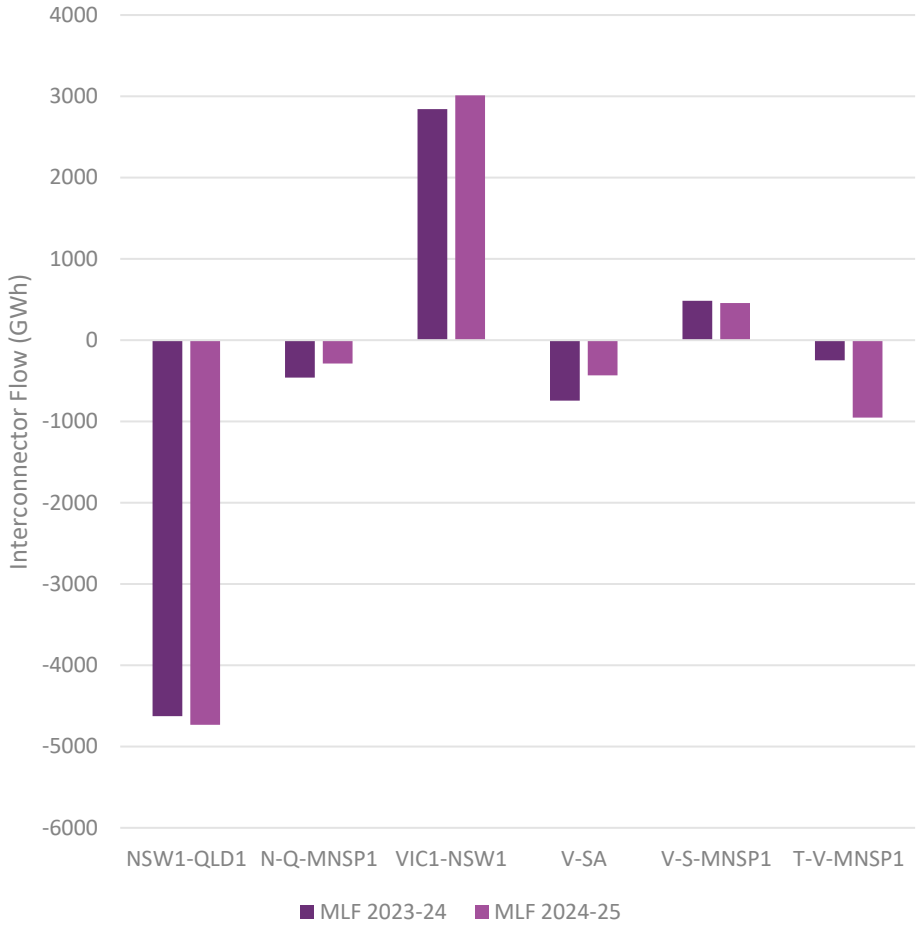
2023-24 vs 2024-25 Preliminary MLF Interconnector Flows

Forecast change in interconnector flows

- Generally moderate year on year variation.
- Decrease in flows from South Australia to Victoria via Heywood.
- Increase in flows from Victoria to Tasmania.

Forecast change in NEM generation

- Large increase in generation capacity in western New South Wales.
- New generation capacity largely offset by reductions in output of thermal generation within the Hunter Valley.

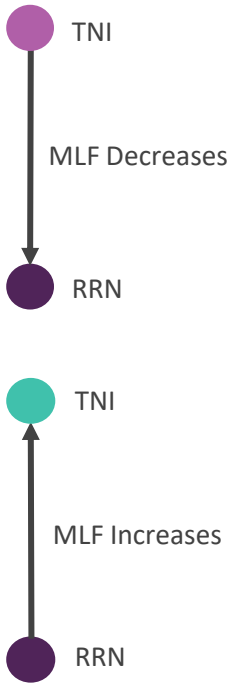


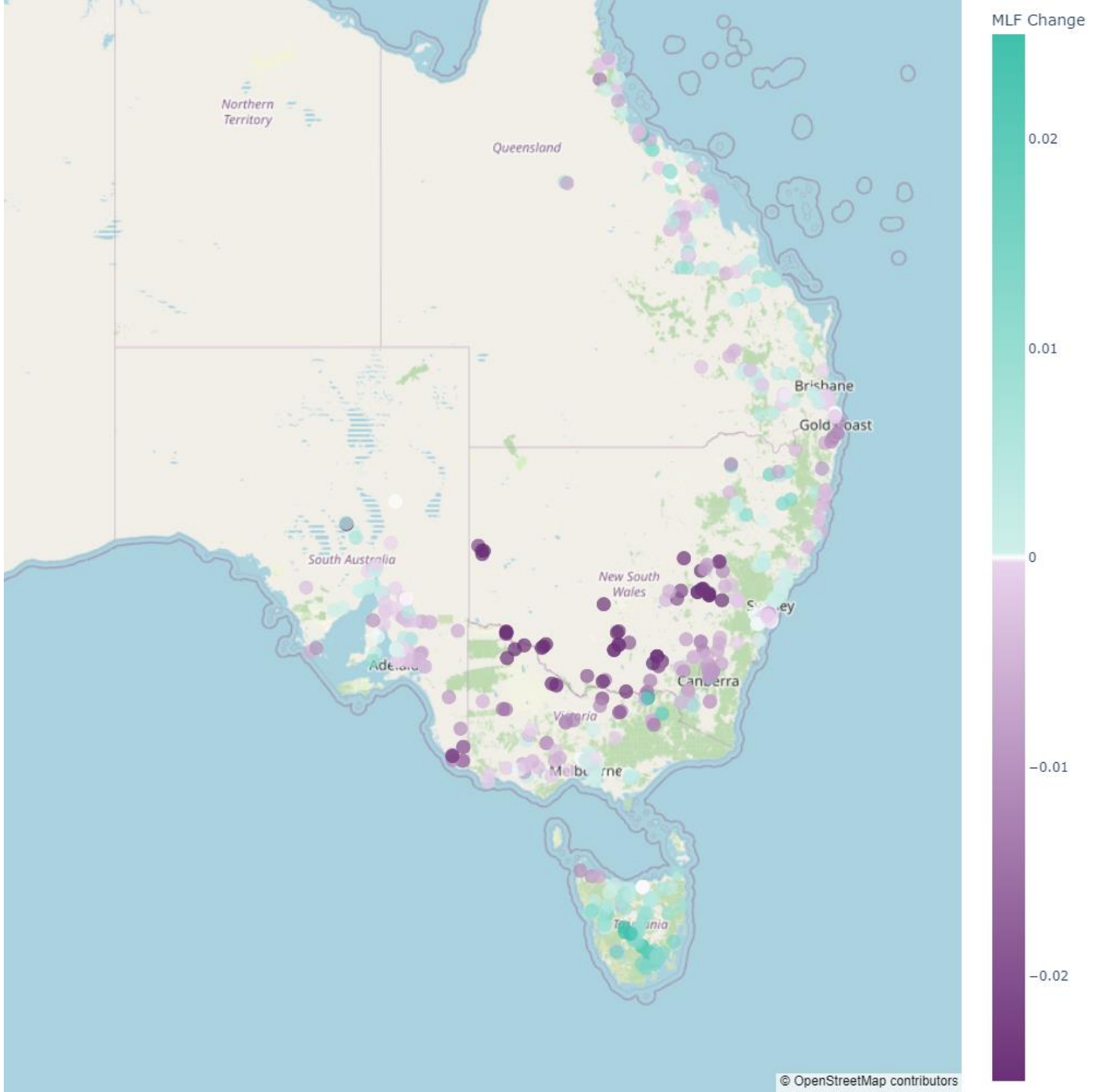
MLF Change Map

Changes in interconnector flows driven by changes in generation are currently the primary drivers of change

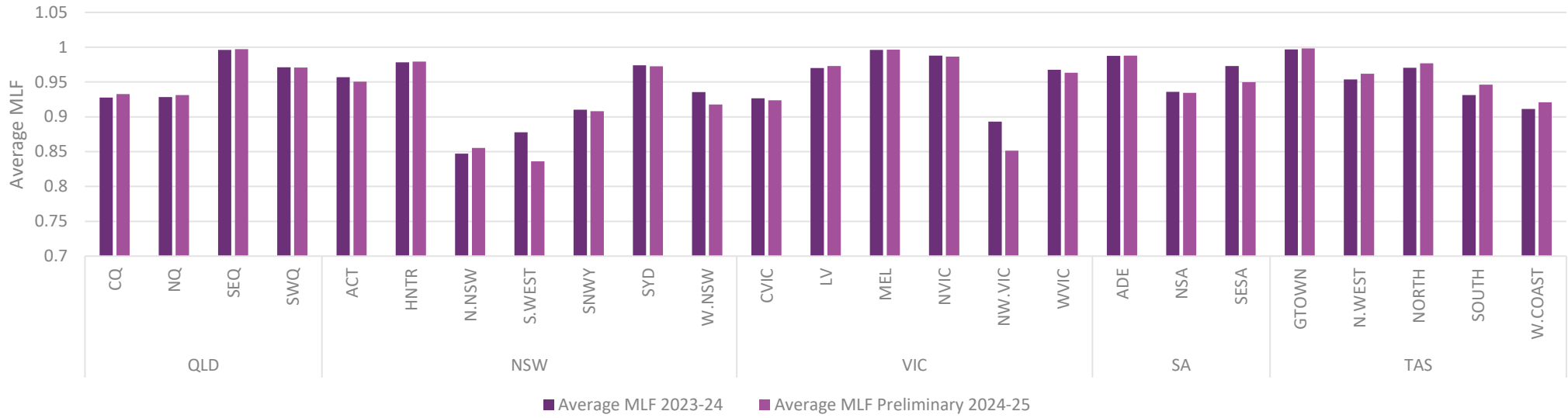
As flows increase from a TNI to the relevant RRN in general there will be a decrease in the MLF

As flows decrease from a TNI to the relevant RRN in general there will be an increase in the MLF





Generator MLF movements (YoY)



New South Wales

- South west MLFs lower, primarily due to increased local generation arising from reduced congestion within the area.
- Western MLFs lower, driven by an increase in local generation capacity.

Victoria

- North west MLFs lower, primarily due to increased local generation arising from reduced congestion within the area.

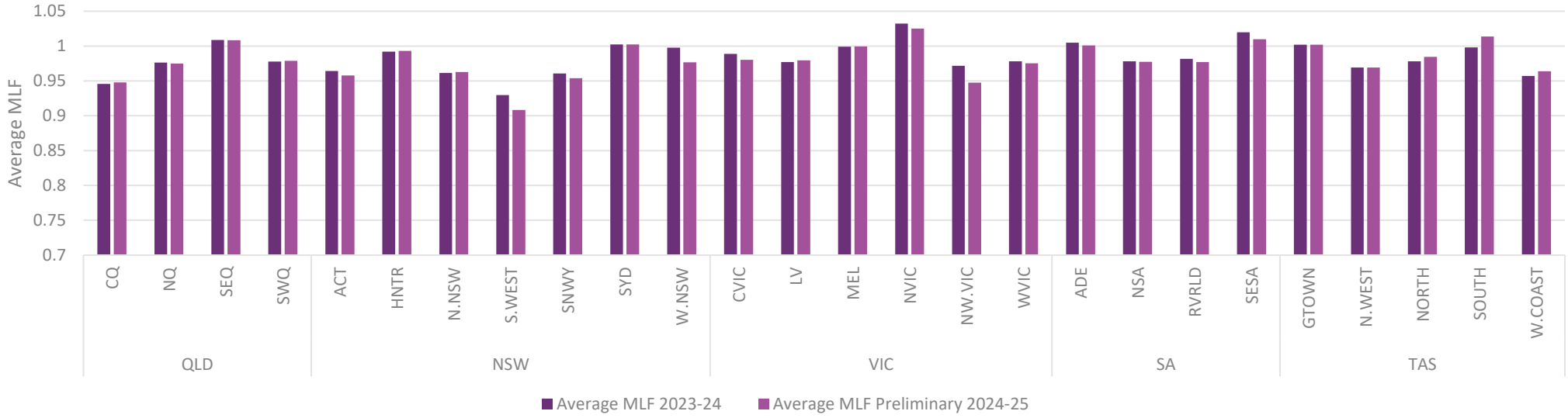
South Australia

- South east MLFs lower, primarily due to decreased exports to Victoria.

Tasmania

- General increases driven by increased import from Victoria.

Load MLF movements (YoY)



Queensland/New South Wales/Victoria/South Australia/Tasmania

- Same drivers as generation commentary.

Congestion and MLFs

MLFs, by virtue of representing losses driven by variations in the flow of electricity have a relationship with congestion.

- Material reductions in MLFs typically precursor to congestion.
- Congestion will result in a soft ‘floor’ in relation to MLF determinations for impacted generation.
- Any relief in high impact congestion (without change to network impedance) will lead to reductions in MLFs.

Potential for Change (Preliminary vs Final)

The following are some of the preliminary vs final related (method related) items we anticipate may result in a material change between the preliminary 2024-25 MLF results and the final 2024-25 MLF outcomes to be published by 1 April 2024.

Load Forecast

- The preliminary study has been based on load data that is scaled to meet forecast targets, but the scaling process implemented for the preliminary study is simplistic in nature. E.g. No consideration was made for increased rooftop PV penetration.
- The load reference year loads will be reviewed and adjusted further prior to publication of the draft and final 2024-25 MLF outcomes.

New Generation

- If new generation achieves COM/COM*/COM[1] status by the cut-off date, these will be incorporated for the 2024-25 FY which will have an impact on MLF outcomes.
- Current generation profiles for future generation and existing generation that were not commercially operational for the reference year.

Intra/Inter-Regional Limits

- The intra/inter-regional limits considered in the 2023-24 MLF study have implemented into this preliminary 2024-25 MLF study. While they have been revised to incorporate additional generation and revisions to limits, further analysis is required prior to the publication of the final 2023-24 MLF outcomes.
- This analysis may result in additional constraints being considered, or further changes to constraints currently considered.

Other Items

Daniel Flynn/Johnny Mangala

TPRICE Replacement

The TPRICE software package has two core functions when determining MLF outcomes.

1. Balancing supply and demand.
2. Performing an AC load flow (and subsequent load flows to derive MLFs).

The replacement of TPRICE is being split into two components, with the components individually dealing with the functions listed above.

Methodology Review

- Seeking feedback from market to commence a methodology review following publication of Final MLF Report on April 1st
- This would also coincide with AEMO working with industry on the next steps for the TPrice Replacement work

MLF publications and further information

Johnny Mangala

MLF publication cadence

Current MLF application period

April	July	October	January	April	July
MLF report	**Revised MLF report** New/modified connection points since final report	**Revised MLF report** New/modified connection points since final report	**Revised MLF report** New/modified connection points since final report	**Revised MLF report** New/modified connection points since final report	**Revised MLF report** New/modified connection points since final report

Next MLF application period

January	March	1 April
Preliminary MLF report	**Draft MLF report** Draft version of the final report allowing participants to review and provide feedback	**Final MLF report**

Feedback & further information

- Feedback can be provided directly to:
  MLF_feedback@aemo.com.au

- Methodology and MLF publications can be found at:
  https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Loss-factor-and-regional-boundaries

For more information visit

aemo.com.au