Marginal Loss Factors: Financial Year 2025-26

April 2025

A report for the National Electricity Market

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.

Important notice

Purpose

The purpose of this publication is to detail the regional boundaries as the 'Regions Publication' under clause 2A.1.3 of the National Electricity Rules (Rules), and to inform registered participants, proponents and stakeholders of the 2025-26 inter-regional loss equations under clause 3.6.1 of the Rules and 2025-26 intra-regional loss factors under clause 3.6.2 of the Rules.

AEMO publishes this Marginal Loss Factors: Financial Year 2025-26 in accordance with clauses 3.6.2 (d1) and 2A.1.3 of the Rules. This publication is generally based on information available to AEMO as at 1 March 2024 unless otherwise indicated.

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AEMO has made reasonable efforts to ensure the quality of the information in this publication but cannot guarantee that information, forecasts and assumptions are accurate, complete or appropriate for your circumstances.

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Acknowledgment

AEMO acknowledges the support, co-operation and contribution of all registered participants, proponents and stakeholders who provided the data and information used in this publication.

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Version control

Version	Release date	Changes
1	01/4/2025	Final 2025-26 MLFs published

Introduction

This document sets out the financial year 2025-26 (2025-26) National Electricity Market (NEM) intra-regional loss factors, commonly referred to as marginal loss factors (MLFs), calculated under clause 3.6.2 of the National Electricity Rules (Rules). MLFs represent electrical transmission losses within each of the five regions in the NEM – Queensland, New South Wales, Victoria, South Australia, and Tasmania.

As well as the MLFs, this document provides the following information for 2025-26:

- Connection point transmission node identifiers (TNIs).
- Virtual transmission nodes (VTNs).
- NEM inter-regional loss factor equations and loss equations calculated under clause 3.6.1 of the Rules.

This document also serves as the Regions Publication under clause 2A.1.3 of the Rules, providing the following information for the 2025-26:

- Region definitions.
- Regional reference nodes (RRNs).
- Region boundaries.

Loss factors apply for 2025-26 only, and should not be relied on as an indicator for future years.

Context

In recent years, supply and demand patterns in the NEM have been changing at an increasing rate, driven by new technology and a changing generation mix. This has led to large year-on-year changes in MLFs, particularly in areas of high renewable penetration that are electrically weak and remote from load centres.

The large year-on-year changes in MLFs demonstrate the ongoing need for comprehensive planning to minimise costs to consumers.

All-of-system planning documents, such as the *Integrated System Plan* (ISP)[1], are critical in the provision of information to participants regarding the needs of, and changes occurring in, the power system.

In June 2024, AEMO published the first *Enhanced Locational Information* (ELI) report[2], which provides further information on locational investment signals. The ELI report is intended to support more informed investment and decision-making processes in the NEM.

Structure of the report

This document has been structured as follows:

- Section 1 outlines the MLFs for loads and generators in 2025-26.

[1] At https://www.aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp.

[2] At https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/enhanced-locational-information.

- Section 2 summarises the key changes that have been observed in MLFs between 2024-25 and 2025-26.
- Section 3 outlines the inter-regional loss factor equations for 2025-26.
- Section 4 outlines the inter-regional loss equations for 2025-26.
- Section 5 outlines the Basslink, Murraylink and Terranora loss equations for 2025-26.
- Section 6 outlines the proportioning of inter-regional losses to regions for 2025-26.
- Section 7 defines the regions and regional reference nodes for 2025-26.
- Section 8 outlines the virtual transmission nodes for 2025-26.
- Appendix A1 provides a background to MLFs.
- Appendix A2 outlines the methodology, inputs, and assumptions that have been used to determine the MLFs for 2025-26.
- Appendix A3 outlines the impact of various technologies on volume weighted MLF outcomes.
- Appendix A4 outlines the impact of congestion on volume weighted MLF outcomes.

Review of calculation

AEMO applied a number of quality assurance steps when calculating the 2025-26 MLFs. These included engaging an independent consultant to review the quality and accuracy of the MLF calculation process. The consultant is satisfied that AEMO is appropriately applying the published forward looking loss factor methodology (the Methodology) based on the data provided by registered participants, historical market data, and AEMO's electricity consumption forecasts, and the process applied to the calculation of MLF values.

Revised methodology

In 2024, AEMO, in consultation with stakeholders, revised the Methodology. The consultation focused on changes enabled by the replacement of the tooling to determine MLF outcomes. Specifically, changes were made to the supply and demand balancing process[3] with an intent to better reflect the increasing complexities associated with commercial responses to economic signals for various forms of generation.

Error! Reference source not found. shows the historical supply and demand balancing levels prior to the 2024 review of the Methodology and Figure 2 shows the current supply and demand balancing levels in the Methodology,

[3] Note the supply and demand balancing process is associated with the minimal extrapolation principles of MLF forecasts, it manages the imbalances between demand forecasts and initial generation conditions. For further information, refer to the Methodology.

Figure 1 Forward looking loss factor supply and demand balancing process, before 2024 review

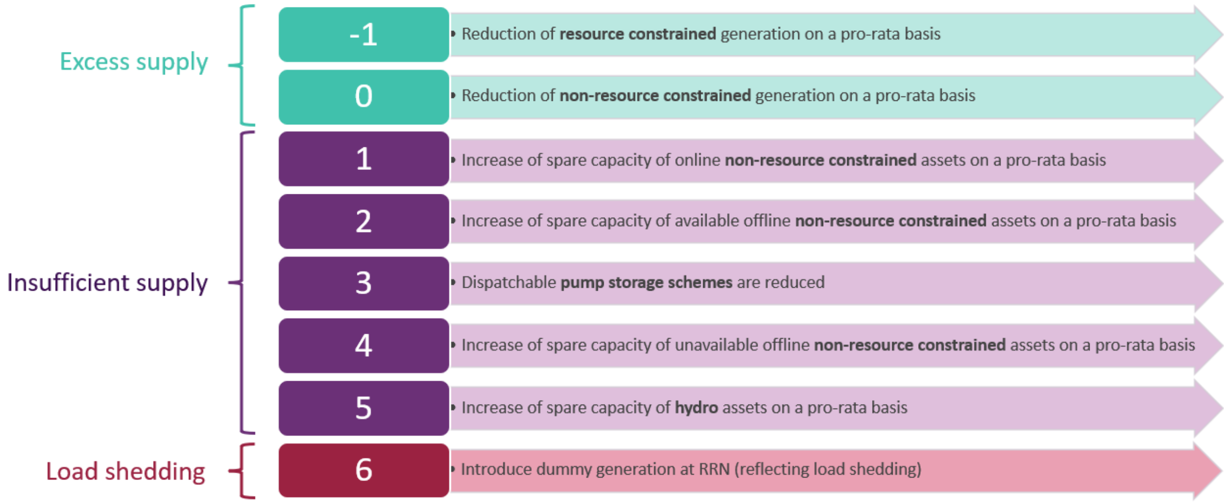
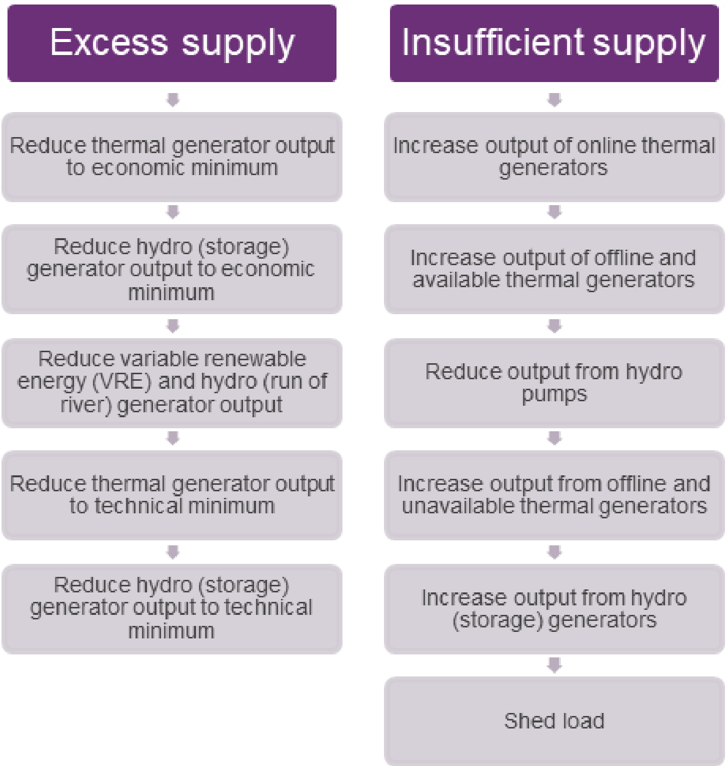


Figure 2 Current forward looking loss factor supply and demand balancing process, after 2024 review



The revised Methodology and Final Report on the standard consultation to revise the Methodology that summarises the changes made to it can be accessed on AEMO's website[4].

[4] At https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/loss_factors_and_regional_boundaries/forward-looking-loss-factor-methodology.pdf?la=en. Consultation details are at https://aemo.com.au/consultations/current-and-closed-consultations/consultation-on-forward-looking-transmission-loss-factor-methodology.

Potential further MLF reform

During the recently completed consultation on the Methodology, AEMO invited and received feedback on the broader MLF framework prescribed in the Rules. This feedback was used as a basis for industry workshops held with NEM and Western Australian participants in November 2024 and January 2025[5]. These workshops were used to test MLF reform concepts with industry.

During 2025, AEMO intends to investigate two possible MLF reform pathways drawn from the concepts most supported by workshop participants[6]. AEMO hopes to publish its research results in the second half of 2025 and consult with stakeholders on the findings and recommended next steps. Where the research identifies improvement opportunities and industry remains supportive, AEMO would then move towards implementation, including supporting any necessary Rules changes and associated Methodology changes.

Changes since draft report

AEMO published a draft report on 2025-26 MLFs on 3 March 2025 and sought feedback from stakeholders.

As part of its standard quality assurance checks for the final report, AEMO identified an error in the underlying network model that has since been corrected. This correction led to a reduction in the increases previously seen in south-west New South Wales and north-west Victoria. AEMO published an updated draft report on the 2025-26 MLFs on 25 March 2025 to provide stakeholders with an early indication as to the impact of the correction.

AEMO also made a number of minor improvements to modelling compared to the study used for the draft report, following the completion of a calculation review.

Observations and trends

For the 2025-26 MLF study, the primary observation is the projected impact of generation behaviour driven by variations in economic curtailment, demand forecasts, and the continual addition of new capacity predominately in the form of storage, solar and wind.

Increasingly, MLF outcomes are being dictated by diurnal trends in the shape of flows between a given location and the associated RRN. For example,

- Solar rich areas typically have excess supply during daylight hours, resulting in increased flow toward the RRN (or reduced flow from the RRN) during daylight hours.
- Wind rich areas typically have excess supply overnight, resulting in increased flow toward the RRN (or reduced flow from the RRN) overnight.
- Storage reduces daytime excesses in supply and increases supply into peak demands, resulting in decreased flows to the RRN (or increased flows from the RRN) during daylight hours (concentrated toward the middle of day, where demand is at the lowest point), and increased flows toward the RRN (or reduced flow from the RRN) during peaks.

[5] The discussion points register and material from the workshops are at https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/market-operations/loss-factors-and-regional-boundaries/marginal-loss-factor-forums-2024.

[6] The first pathway is a combination of Strawman 1 (Investment stability objective) and 3 (MLF glide paths). The second pathway is Strawman 4 (Quarterly Diurnal MLFs).

These technologies, given their inherent variances in behaviour, drive variations in not only net flows throughout the NEM but also the shape of those flows. These variations in flow are resulting in an increased level of complexity in the drivers of MLF variations.

Further information on observations and trends is in Section 2.4 of this report.

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1 Marginal loss factors by region

This section shows the intra-regional loss factors, commonly known as marginal loss factors (MLFs), for financial year 2025-26, for every existing load or generation transmission connection point (identified by transmission node identifier [TNI] or dispatchable unit identifier [DUID]) in each National Electricity Market (NEM) region. As required by clause 3.6.2(f) of the National Electricity Rules (Rules), these MLFs have been calculated in accordance with AEMO's published Forward Looking Loss Factor Methodology (Methodology).

The generation profiles for committed but not yet NEM-registered projects are included in the MLF calculation, however AEMO does not publish MLFs for connection points relating to projects whose registration has not been completed as at the date of publication. AEMO will publish MLFs for those connection points following registration. MLF updates and additions that are developed throughout the year will be included in the updated Final Marginal Loss Factors for the 2025-26 Financial Year reports and spreadsheets, which are also published on AEMO's website[7] throughout the financial year.

1.1 Queensland marginal loss factors

Table 1 Queensland loads

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Abermain	33	QABM	1.0000	1.0005
Abermain – Dual MLF (Generation)	110	QABR	1.0000	0.9997
Abermain – Dual MLF (Load)	110	QABR	0.9986	0.9992
Alan Sherriff	132	QASF	1.0071	0.9978
Algester	33	QALG	1.0155	1.0176
Alligator Creek	132	QALH	0.9821	0.9769
Alligator Creek	33	QALC	0.9892	0.9807
Ashgrove West	110	QCBW	1.0106	1.0125
Ashgrove West	33	QAGW	1.0134	1.0152
Belmont	110	QBMH	1.0102	1.0127
Belmont Wecker Road	33	QBBS	1.0120	1.0146
Biloela	66/11	QBIL	0.9313	0.9319
Blackstone	110	QBKS	0.9980	0.9984
Blackwater	132	QBWH	0.9826	0.9717
Blackwater	66/11	QBWL	0.9856	0.9749
Bluff	132	QBLF	0.9824	0.9751
Bolingbroke	132	QBNB	0.9685	0.9660
Bowen North	66	QBNN	0.9807	0.9707
Boyne Island	132	QBOL	0.9605	0.9603
Boyne Island	275	QBOH	0.9623	0.9621

[7] At https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Loss-factor-and-regional-boundaries.

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Braemar – Kumbarilla Park	275	QBRE	0.9795	0.9742
Bulli Creek (Essential Energy)	132	QBK2	0.9839	0.9807
Bulli Creek (Waggamba)	132	QBLK	0.9839	0.9807
Bundamba	110	QBDA	0.9997	1.0001
Burton Downs	132	QBUR	0.9916	0.9837
Callemondah (Rail)	132	QCMD	0.9516	0.9525
Calliope River	132	QCAR	0.9490	0.9487
Cardwell	22	QCDW	0.9963	0.9865
Chinchilla	132	QCHA	0.9752	0.9719
Clare	66	QCLR	1.0120	1.0019
Collinsville Load	33	QCOL	0.9704	0.9609
Columboola	132	QCBL	0.9854	0.9760
Columboola 132 (Bellevue LNG load)	132	QCBB	0.9865	0.9771
Coppabella (Rail)	132	QCOP	0.9987	0.9885
Dan Gleeson	66	QDGL	1.0053	0.9935
Duaringa	132	QDRG	0.9700	0.9567
Dysart	132	QDYS	0.9964	0.9880
Eagle Downs Mine	132	QEGD	0.9973	0.9831
Edmonton	22	QEMT	1.0075	0.9989
Egans Hill	66	QEGN	0.9385	0.9389
El Arish	22	QELA	1.0004	0.9918
Garbutt	66	QGAR	1.0086	0.9617
Gin Gin	132	QGNG	0.9716	0.9680
Gladstone South	66/11	QGST	0.9516	0.9455
Goodna	33	QGDA	1.0039	1.0047
Goonyella Riverside Mine	132	QGYR	1.0103	1.0012
Grantleigh (Rail)	132	QGRN	0.9436	0.9359
Greenland 132	132	QGLD	0.9963	0.9875
Gregory (Rail)	132	QGRE	0.9617	0.9517
Ingham	66	QING	1.0427	1.0046
Innisfail	22	QINF	1.0016	0.9976
Invicta Load	132	QINV	0.9561	0.9314
Kamerunga	22	QKAM	1.0077	0.9933
Kemmis	66	QEMS	0.9886	0.9817
King Creek	132	QKCK	0.9710	0.9647
Larcom Creek	275	QLCH	0.9476	0.9636
Lilyvale	66	QLIL	0.9564	0.9538
Lilyvale (Barcaldine)	132	QLCM	0.9668	0.9568
Loganlea	110	QLGH	1.0099	1.0115
Loganlea	33	QLGL	1.0123	1.0138

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Mackay	33	QMKA	0.9888	0.9783
Middle Ridge (Energex)	110	QMRX	0.9859	0.9860
Middle Ridge (Ergon)	110	QMRG	0.9859	0.9860
Mindi (Rail)	132	QMND	0.9631	0.9609
Molendinar	110	QMAR	1.0117	1.0130
Molendinar	33	QMAL	1.0110	1.0124
Moranbah (Mine)	66	QMRN	1.0081	0.9981
Moranbah (Town)	11	QMRL	1.0008	0.9928
Moranbah Substation	132	QMRH	0.9999	0.9933
Moura	66/11	QMRA	0.9611	0.9496
Mt McLaren (Rail)	132	QMTM	1.0050	0.9926
Mudgeeraba	110	QMGB	1.0115	1.0134
Mudgeeraba	33	QMGL	1.0133	1.0147
Murarrie (Belmont)	110	QMRE	1.0104	1.0123
Nebo	11	QNEB	0.9627	0.9579
Newlands	66	QNLD	1.0008	0.9926
North Goonyella	132	QNGY	1.0089	0.9993
Norwich Park (Rail)	132	QNOR	0.9803	0.9753
Oakey	110	QOKT	0.9881	0.9858
Oonooie (Rail)	132	QOON	0.9855	0.9788
Orana LNG	275	QORH	0.9802	0.9718
Palmwoods	132	QPWD	1.0144	1.0145
Pandoin	132	QPAN	0.9365	0.9353
Pandoin	66	QPAL	0.9361	0.9342
Peak Downs (Rail)	132	QPKD	1.0003	0.9986
Pioneer Valley	66	QPIV	1.0026	0.9922
Proserpine	66	QPRO	1.0039	0.9946
Queensland Alumina Ltd (Gladstone South)	132	QQAH	0.9583	0.9568
Queensland Nickel (Yabulu)	132	QQNH	0.9874	0.9783
Raglan	275	QRGL	0.9425	0.9428
Redbank Plains	11	QRPN	1.0033	1.0033
Richlands	33	QRLD	1.0138	1.0155
Rockhampton	66	QROC	0.9561	0.9547
Rocklea (Archerfield)	110	QRLE	1.0044	1.0054
Ross	132	QROS	0.9877	0.9776
Runcorn	33	QRBS	1.0154	1.0178
South Pine	110	QSPN	1.0047	1.0045
Stony Creek	132	QSYC	0.9858	0.9829
Sumner	110	QSUM	1.0054	1.0065

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Tangkem (Dalby)	110	QTKM	0.9878	0.9864
Tarong	66	QTRL	0.9725	0.9720
Teebar Creek	132	QTBC	0.9896	0.9869
Tennyson	33	QTNS	1.0085	1.0098
Tennyson (Rail)	110	QTNN	1.0065	1.0076
Townsville East	66	QTVE	1.0030	0.9865
Townsville South	66	QTVS	1.0034	0.9893
Townsville South (KZ)	132	QTZS	1.0151	1.0159
Tully	22	QTLL	1.0230	1.0262
Turkinje	66	QTUL	1.0128	1.0142
Turkinje (Craiglie)	132	QTUH	1.0164	1.0167
Wandoan South	132	QWSH	0.9990	0.9879
Wandoan South (NW Surat)	275	QWST	0.9990	0.9865
Wandoo (Rail)	132	QWAN	0.9663	0.9646
Wivenhoe Pump	275	QWIP	1.0015	1.0001
Woolooga (Energex)	132	QWLG	0.9864	0.9852
Woolooga (Ergon)	132	QWLN	0.9864	0.9852
Woree	132	QWRE	0.9961	0.9923
Wotonga (Rail)	132	QWOT	0.9987	0.9914
Wycarbah	132	QWCB	0.9383	0.9346
Yarwun – Boat Creek (Ergon)	132	QYAE	0.9498	0.9485
Yarwun – Rio Tinto	132	QYAR	0.9492	0.9483

Table 2 Queensland generation

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Baking Board Solar Farm (Chinchilla Solar Farm)	132	BAKING1	QCHS1C	QCHS	0.9593	0.9442
Barcaldine PS – Lilyvale	132	BARCALDN	QBCG	QBCG	0.9392	0.9331
Barcaldine Solar at Lilyvale (132)	132	BARCSF1	QLLV1B	QLLV	0.9410	0.9370
Barron Gorge Power Station Unit 1	132	BARRON-1	QBGH1	QBGH	0.9569	0.9556
Barron Gorge Power Station Unit 2	132	BARRON-2	QBGH2	QBGH	0.9569	0.9556
Bluegrass Solar Farm	132	BLUEGSF1	QCBS1B	QCBS	0.9543	0.9433
Braemar PS Unit 1	275	BRAEMAR1	QBRA1	QBRA	0.9667	0.9627
Braemar PS Unit 2	275	BRAEMAR2	QBRA2	QBRA	0.9667	0.9627
Braemar PS Unit 3	275	BRAEMAR3	QBRA3	QBRA	0.9667	0.9627
Braemar Stage 2 PS Unit 5	275	BRAEMAR5	QBRA5B	QBRA	0.9667	0.9627
Braemar Stage 2 PS Unit 6	275	BRAEMAR6	QBRA6B	QBRA	0.9667	0.9627
Braemar Stage 2 PS Unit 7	275	BRAEMAR7	QBRA7B	QBRA	0.9667	0.9627
Browns Plains Landfill Gas PS	110	BPLANDF1	QLGH3B	QLGH	1.0099	1.0115
Callide A PS Unit 4	132	CALL_A_4	QCAA4	QCAA	0.9283	0.9284

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Callide A PS Unit 4 Load	132	CALLNL4	QCAA2	QCAA	0.9283	0.9284
Callide B PS Unit 1	275	CALL_B_1	QCAB1	QCAB	0.9252	0.9188
Callide B PS Unit 2	275	CALL_B_2	QCAB2	QCAB	0.9252	0.9188
Callide C PS Unit 3	275	CPP_3	QCAC3	QCAC	0.9222	0.9160
Callide C PS Unit 4	275	CPP_4	QCAC4	QCAC	0.9222	0.9160
Callide PS Load	132	CALLNL1	QCAX	QCAX	0.9298	0.9270
Childers Solar Farm	132	CHILDSF1	QTBS1C	QTBS	0.9772	0.9828
Clare Solar Farm	132	CLARESF1	QCLA1C	QCLA	0.9363	0.9116
Clarke Creek Wind Farm 1	275	CLRKCWF1	QBSW1C	QBSW	0.9430	0.9497
Clermont Solar Farm	132	CLERMSF1	QLLV3C	QLLV	0.9410	0.9370
Collinsville Solar Farm	33	CSPVPS1	QCOS1C	QCOS	0.9413	0.9356
Columboola Solar Farm	132	COLUMSF1	QCBR1C	QCBR	0.9865	0.9718
Columboola – Condamine PS	132	CPSA	QCND1C	QCND	0.9724	0.9729
Coopers Gap Wind Farm	275	COOPGWF1	QCPG1C	QCPG	0.9691	0.9672
Darling Downs PS	275	DDPS1	QBRA8D	QBRA	0.9667	0.9627
Darling Downs Solar Farm	275	DDSF1	QBRS1D	QBRS	0.9849	0.9755
Daydream Solar Farm	33	DAYDSF1	QCCK1D	QCCK	0.9396	0.9306
Dulacca Wind Farm	132	DULAWF1	QCBF1D	QCBF	0.9853	0.9770
Edenvale Solar Park	275	EDENVSF1	QORS1E	QORS	0.9823	0.9707
Emerald Solar Farm	66	EMERASF1	QLIS1E	QLIS	0.9381	0.9331
Gangarri Solar Farm	132	GANGARR1	QWSS1G	QWSS	0.9977	0.9788
German Creek Generator	66	GERMCRK	QLIL2	QLIL	0.9564	0.9538
Gladstone PS (132 kV) Unit 3	132	GSTONE3	QGLD3	QGLL	0.9437	0.9410
Gladstone PS (132 kV) Unit 4	132	GSTONE4	QGLD4	QGLL	0.9437	0.9410
Gladstone PS (132kV) Load	132	GLADNL1	QGLL	QGLL	0.9437	0.9410
Gladstone PS (275 kV) Unit 1	275	GSTONE1	QGLD1	QGLH	0.9461	0.9403
Gladstone PS (275 kV) Unit 2	275	GSTONE2	QGLD2	QGLH	0.9461	0.9403
Gladstone PS (275 kV) Unit 5	275	GSTONE5	QGLD5	QGLH	0.9461	0.9403
Gladstone PS (275 kV) Unit 6	275	GSTONE6	QGLD6	QGLH	0.9461	0.9403
Grosvenor PS At Moranbah 66 No 1	66	GROSV1	QMRN2G	QMRV	0.9977	0.9907
Grosvenor PS At Moranbah 66 No 2	66	GROSV2	QMRV1G	QMRV	0.9977	0.9907
Hamilton Solar Farm	33	HAMISF1	QSLD1H	QSLD	0.9385	0.9305
Haughton Solar Farm	275	HAUGHT11	QHAR1H	QHAR	0.9475	0.9332
Hayman Solar Farm	33	HAYMSF1	QCCK2H	QCCK	0.9396	0.9306
Hughenden Solar Farm	132	HUGSF1	QROG2H	QROG	0.9516	0.9385
Invicta Sugar Mill	132	INVICTA	QINV1I	QINV	0.9561	0.9314
Isis CSM	132	ICSM	QGNG1I	QTBC	0.9896	0.9869
Kaban Wind Farm	275	KABANWF1	QTMW1K	QTMW	0.9696	0.9605
Kareeya PS Unit 1	132	KAREEYA1	QKAH1	QKYH	0.9828	0.9642

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Kareeya PS Unit 2	132	KAREEYA2	QKAH2	QKYH	0.9828	0.9642
Kareeya PS Unit 3	132	KAREEYA3	QKAH3	QKYH	0.9828	0.9642
Kareeya PS Unit 4	132	KAREEYA4	QKAH4	QKYH	0.9828	0.9642
Kennedy Energy Park Battery (Generation)	132	KEPBG1	QROW3K	QROW	0.9813	0.9703
Kennedy Energy Park Battery (Load)	132	KEPBL1	QROW4K	QROW	0.9813	0.9703
Kennedy Energy Park Solar Farm	132	KEPSF1	QROW2K	QROW	0.9813	0.9703
Kennedy Energy Park Wind Farm	132	KEPWF1	QROW1K	QROW	0.9813	0.9703
Kidston Solar Farm	132	KSP1	QROG1K	QROG	0.9516	0.9385
Kingaroy Solar Farm	66	KINGASF1	QTRS1K	QTRS	0.9795	0.9775
Kogan Creek PS	275	KPP_1	QBRA4K	QWDN	0.9737	0.9692
Koombooloomba	132	KAREEYA5	QKYH5	QKYH	0.9828	0.9642
Lilyvale Solar Farm	33	LILYSF1	QBDR1L	QBDR	0.9379	0.9295
Longreach Solar Farm	132	LRSF1	QLLV2L	QLLV	0.9410	0.9370
Macintyre Wind Farm	330	MCINTYR1	QMSW1M	QMSW	0.9723	0.9734
Maryrorough Solar Farm (Brigalow Solar Farm)	110	MARYRSF1	QMRY2M	QMRY	0.9888	0.9847
Middlemount Sun Farm	66	MIDDLSF1	QLIS2M	QLIS	0.9381	0.9331
Millmerran PS Unit 1	330	MPP_1	QBCK1	QMLN	0.9800	0.9797
Millmerran PS Unit 2	330	MPP_2	QBCK2	QMLN	0.9800	0.9797
Moranbah Generation	11	MORANBAH	QMRL1M	QMRL	1.0008	0.9928
Moranbah North PS	66	MBAHNTH	QMRN1P	QMRN	1.0081	0.9981
Mount Emerald Wind farm	275	MEWF1	QWKM1M	QWKM	0.9649	0.9527
Moura Solar Farm	132	MOUSF1	QMRR1M	QMRR	0.9328	0.9319
Mt Stuart PS Unit 1	132	MSTUART1	QMSP1	QMSP	0.9121	0.9471
Mt Stuart PS Unit 2	132	MSTUART2	QMSP2	QMSP	0.9121	0.9471
Mt Stuart PS Unit 3	132	MSTUART3	QMSP3M	QMSP	0.9121	0.9471
Oakey 1 Solar Farm	110	OAKEY1SF	QTKS1O	QTKS	0.9852	0.9810
Oakey 2 Solar Farm	110	OAKEY2SF	QTKS2O	QTKS	0.9852	0.9810
Oakey PS Unit 1	110	OAKEY1	QOKY1	QOKY	0.9666	0.9572
Oakey PS Unit 2	110	OAKEY2	QOKY2	QOKY	0.9666	0.9572
Oaky Creek 2	66	OAKY2	QLIL3O	QLIL	0.9564	0.9538
Oaky Creek Generator	66	OAKYCREK	QLIL1	QLIL	0.9564	0.9538
Rocky Point Gen (Loganlea 110kV)	110	RPCG	QLGH2	QLGH	1.0099	1.0115
Roma PS Unit 7 – Columboola	132	ROMA_7	QRMA7	QRMA	0.9687	0.9643
Roma PS Unit 8 – Columboola	132	ROMA_8	QRMA8	QRMA	0.9687	0.9643
Ross River Solar Farm	132	RRSF1	QROG3R	QROG	0.9516	0.9385
Rugby Run Solar Farm	132	RUGBYR1	QMPL1R	QMPL	0.9463	0.9397
Stanwell PS Load	132	STANNL1	QSTX	QSTX	0.9366	0.9317
Stanwell PS Unit 1	275	STAN-1	QSTN1	QSTN	0.9273	0.9218
Stanwell PS Unit 2	275	STAN-2	QSTN2	QSTN	0.9273	0.9218

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Stanwell PS Unit 3	275	STAN-3	QSTN3	QSTN	0.9273	0.9218
Stanwell PS Unit 4	275	STAN-4	QSTN4	QSTN	0.9273	0.9218
Stapylton	110	STAPYLTON1	QLGH4S	QLGH	1.0099	1.0115
Sun Metals Solar Farm	132	SMCSF1	QTZS1S	QTZS	1.0151	1.0159
Sunshine Coast Solar Farm	132	VALDORA1	QPWD1S	QPWD	1.0144	1.0145
Susan River Solar Farm	132	SRSF1	QTBS2S	QTBS	0.9772	0.9828
Swanbank E GT	275	SWAN_E	QSWE	QSWE	0.9994	0.9998
Tarong North PS	275	TNPS1	QTNT	QTNT	0.9736	0.9718
Tarong PS Unit 1	275	TARONG#1	QTRN1	QTRN	0.9730	0.9716
Tarong PS Unit 2	275	TARONG#2	QTRN2	QTRN	0.9730	0.9716
Tarong PS Unit 3	275	TARONG#3	QTRN3	QTRN	0.9730	0.9716
Tarong PS Unit 4	275	TARONG#4	QTRN4	QTRN	0.9730	0.9716
Ti Tree BioReactor	33	TITREE	QABM1T	QABM	1.0000	1.0005
Wandoan South Solar Farm 1	275	WANDSF1	QWSR1W	QWSR	0.9975	0.9785
Warwick Solar Farm 1	110	WARWSF1	QMRY3W	QMRY	0.9888	0.9847
Warwick Solar Farm 2	110	WARWSF2	QMRY4W	QMRY	0.9888	0.9847
Western Downs Green Power Hub	275	WDGPH1	QWDR1W	QWDR	0.9767	0.9701
Whitsunday Solar Farm	33	WHITSF1	QSLS1W	QSLS	0.9398	0.9204
Windy Hill Wind Farm	66	WHILL1	QTUL	QTUL	1.0128	1.0142
Wivenhoe Generation Unit 1	275	W/HOE#1	QWIV1	QWIV	0.9913	0.9909
Wivenhoe Generation Unit 2	275	W/HOE#2	QWIV2	QWIV	0.9913	0.9909
Wivenhoe Pump 1	275	PUMP1	QWIP1	QWIP	1.0015	1.0001
Wivenhoe Pump 2	275	PUMP2	QWIP2	QWIP	1.0015	1.0001
Woolooga Solar Farm	132	WOOLGSF1	QWLS1W	QWLS	0.9787	0.9850
Yabulu PS	132	YABULU	QTYP	QTYP	0.9508	0.9549
Yabulu Steam Turbine (Garbutt 66kV)	66	YABULU2	QGAR1	QYST	0.9734	0.9482
Yarranlea Solar Farm	110	YARANSF1	QMRY1Y	QMRY	0.9888	0.9847
Yarwun PS	132	YARWUN_1	QYAG1R	QYAG	0.9472	0.9470

Table 3 Queensland bidirectional units

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 Import MLF	2025-26 Export MLF	2024-25 Import MLF	2024-25 Export MLF
Bouldercombe Battery Energy Storage System (BESS)	132	BBATTERY1	QBCB3B	QBCB	0.9358	0.9162	0.9528	0.9166
Chinchilla BESS	275	CHBESS1	QWDB3C	QWDB	0.9875	0.9595	0.9761	0.9611
Greenbank BESS	275	GREENB1	QGBB1G	QGBB	1.0045	0.9998	1.0033	0.9986
Wandoan South BESS	132	WANDB1	QWSB3W	QWSB	1.0066	0.9846	0.9877	0.9823
Western Downs BESS	275	WDBESS1	QWDE3W	QWDE	0.9891	0.9708	0.9762	0.9556

1.2 New South Wales marginal loss factors[8]

Table 4 New South Wales loads

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Albury	132	NALB	0.9559	0.9331
Alexandria	33	NALX	1.0022	1.0024
Armidale	66	NAR1	0.8892	0.9234
Australian Newsprint Mill	132	NANM	0.9554	0.9178
BHP (Waratah)	132	NWR1	0.9923	0.9932
Balranald	22	NBAL	0.9381	0.8692
Beaconsfield North	132	NBFN	1.0017	1.0019
Beaconsfield South	132	NBFS	1.0018	1.0020
Belmore Park	132	NBM1	1.0023	1.0023
Belmore Park 11	11	NBMP	1.0049	1.0038
Beryl	66	NBER	0.9881	0.9747
Boambee South	132	NWST	0.9221	0.9611
Boggabri East	132	NBGE	0.9333	0.9528
Boggabri North	132	NBGN	0.9347	0.9524
Brandy Hill	11	NBHL	0.9972	0.9981
Brandy Hill (Essential Energy)	11	NBHX	0.9972	0.9981
Broken Hill	22	NBKG	0.9228	0.8518
Broken Hill	220	NBKH	0.9267	0.8295
Bunnerong	33	NBG3	1.0038	1.0045
Bunnerong – Dual MLF (Generation)	132	NBG1	1.0015	1.0021
Bunnerong – Dual MLF (Load)	132	NBG1	1.0020	1.0021
Buronga	220	NBRG	0.9430	0.8530
Burrinjuck	132	NBU2	0.9629	0.9441
Campbell Street	11	NCBS	1.0042	1.0023
Campbell Street	132	NCS1	1.0023	1.0023
Canterbury	33	NCTB	1.0047	1.0046
Carlingford	132	NCAR	1.0016	1.0010
Casino	132	NCSN	0.9204	0.9555
Charmhaven	11	NCHM	0.9942	0.9944
Coffs Harbour	66	NCH1	0.9153	0.9519
Coleambally	132	NCLY	0.9456	0.9073
Cooma	66	NCMA	0.9792	0.9614
Cooma (AusNet Services)	66	NCM2	0.9792	0.9614

[8] The New South Wales region includes the Australian Capital Territory (ACT). ACT generation and load are detailed separately for ease of reference.

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Cowra	66	NCW8	0.9858	0.9971
Cronulla	132	NCR1	1.0008	1.0002
Crookwell 415V	0.5	NCK4	0.9705	0.9597
Dapto (Endeavour Energy)	132	NDT1	0.9934	0.9893
Dapto (Essential Energy)	132	NDT2	0.9934	0.9893
Darlington Point	132	NDNT	0.9520	0.9135
Deniliquin	66	NDN7	0.9748	0.9543
Dorrigo	132	NDOR	0.9035	0.9412
Dunoon	132	NDUN	0.9370	0.9684
Far North VTN	N/A	NEV1	0.9737	0.9791
Finley	66	NFNY	0.9712	0.9563
Finley – Dual MLF (Generation)	132	NFN2	0.9116	0.9625
Finley – Dual MLF (Load)	132	NFN2	0.9116	0.8650
Forbes	66	NFB2	1.0044	1.0018
Gadara	132	NGAD	0.9695	0.9501
Glen Innes	66	NGLN	0.8932	0.9295
Gosford	33	NGSF	1.0026	1.0031
Gosford	66	NGF3	1.0022	1.0025
Grafton East 132	132	NGFT	0.9073	0.9377
Green Square	11	NGSQ	1.0039	1.0045
Griffith	33	NGRF	0.9583	0.9247
Gunnedah	66	NGN2	0.9397	0.9687
Gwawley Bay	132	NGB1	1.0002	0.9998
Haymarket	132	NHYM	1.0022	1.0022
Heron's Creek	132	NHNC	0.9984	1.0218
Holroyd	132	NHLD	1.0017	1.0017
Holroyd (Ausgrid)	132	NHLX	1.0017	1.0017
Homebush Bay	11	NHBB	1.0108	1.0146
Hurstville North	11	NHVN	1.0019	1.0017
Ilford	132	NLFD	0.9718	0.9652
Ingleburn	66	NING	0.9961	0.9954
Inverell	66	NNVL	0.9159	0.9465
Kemps Creek	330	NKCK	0.9943	0.9937
Kempsey	33	NKS3	0.9593	0.9908
Kempsey	66	NKS2	0.9465	0.9728
Kogarah	11	NKOG	1.0036	1.0037
Koolkhan	66	NKL6	0.9347	0.9768
Kurnell	132	NKN1	1.0010	1.0005
Kurnell	11	NKNL	1.0015	1.0012

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Lake Munmorah	132	NMUN	0.9885	0.9859
Lane Cove	132	NLCV	1.0094	1.0114
Liddell	33	NLD3	0.9667	0.9694
Lismore	132	NLS2	0.9518	0.9742
Liverpool	132	NLP1	1.0010	0.9998
Macarthur	132	NMC1	0.9914	0.9924
Macarthur	66	NMC2	0.9947	0.9926
Macksville	132	NMCV	0.9398	0.9768
Macquarie Park	11	NMQP	1.0099	1.0138
Macquarie Park	33	NMQS	1.0081	1.0104
Manildra	132	NMLD	1.0071	1.0136
Marrickville	11	NMKV	1.0061	1.0072
Marulan (Endeavour Energy)	132	NMR1	0.9971	1.0088
Marulan (Essential Energy)	132	NMR2	0.9971	1.0088
Mason Park	132	NMPK	1.0096	1.0118
Meadowbank	11	NMBK	1.0114	1.0149
Molong	132	NMOL	1.0295	1.0305
Moree	66	NMRE	0.9481	0.9628
Morven	132	NMVN	0.9562	0.9275
Mt Piper	66	NMP6	0.9756	0.9755
Mudgee	132	NMDG	0.9986	0.9796
Mullumbimby	11	NML1	0.9381	0.9680
Mullumbimby	132	NMLB	0.9311	0.9574
Munmorah STS 33	33	NMU3	0.9907	0.9912
Munyang	11	NMY1	1.0003	0.9795
Munyang	33	NMYG	1.0003	0.9795
Murrumbateman	132	NMBM	0.9621	0.9481
Murrumburrah	66	NMRU	0.9761	0.9573
Muswellbrook	132	NMRK	0.9741	0.9797
Nambucca Heads	132	NNAM	0.9352	0.9719
Narrabri	66	NNB2	0.9620	0.9911
Newcastle	132	NNEW	0.9916	0.9920
Newcastle (Essential Energy)	132	NNEX	0.9916	0.9920
North of Broken Bay VTN	N/A	NEV2	0.9946	0.9952
Orange	66	NRGE	1.0500	1.0434
Orange North	132	NONO	1.0387	1.0363
Ourimbah	33	NORB	0.9992	0.9996
Ourimbah	66	NOR6	0.9989	0.9991
Ourimbah	132	NOR1	0.9982	1.0000

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Panorama	66	NPMA	1.0308	1.0285
Parkes	132	NPKS	0.9893	0.9901
Parkes	66	NPK6	1.0301	1.0292
Peakhurst	33	NPHT	1.0013	1.0009
Potts Hill	11	NPHL	1.0012	1.0023
Potts Hill	132	NPO1	1.0012	1.0024
Pt Macquarie	33	NPMQ	0.9888	1.0159
Queanbeyan	132	NQBY	0.9932	0.9711
Raleigh	132	NRAL	0.9251	0.9631
Ravine	330	NRVN	0.9649	0.9356
Regentville	132	NRGV	0.9981	0.9987
Riverina 415V	0.42	NRVA	0.9499	0.9113
Rockdale (Ausgrid)	11	NRKD	1.0040	1.0039
Rookwood Road	132	NRWR	1.0011	1.0022
Rose Bay	11	NRSB	1.0047	1.0051
Snowy Adit	132	NSAD	0.9932	0.9726
Somersby	11	NSMB	1.0031	1.0035
South of Broken Bay VTN	N/A	NEV3	1.0035	1.0039
St Peters	11	NSPT	1.0046	1.0054
Strathfield South	11	NSFS	1.0042	1.0042
Stroud	132	NSRD	1.0048	1.0094
Sydney East	132	NSE2	1.0050	1.0056
Sydney North (Ausgrid)	132	NSN1	1.0020	1.0025
Sydney North (Endeavour Energy)	132	NSN2	1.0020	1.0025
Sydney South	132	NSYS	0.9987	0.9984
Sydney West (Ausgrid)	132	NSW1	1.0016	1.0010
Sydney West (Endeavour Energy)	132	NSW2	1.0016	1.0010
Tamworth	66	NTA2	0.9348	0.9531
Taree (Essential Energy)	132	NTR2	1.0151	1.0322
Tenterfield	132	NTTF	0.9086	0.9439
Terranora	110	NTNR	0.8811	0.9510
Tomago	330	NTMG	0.9928	0.9939
Tomago (Ausgrid)	132	NTME	0.9972	0.9985
Tomago (Essential Energy)	132	NTMC	0.9972	0.9985
Top Ryde	11	NTPR	1.0102	1.0136
Tuggerah	132	NTG3	0.9959	0.9964
Tumut	66	NTU2	0.9673	0.9519
Tumut 66 (AusNet DNSP)	66	NTUX	0.9673	0.9519
Upper Tumut 11kV (Essential Energy)	11	NUT4	0.9599	0.9325

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Vales Pt.	132	NVP1	0.9878	0.9877
Vineyard	132	NVYD	0.9995	0.9998
Wagga	66	NWG2	0.9544	0.9297
Wagga North	132	NWGN	0.9641	0.9259
Wagga North	66	NWG6	0.9556	0.9270
Wallerawang (Endeavour Energy)	132	NWW6	0.9754	0.9753
Wallerawang (Essential Energy)	132	NWW5	0.9754	0.9753
Wallerawang 330 PS Load	330	NWWP	0.9753	0.9740
Wallerawang 66	66	NWW7	0.9755	0.9756
Wallerawang 66 (Essential Energy)	66	NWW4	0.9755	0.9756
Waverley	11	NWAV	1.0046	1.0049
Wellington	132	NWL8	0.9793	0.9835
West Gosford	11	NGWF	1.0033	1.0041
Williamsdale (Essential Energy) (Bogong)	132	NWD1	0.9635	0.9545
Wyong	11	NWYG	0.9972	0.9976
Yanco	33	NYA3	0.9655	0.9322
Yass	66	NYS6	0.9654	0.9505
Yass	132	NYS1	0.9521	0.9317

Table 5 New South Wales generation

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Appin Power Station	66	APPIN	NAPP1A	NAPP	0.9950	0.9929
Avonlie Solar Farm	132	AVLSF1	NNRN1A	NNRN	0.8698	0.8446
Bango 973 Wind Farm	132	BANGOWF1	NBA21B	NBA2	0.9226	0.9047
Bango 999 Wind Farm	132	BANGOWF2	NBB21B	NBB2	0.9355	0.9182
Bayswater PS Unit 1	330	BW01	NBAY1	NBAY	0.9637	0.9664
Bayswater PS Unit 2	330	BW02	NBAY2	NBAY	0.9637	0.9664
Bayswater PS Unit 3	500	BW03	NBAY3	NBYW	0.9632	0.9663
Bayswater PS Unit 4	500	BW04	NBAY4	NBYW	0.9632	0.9663
Beryl Solar Farm	66	BERYLSF1	NBES1B	NBES	0.9284	0.9182
Blowering	132	BLOWERNG	NBLW8	NBLW	0.9209	0.9141
Boco Rock Wind Farm	132	BOCORWF1	NCMA3B	NBCO	0.9557	0.9344
Bodangora Wind Farm	132	BODWF1	NBOD1B	NBOD	0.9638	0.9518
Bomen Solar Farm	132	BOMENSF1	NWGS1B	NWGS	0.9187	0.8719
Broadwater PS	132	BWTR1	NLS21B	NLS2	0.9518	0.9742
Broken Hill GT 1	22	GB01	NBKG1	NBKG	0.9228	0.8518
Broken Hill Solar Farm	22	BROKENH1	NBK11B	NBK1	0.8642	0.7784
Brown Mountain	66	BROWNMT	NCMA1	NCMA	0.9792	0.9614

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Burrendong Hydro PS	132	BDONGHYD	NWL81B	NWL8	0.9793	0.9835
Burrinjuck PS	132	BURRIN	NBUK	NBUK	0.9597	0.9371
Campbelltown WSLC	66	WESTCBT1	NING1C	NING	0.9961	0.9954
Capital Wind Farm	330	CAPTL_WF	NCWF1R	NCWF	0.9649	0.9467
Coleambally Solar Farm	132	COLEASF1	NCLS1C	NCLS	0.8730	0.8367
Collector Wind Farm	330	COLWF01	NCLW1C	NCLW	0.9628	0.9495
Colongra PS Unit 1	330	CG1	NCLG1D	NCLG	0.9849	0.9828
Colongra PS Unit 2	330	CG2	NCLG2D	NCLG	0.9849	0.9828
Colongra PS Unit 3	330	CG3	NCLG3D	NCLG	0.9849	0.9828
Colongra PS Unit 4	330	CG4	NCLG4D	NCLG	0.9849	0.9828
Condong PS	110	CONDONG1	NTNR1C	NTNR	0.8811	0.9510
Copeton Hydro PS	66	COPTNHYD	NNVL1C	NNVL	0.9159	0.9465
Corowa Solar Farm	132	CRWASF1	NAL11C	NAL1	0.9355	0.8979
Crookwell 2 Wind Farm	33	CROOKWF2	NCKW1C	NCKW	0.9644	0.9512
Crookwell 3 Wind Farm	33	CROOKWF3	NCW31C	NCW3	0.9620	0.9588
Crudine Ridge Wind Farm	132	CRURWF1	NCDS1C	NCDS	0.9409	0.9280
Cullerin Range Wind Farm	132	CULLRGWF	NYS11C	NYS1	0.9521	0.9317
Darlington Point Solar Farm	132	DARLSF1	NDNS1D	NDNS	0.8854	0.8439
Eastern Creek	132	EASTCRK	NSW21	NSW2	1.0016	1.0010
Eastern Creek 2	132	EASTCRK2	NSW23L	NSW2	1.0016	1.0010
Eraring 330 BS UN (GT)	330	ERGT01	NEP35B	NEP3	0.9846	0.9855
Eraring 330 PS Unit 1	330	ER01	NEPS1	NEP3	0.9846	0.9855
Eraring 330 PS Unit 2	330	ER02	NEPS2	NEP3	0.9846	0.9855
Eraring 500 PS Unit 3	500	ER03	NEPS3	NEPS	0.9854	0.9855
Eraring 500 PS Unit 4	500	ER04	NEPS4	NEPS	0.9854	0.9855
Eraring PS Load	132	ERNL1	NEPSL	NNEW	0.9916	0.9920
Finley Solar Farm	132	FINLYSF1	NFNS1F	NFNS	0.8898	0.8651
Flyers Creek Wind Farm	132	FLYCRKWF	NONF1F	NONF	1.0278	1.0205
Glenbawn Hydro PS	132	GLBWNHYD	NMRK2G	NMRK	0.9741	0.9797
Glenn Innes (Pindari PS)	66	PINDARI	NGLN1	NGLN	0.8932	0.9295
Glennies Creek PS	132	GLENNCRK	NMRK3T	NMRK	0.9741	0.9797
Goonumbla Solar Farm	66	GOONSF1	NPG12G	NPG1	0.8888	0.8969
Grange Avenue	132	GRANGEAV	NVYD1	NVYD	0.9995	0.9998
Griffith Solar Farm	33	GRIFSF1	NGG11G	NGG1	0.8921	0.8424
Gullen Range 1 Wind Farm	330	GULLRWF1	NGUR1G	NGUR	0.9620	0.9498
Gullen Range 2 Wind Farm	330	GULLRWF2	NGUR3G	NGUR	0.9620	0.9498
Gullen Range Solar Farm	330	GULLRSF1	NGUR2G	NGUR	0.9620	0.9498
Gunnedah Solar Farm	132	GNNDHSF1	NGNE1G	NGNE	0.8437	0.8394
Gunning Wind Farm	132	GUNNING1	NYS12A	NYS1	0.9521	0.9317

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Guthega	132	GUTHEGA	NGUT8	NGUT	0.9135	0.8920
Guthega Auxiliary Supply	11	GUTHNL1	NMY11	NMY1	1.0003	0.9795
Hillston Solar Farm	132	HILLSTN1	NDNH1H	NDNH	0.8888	0.8482
Hume (New South Wales Share)	132	HUMENSW	NHUM	NHUM	0.9316	0.8975
Hunter Economic Zone	132	HEZ1	NNEE1H	NNEE	0.9931	0.9896
Jemalong Solar Farm	66	JEMALNG1	NFBS1J	NFBS	0.8923	0.8943
Jindabyne Generator	66	JNDABNE1	NCMA2	NCMA	0.9792	0.9614
Jounama PS	66	JOUNAMA1	NTU21J	NTU2	0.9673	0.9519
Junee Solar Farm	132	JUNEESF1	NWGJ1J	NWGJ	0.9220	0.8752
Kangaroo Valley (Shoalhaven) Pumps – Dual MLF (Load)	330	SHPUMP	NSHP1	NSHN	0.9948	0.9866
Kangaroo Valley – Bendeela (Shoalhaven) – Dual MLF (Generation)	330	SHGEN	NSHL	NSHN	0.9772	0.9679
Keepit	66	KEEPIT	NKPT	NKPT	0.9397	0.9687
Liddell 330 PS Load	330	LIDDNL1	NLDPL	NLDP	0.9650	0.9680
Limondale Solar Farm 1	220	LIMOSF11	NBSF1L	NBSF	0.8529	0.7774
Limondale Solar Farm 2	22	LIMOSF21	NBL21L	NBL2	0.8528	0.7793
Liverpool 132 (Jacks Gully)	132	JACKSGUL	NLP11	NMC1	0.9914	0.9924
Lower Tumut Pipeline Auxiliary	66	TUMT3NL3	NTU2L3	NTU2	0.9673	0.9519
Lower Tumut Pumps – Dual MLF (Load)	330	SNOWYP	NLTS3	NLTS	0.9892	0.9498
Lower Tumut T2 Auxiliary	66	TUMT3NL1	NTU2L1	NTU2	0.9673	0.9519
Lower Tumut T4 Auxiliary	66	TUMT3NL2	NTU2L2	NTU2	0.9673	0.9519
Lower Tumut – Dual MLF (Generation)	330	TUMUT3	NLTS8	NLTS	0.9144	0.8988
Lucas Heights II Power Plant	132	LUCASHGT	NSYS2G	NSYS	0.9987	0.9984
Lucas Heights Stage 2 Power Station	132	LUCAS2S2	NSYS1	NSYS	0.9987	0.9984
Manildra Solar Farm	132	MANSLR1	NMLS1M	NMLS	0.9400	0.9541
Metz Solar Farm	132	METZSF1	NMTZ1M	NMTZ	0.8557	0.8668
Molong Solar Farm	66	MOLNGSF1	NMOS1M	NMOS	0.9573	0.9616
Moree Solar Farm	66	MOREESF1	NMR41M	NMR4	0.8387	0.8086
Mt Piper PS Load	330	MPNL1	NMPPL	NMTP	0.9727	0.9706
Mt Piper PS Unit 1	330	MP1	NMTP1	NMTP	0.9727	0.9706
Mt Piper PS Unit 2	330	MP2	NMTP2	NMTP	0.9727	0.9706
Narromine Solar Farm	132	NASF1	NWLS1N	NWLS	0.9230	0.9284
Nevertire Solar Farm	132	NEVERSF1	NWLS3N	NWLS	0.9230	0.9284
New England Solar Farm 1	330	NEWENSF1	NURR1N	NURR	0.8803	0.8901
New England Solar Farm 2	330	NEWENSF2	NURR2N	NURR	0.8803	0.8901
Nyngan Solar Farm	132	NYNGAN1	NWL82N	NWL8	0.9793	0.9835
Parkes Solar Farm	66	PARSF1	NPG11P	NPG1	0.8888	0.8969
Rye Park Wind Farm	330	RYEPARK1	NRPK1R	NRPK	0.9595	0.9427
Sapphire Wind Farm	330	SAPHWF1	NSAP1S	NSAP	0.8558	0.9012

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Sebastopol Solar Farm	132	SEBSF1	NWGJ2S	NWGJ	0.9220	0.8752
Silverton Wind Farm	220	STWF1	NBKW1S	NBKW	0.8627	0.8050
Sithe (Holroyd Generation)	132	SITHE01	NSYW1	NHD2	1.0017	1.0015
South Keswick Solar Farm	132	SKSF1	NWLS2S	NWLS	0.9230	0.9284
St George Leagues Club	33	STGEORG1	NPHT1E	NPHT	1.0013	1.0009
Stubbo Solar Farm 1	330	STUBSF1	NSTB1S	NSTB	0.9429	0.9422
Stubbo Solar Farm 2	330	STUBSF2	NSTU1S	NSTU	0.9429	0.9422
Sunraysia Solar farm	220	SUNRSF1	NBSF2S	NBSF	0.8529	0.7774
Suntop Solar Farm	132	SUNTPSF1	NWLW1S	NWLW	0.9073	0.9096
Tahmoor PS	132	TAHMOOR1	NLP12T	NLP1	1.0010	0.9998
Tallawarra B PS	132	TALWB1	NDTB1T	NDTB	0.9924	0.9843
Tallawarra PS	132	TALWA1	NDT13T	NTWA	0.9893	0.9861
Taralga Wind Farm	132	TARALGA1	NMR22T	NMR2	0.9971	1.0088
The Drop Power Station	66	THEDROP1	NFNY1D	NFNY	0.9712	0.9563
Tower Power Plant	132	TOWER	NLP11T	NLP1	1.0010	0.9998
Upper Tumut	330	UPPTUMUT	NUTS8	NUTS	0.9408	0.9236
Uranquinty PS Unit 11	132	URANQ11	NURQ1U	NURQ	0.8729	0.8398
Uranquinty PS Unit 12	132	URANQ12	NURQ2U	NURQ	0.8729	0.8398
Uranquinty PS Unit 13	132	URANQ13	NURQ3U	NURQ	0.8729	0.8398
Uranquinty PS Unit 14	132	URANQ14	NURQ4U	NURQ	0.8729	0.8398
Vales Point 330 PS Load	330	VPNL1	NVPPL	NVPP	0.9868	0.9874
Vales Point 330 PS Unit 5	330	VP5	NVPP5	NVPP	0.9868	0.9874
Vales Point 330 PS Unit 6	330	VP6	NVPP6	NVPP	0.9868	0.9874
Wagga North Solar Farm	66	WAGGNSF1	NWGG1W	NWGG	0.9183	0.8720
Walla Walla Solar Farm 1	330	WLWLSF1	NWLA1W	NWLA	0.9298	0.8853
Walla Walla Solar Farm 2	330	WLWLSF2	NWL21W	NWL2	0.9298	0.8853
Wellington North Solar Farm	330	WELNSF1	NWLN1W	NWLN	0.9339	0.9389
Wellington Solar Farm	132	WELLSF1	NWLS4W	NWLS	0.9230	0.9284
West Wyalong Solar Farm	132	WSTWYSF1	NWGJ3W	NWGJ	0.9220	0.8752
Wests Illawarra Leagues Club	132	WESTILL1	NDT14E	NDT1	0.9934	0.9893
White Rock Solar Farm	132	WRSF1	NWRK2W	NWRK	0.8149	0.8453
White Rock Wind Farm	132	WRWF1	NWRK1W	NWRK	0.8149	0.8453
Wilga Park A	66	WILGAPK	NNB21W	NNB2	0.9620	0.9911
Wilga Park B	66	WILGB01	NNB22W	NNB2	0.9620	0.9911
Wollar Solar Farm	330	WOLARSF1	NWOW1W	NWOW	0.9570	0.9530
Woodlawn Bioreactor	132	WDLNGN01	NMR21W	NMR2	0.9971	1.0088
Woodlawn Wind Farm	330	WOODLWN1	NCWF2W	NCWF	0.9649	0.9467
Wyalong Solar Farm	132	WYASF1	NWGJ4W	NWGJ	0.9220	0.8752
Wyangala A PS	66	WYANGALA	NCW81A	NCW8	0.9858	0.9971

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Wyangala B PS	66	WYANGALB	NCW82B	NCW8	0.9858	0.9971

Table 6 New South Wales bidirectional units

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 Import MLF	2025-26 Export MLF	2024-25 Import MLF	2024-25 Export MLF
Broken Hill BESS	22	BHB1	NBKB3B	NBKB	0.9484	0.8999	0.8284	0.8423
Darlington Point ESS	33	DPNTB1	NRDP3D	NRDP	0.9453	0.9185	0.8774	0.9048
Eraring BESS	330	ERB01	NERB1E	NERB	0.9901	0.9869	0.9925	0.9900
Riverina ESS No.1	33	RESS1	NRBB3R	NRBB	0.9396	0.8781	0.8657	0.8702
Riverina ESS No.2	33	RIVNB2	NRB23R	NRB2	0.9443	0.9173	0.8774	0.9048
Wallgrove BESS	132	WALGRV1	NSWB3W	NSWB	1.0015	1.0018	1.0009	1.001
Waratah BESS	330	WTAHB1	NMWB1W	NMWB	0.9923	0.9884	0.9970	0.9863

Table 7 Australian Capital Territory loads

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
ACT VTN	132	AAVT	0.9766	0.9567
Angle Crossing	132	AAXG	0.9790	0.9485
Belconnen	132	ABCN	0.9753	0.9554
City East	132	ACTE	0.9796	0.9580
Civic	132	ACVC	0.9771	0.9561
East Lake	132	AELK	0.9784	0.9585
Gilmore	132	AGLM	0.9774	0.9569
Gold Creek	132	AGCK	0.9730	0.9557
Harman	11	AHRM	0.9861	0.9645
Latham	132	ALTM	0.9732	0.9551
Queanbeyan (ACTEW)	66	AQB1	0.9954	0.9751
Queanbeyan (Essential Energy)	66	AQB2	0.9954	0.9751
Telopea Park	132	ATLP	0.9795	0.9576
Theodore	132	ATDR	0.9714	0.9574
Wanniassa	132	AWSA	0.9758	0.9567
Woden	132	AWDN	0.9758	0.9562

The RRN for Australian Capital Territory load and generation is the Sydney West 330 kilovolts (kV) node.

Table 8 ACT generation

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Capital East Solar Farm	66	CESF1	AQB21C	AQB2	0.9954	0.9751
Mugga Lane Solar Farm	132	MLSP1	ACA12M	AMS1	0.9821	0.9523
Royalla Solar Farm	132	ROYALLA1	ACA11R	ARS1	0.9814	0.9515

The RRN for Australian Capital Territory load and generation is the Sydney West 330 kV node.

Table 9 ACT bidirectional units

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 Import MLF	2025-26 Export MLF	2024-25 Import MLF	2024-25 Export MLF
Capital ESS	132	CAPBES1	NQBC3C	NQBC	1.0389	0.9774	1.0084	0.9337
Queanbeyan BESS	66	QBYNB1	NQBB3Q	NQBB	1.0072	0.9730	0.9795	0.9571

1.3 Victoria marginal loss factors

Table 10 Victoria loads

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Altona	220	VAT2	0.9982	0.9975
Altona	66	VATS	1.0049	1.0041
BHP Western Port	220	VJLA	0.9951	0.9947
Ballarat	66	VBAT	0.9825	0.9718
Bendigo	22	VBE2	1.0192	1.0091
Bendigo	66	VBE6	1.0166	1.0072
Brooklyn (Jemena)	22	VBL2	1.0036	1.0023
Brooklyn (Jemena)	66	VBL6	1.0062	1.0053
Brooklyn (Powercor)	22	VBL3	1.0036	1.0023
Brooklyn (Powercor)	66	VBL7	1.0062	1.0053
Brunswick (CitiPower)	22	VBT2	1.0008	1.0006
Brunswick (Jemena)	22	VBTS	1.0008	1.0006
Brunswick 66 (CitiPower)	66	VBT6	1.0004	1.0000
Cranbourne	220	VCB2	0.9935	0.9937
Cranbourne (AusNet Services)	66	VCBT	0.9960	0.9955
Cranbourne (United Energy)	66	VCB5	0.9960	0.9955
Deer Park	66	VDPT	1.0035	1.0023
East Rowville (AusNet Services)	66	VER2	0.9955	0.9954
East Rowville (United Energy)	66	VERT	0.9955	0.9954
Fishermens Bend (CitiPower)	66	VFBT	1.0026	1.0022
Fishermens Bend (Powercor)	66	VFB2	1.0026	1.0022
Fosterville	220	VFVT	1.0049	0.9963
Geelong	66	VGT6	0.9958	0.9927

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Glenrowan	66	VGNT	1.0135	1.0160
Heatherton	66	VHTS	0.9998	1.0006
Heywood	22	VHY2	0.9960	0.9898
Horsham	66	VHOT	0.9333	0.9036
Keilor (Jemena)	66	VKT2	1.0023	1.0006
Keilor (Powercor)	66	VKTS	1.0023	1.0006
Kerang	22	VKG2	1.0222	1.0071
Kerang	66	VKG6	1.0267	1.0170
Khancoban	330	NKHN	1.0046	1.0379
Loy Yang Substation	66	VLY6	0.9859	0.9856
Malvern	22	VMT2	0.9980	0.9984
Malvern	66	VMT6	0.9971	0.9974
Malvern (CitiPower)	66	VMT7	0.9971	0.9974
Morwell PS (G4&5)	11	VMWP	0.9839	0.9836
Morwell Power Station Units 1 to 3	66	VMWG	0.9870	0.9855
Morwell TS	66	VMWT	0.9862	0.9848
Mt Beauty	66	VMBT	1.0191	1.0284
Portland	500	VAPD	1.0003	0.9936
Red Cliffs	22	VRC2	0.9952	0.9566
Red Cliffs	66	VRC6	0.9967	0.9662
Red Cliffs (Essential Energy)	66	VRCA	0.9967	0.9662
Richmond	22	VRT2	1.0000	0.9994
Richmond (CitiPower)	66	VRT7	1.0002	1.0001
Richmond (United Energy)	66	VRT6	1.0002	1.0001
Ringwood (AusNet Services)	22	VRW3	0.9998	1.0003
Ringwood (AusNet Services)	66	VRW7	0.9998	0.9996
Ringwood (United Energy)	22	VRW2	0.9998	1.0003
Ringwood (United Energy)	66	VRW6	0.9998	0.9996
Shepparton	66	VSHT	1.0315	1.0372
South Morang (AusNet Services)	66	VSMT	0.9981	0.9977
South Morang (Jemena)	66	VSM6	0.9981	0.9977
Springvale (CitiPower)	66	VSVT	0.9977	0.9978
Springvale (United Energy)	66	VSV2	0.9977	0.9978
Templestowe (AusNet Services)	66	VTS3	1.0018	0.9999
Templestowe (CitiPower)	66	VTS2	1.0018	0.9999
Templestowe (Jemena)	66	VTST	1.0018	0.9999
Templestowe (United Energy)	66	VTS4	1.0018	0.9999
Terang	66	VTGT	1.0018	0.9993
Thomastown (AusNet Services)	66	VTT2	1.0000	1.0000
Thomastown (Jemena)	66	VTTS	1.0000	1.0000

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Tyabb	66	VTBT	0.9964	0.9959
Wemen 66 (Essential Energy)	66	VWEA	0.9745	0.9367
Wemen TS	66	VWET	0.9745	0.9367
West Melbourne	22	VWM2	1.0003	0.9997
West Melbourne (CitiPower)	66	VWM7	1.0013	1.0012
West Melbourne (Jemena)	66	VWM6	1.0013	1.0012
Wodonga	22	VWO2	1.0220	1.0305
Wodonga	66	VWO6	1.0096	1.0200
Yallourn	11	VYP1	0.9637	0.9640

Table 11 Victoria generation

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Ararat Wind Farm	220	ARWF1	VART1A	VART	0.9031	0.8856
Bairnsdale Power Station	66	BDL01	VMWT2	VBDL	0.9816	0.9816
Bairnsdale Power Station Unit 2	66	BDL02	VMWT3	VBDL	0.9816	0.9816
Bald Hills Wind Farm	66	BALDHWF1	VMWT9B	VMWT	0.9862	0.9848
Ballarat Health Services	66	BBASEHOS	VBAT1H	VBAT	0.9825	0.9718
Banimboola	220	BAPS	VDPS2	VDPS	0.9729	0.9814
Bannerton Solar Farm	66	BANN1	VWES1B	VWES	0.8986	0.8584
Basslink (Loy Yang Power Station Switchyard) Tasmania to Victoria	500	BLNKVIC	VLYP13	VTBL	0.9907	0.9777
Basslink (Loy Yang Power Station Switchyard) Victoria to Tasmania	500	BLNKVIC	VLYP13	VTBL	0.9907	0.9852
Berrybank Wind Farm	220	BRYB1WF1	VBBT1B	VBBT	0.9465	0.9315
Berrybank Wind Farm 2	220	BRYB2WF2	VBBT2B	VBBT	0.9465	0.9315
Brooklyn Landfill & Recycling Facility	66	BROOKLYN	VBL61	VBL6	1.0062	1.0053
Bulgana Green Power Hub	220	BULGANA1	VBGT1B	VBGT	0.8907	0.8733
Challicum Hills Wind Farm	66	CHALLHWF	VHOT1	VBAT	0.9825	0.9718
Chepstowe Wind Farm	66	CHPSTWF1	VBAT3C	VBAT	0.9825	0.9718
Cherry Tree Wind Farm	66	CHYTWF1	VSM71C	VSM7	0.9980	0.9976
Clayton Landfill Gas Power Station	66	CLAYTON	VSV21B	VSV2	0.9977	0.9978
Clover PS	66	CLOVER	VMBT1	VMBT	1.0191	1.0284
Codrington Wind Farm	66	CODRNGTON	VTGT2C	VTGT	1.0018	0.9993
Cohuna Solar Farm	66	COHUNSF1	VKGS2C	VKGS	0.9305	0.8962
Coonooer Bridge Wind Farm	66	CBWF1	VBE61C	VBE6	1.0166	1.0072
Crowlands Wind Farm	220	CROWLWF1	VCWL1C	VCWL	0.9004	0.8833
Dartmouth PS	220	DARTM1	VDPS	VDPS	0.9729	0.9814
Diapur Wind Farm	66	DIAPURWF1	VHOG2D	VHOG	0.8959	0.8733
Dundonnell Wind Farm 1	500	DUNDWF1	VM051D	VM05	0.9845	0.9810
Dundonnell Wind Farm 2	500	DUNDWF2	VM052D	VM05	0.9845	0.9810

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Dundonnell Wind Farm 3	500	DUNDWF3	VM053D	VM05	0.9845	0.9810
Eildon Hydro PS	66	EILDON3	VTT22E	VSMT	0.9981	0.9977
Eildon PS Unit 1	220	EILDON1	VEPS1	VEPS	0.9945	0.9912
Eildon PS Unit 2	220	EILDON2	VEPS2	VEPS	0.9945	0.9912
Elaine Wind Farm	220	ELAINWF1	VELT3E	VELT	0.9569	0.9475
Ferguson South Wind Farm	66	FSWF1	VTGT7F	VTGT	1.0018	0.9993
Gannawarra Solar Farm	66	GANNSF1	VKGS1G	VKGS	0.9305	0.8962
Girgarre Solar Farm	66	GIRGSF	VSHS2G	VSHS	0.9463	0.9477
Glenmaggie Hydro PS	66	GLENMAG1	VMWT8G	VMWT	0.9862	0.9848
Glenrowan Solar Farm	220	GLENSF1	VGN21G	VGN2	0.9490	0.9626
Glenrowan West Sun Farm	66	GLRWNSF1	VGNS1G	VGNS	0.9402	0.9455
Golden Plains Wind Farm 1	220	GPWFEST1	VGPT1G	VGPT	0.9834	0.9808
Golden Plains Wind Farm 2	220	GPWFEST2	VGPT2G	VGPT	0.9834	0.9808
Golden Plains Wind Farm 3	220	GPWFEST3	VGPT3G	VGPT	0.9834	0.9808
Golden Plains Wind Farm Aux	220	GPWFEL1	VGPT4G	VGPT	0.9834	0.9808
Hallam Mini Hydro	66	HLMSEW01	VER21H	VCBT	0.9960	0.9955
Hallam Road Renewable Energy Facility	66	HALAMRD1	VER22L	VER2	0.9955	0.9954
Hastings GS 1	66	HASTING1	VTBT1H	VTBT	0.9964	0.9954
Hastings GS 2	66	HASTING2	VTBT2H	VTBT	0.9964	0.9954
Hastings GS 3	66	HASTING3	VTBT3H	VTBT	0.9964	0.9954
Hawkesdale Wind Farm	132	HD1WF1	VTR11H	VTR1	0.9865	0.9809
Hepburn Community Wind Farm	66	HEPWIND1	VBAT2L	VBAT	0.9825	0.9718
Hume (Victorian Share)	66	HUMEV	VHUM	VHUM	0.9586	0.9539
Jeeralang A PS Unit 1	220	JLA01	VJLGA1	VJLG	0.9768	0.9789
Jeeralang A PS Unit 2	220	JLA02	VJLGA2	VJLG	0.9768	0.9789
Jeeralang A PS Unit 3	220	JLA03	VJLGA3	VJLG	0.9768	0.9789
Jeeralang A PS Unit 4	220	JLA04	VJLGA4	VJLG	0.9768	0.9789
Jeeralang B PS Unit 1	220	JLB01	VJLGB1	VJLG	0.9768	0.9789
Jeeralang B PS Unit 2	220	JLB02	VJLGB2	VJLG	0.9768	0.9789
Jeeralang B PS Unit 3	220	JLB03	VJLGB3	VJLG	0.9768	0.9789
Jindabyne pump at Guthega	132	SNOWYGJP	NGJP	NGJP	1.0606	1.0930
Karadoc Solar Farm	66	KARSF1	VRCS1K	VRCS	0.8895	0.8506
Kerang Solar Plant	22	KERNGSP1	VKGP1K	VKGP	0.9329	0.8964
Kiamal Solar Farm	220	KIAMSF1	VKMT1K	VKMT	0.8785	0.8363
Kiata Wind Farm	66	KIATAWF1	VHOG1K	VHOG	0.8959	0.8733
Laverton PS (LNGS1)	220	LNGS1	VAT21L	VAT2	0.9982	0.9975
Laverton PS (LNGS2)	220	LNGS2	VAT22L	VAT2	0.9982	0.9975
Longford	66	LONGFORD	VMWT6	VMWT	0.9862	0.9848
Loy Yang A PS Load	500	LYNL1	VLYPL	VLYP	0.9815	0.9809

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Loy Yang A PS Unit 1	500	LYA1	VLYP1	VLYP	0.9815	0.9809
Loy Yang A PS Unit 2	500	LYA2	VLYP2	VLYP	0.9815	0.9809
Loy Yang A PS Unit 3	500	LYA3	VLYP3	VLYP	0.9815	0.9809
Loy Yang A PS Unit 4	500	LYA4	VLYP4	VLYP	0.9815	0.9809
Loy Yang B PS Unit 1	500	LOYYB1	VLYP5	VLYP	0.9815	0.9809
Loy Yang B PS Unit 2	500	LOYYB2	VLYP6	VLYP	0.9815	0.9809
MacArthur Wind Farm	500	MACARTH1	VTRT1M	VTRT	0.9829	0.9781
Maroona Wind Farm	66	MAROOWF1	VBAT5M	VBAT	0.9825	0.9718
McKay Creek / Bogong PS	220	MCKAY1	VMKP1	VT14	0.9828	0.9703
Mokoan Solar Farm	66	MOKOSF1	VGN61M	VGN6	0.9415	0.9484
Moorabool Wind Farm	220	MOORAWF1	VELT2M	VELT	0.9569	0.9475
Mortlake South Wind Farm	220	MRTLSWF1	VTG21M	VTG2	0.9525	0.9430
Mortlake Unit 1	500	MORTLK11	VM0P1O	VM0P	0.9969	0.9914
Mortlake Unit 2	500	MORTLK12	VM0P2O	VM0P	0.9969	0.9914
Mortons Lane Wind Farm	66	MLWF1	VTGT4M	VTGT	1.0018	0.9993
Mt Gellibrand Wind Farm	66	MTGELWF1	VGTW1M	VGTW	0.9879	0.9855
Mt Mercer Wind Farm	220	MERCER01	VELT1M	VELT	0.9569	0.9475
Murra Warra Wind Farm	220	MUWAWF1	VMRT1M	VMRT	0.8817	0.8619
Murra Warra Wind Farm Stage 2	220	MUWAWF2	VMRT2M	VMRT	0.8817	0.8619
Murray	330	MURRAY	NMUR8	NMUR	0.9819	0.9947
Murray (Geehi Tee off Auxiliary)	330	MURAYNL3	NMURL3	NMUR	0.9819	0.9947
Murray Power Station M1 Auxiliary	330	MURAYNL1	NMURL1	NMUR	0.9819	0.9947
Murray Power Station M2 Auxiliary	330	MURAYNL2	NMURL2	NMUR	0.9819	0.9947
Newport PS	220	NPS	VNPS	VNPS	0.9943	0.9941
Numurkah Solar Farm	66	NUMURSF1	VSHS1N	VSHS	0.9463	0.9477
Oaklands Hill Wind Farm	66	OAKLAND1	VTGT3A	VTGT	1.0018	0.9993
Rubicon Mountain Streams Station	66	RUBICON	VTT21R	VSMT	0.9981	0.9977
Ryan Corner Wind Farm	132	RYANCWF1	VTR31R	VTR3	0.9875	0.9787
Salt Creek Wind Farm	66	SALTCRK1	VTG61S	VTG6	0.9519	0.9388
Shepparton Waste Gas	66	SHEP1	VSHT2S	VSHT	1.0315	1.0372
Somerton Power Station	66	AGLSOM	VTTS1	VSOM	0.9965	0.9962
Stockyard Hill Wind Farm	500	STOCKYD1	VHGT1S	VHGT	0.9845	0.9812
Tatura	66	TATURA01	VSHT1	VSHT	1.0315	1.0372
Timboon West Wind Farm	66	TIMWEST	VTGT5T	VTGT	1.0018	0.9993
Toora Wind Farm	66	TOORAWF	VMWT5	VMWT	0.9862	0.9848
Traralgon NSS	66	TGNSS1	VMWT1T	VMWT	0.9862	0.9848
Valley Power Unit 1	500	VPGS1	VLYP07	VLYP	0.9815	0.9809
Valley Power Unit 2	500	VPGS2	VLYP08	VLYP	0.9815	0.9809
Valley Power Unit 3	500	VPGS3	VLYP09	VLYP	0.9815	0.9809

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Valley Power Unit 4	500	VPGS4	VLYP010	VLYP	0.9815	0.9809
Valley Power Unit 5	500	VPGS5	VLYP011	VLYP	0.9815	0.9809
Valley Power Unit 6	500	VPGS6	VLYP012	VLYP	0.9815	0.9809
Waubra Wind Farm	220	WAUBRAWF	VWBT1A	VWBT	0.9329	0.9149
Wemen Solar Farm	66	WEMENSF1	VWES2W	VWES	0.8986	0.8584
West Kiewa PS Unit 1	220	WKIEWA1	VWKP1	VWKP	1.0038	1.0026
West Kiewa PS Unit 2	220	WKIEWA2	VWKP2	VWKP	1.0038	1.0026
William Hovell Hydro PS	66	WILLHOV1	VW061W	VGNT	1.0135	1.0160
Winton Solar Farm	66	WINTSF1	VGNS2W	VGNS	0.9402	0.9455
Wollert Renewable Energy Facility	66	WOLLERT1	VSMT1W	VSMT	0.9981	0.9977
Wonthaggi Wind Farm	66	WONWP	VMWT7	VMWT	0.9862	0.9848
Wunghnu Solar Farm	66	WUNUSF1	VSHS2W	VSHS	0.9463	0.9477
Yallourn W PS 220 Load	220	YWNL1	VYP2L	VYP2	0.9599	0.9604
Yallourn W PS 220 Unit 1	220	YWPS1	VYP21	VYP3	0.9674	0.9621
Yallourn W PS 220 Unit 2	220	YWPS2	VYP22	VYP2	0.9599	0.9604
Yallourn W PS 220 Unit 3	220	YWPS3	VYP23	VYP2	0.9599	0.9604
Yallourn W PS 220 Unit 4	220	YWPS4	VYP24	VYP2	0.9599	0.9604
Yaloak South Wind Farm	66	YSWF1	VBAT4Y	VBAT	0.9825	0.9718
Yambuk Wind Farm	66	YAMBUKWF	VTGT1	VTGT	1.0018	0.9993
Yarrawonga Hydro PS	66	YWNGAHYD	VSHT3Y	VSHT	1.0315	1.0372
Yatpool Solar Farm	66	YATSF1	VRCS2Y	VRCS	0.8895	0.8506
Yawong Wind Farm	66	YAWWF1	VBE62Y	VBE6	1.0166	1.0072
Yendon Wind Farm	66	YENDWF1	VBAW1Y	VBAW	0.9537	0.9425

Table 12 Victoria bidirectional units

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 Import MLF	2025-26 Export MLF	2024-25 Import MLF	2024-25 Export MLF
Ballarat BESS	22	BALB1	VBA23B	VBA2	0.9766	0.9809	0.9605	0.9713
Bulgana BESS	220	BULBES1	VBGT4B	VBGT	0.8907	0.8907	0.8733	0.8733
Gannawarra BESS	66	GANNB1	VKGB3G	VKGB	0.9857	1.0227	0.9597	1.0155
Hazelwood BESS	220	HBESS1	VHW23H	VHW2	0.9873	0.9802	0.9864	0.9804
Koorangie BESS	220	KESSB1	VKOT1K	VKOT	0.9704	1.0030	0.9836	0.9572
Phillip Island BESS	66	PIBESS1	VMWT12	VMWT	0.9861	0.9861	0.9848	0.9848
Rangebank BESS	220	RANGEB1	VCB33R	VCB3	0.9961	0.9908	0.9955	0.9910
Victorian Big Battery	220	VBB1	VMLB3V	VMLB	0.9918	0.9897	0.9858	0.9879

1.4 South Australia marginal loss factors

Table 13 South Australia loads

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Angas Creek	33	SANC	1.0080	1.0082
Ardrossan West	33	SARW	0.9536	0.9355
Back Callington	11	SBAC	1.0087	1.0063
Baroota – Dual MLF (Generation)	33	SBAR	0.9879	0.9739
Baroota – Dual MLF (Load)	33	SBAR	0.9928	0.9884
Berri	66	SBER	1.0493	0.9619
Berri (POWERCOR)	66	SBE1	1.0493	0.9619
Blanche	33	SBLA	0.9828	1.0236
Blanche (POWERCOR)	33	SBL1	0.9828	1.0236
Brinkworth	33	SBRK	0.9872	0.9862
Bungama Industrial	33	SBUN	0.9854	0.9772
Bungama Rural	33	SBUR	0.9965	0.9866
City West	66	SACR	1.0041	1.0064
Clare North	33	SCLN	0.9837	0.9794
Dalrymple	33	SDAL	0.9215	0.9047
Davenport	275	SDAV	0.9875	0.9764
Davenport	33	SDAW	0.9867	0.9795
Dorrien	33	SDRN	1.0062	1.0036
East Terrace	66	SETC	1.0029	1.0009
Happy Valley	66	SHVA	1.0024	1.0043
Hummocks	33	SHUM	0.9729	0.9558
Kadina East – Dual MLF (Generation)	33	SKAD	0.9505	0.9606
Kadina East – Dual MLF (Load)	33	SKAD	0.9713	0.9606
Kanmantoo	11	SKAN	1.0120	1.0109
Keith	33	SKET	0.9925	1.0151
Kilburn	66	SKLB	1.0013	1.0023
Kincraig	33	SKNC	0.9857	1.0179
Lefevre	66	SLFE	1.0001	1.0002
Leigh Creek South	11	SLCS	0.9886	1.0036
Magill	66	SMAG	1.0014	1.0021
Mannum	33	SMAN	1.0158	1.0170
Mannum – Adelaide Pipeline 1	3.3	SMA1	1.0095	1.0100
Mannum – Adelaide Pipeline 2 – Dual MLF (Generation)	3.3	SMA2	1.0257	0.9926
Mannum – Adelaide Pipeline 2 – Dual MLF (Load)	3.3	SMA2	1.0257	1.0114
Mannum – Adelaide Pipeline 3	3.3	SMA3	1.0252	0.9802

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Middleback	132	SMBK	1.0035	0.9917
Middleback	33	SMDL	1.0021	0.9894
Millbrook	132	SMLB	1.0014	1.0008
Mobilong	33	SMBL	1.0060	1.0098
Morgan – Whyalla Pipeline 1	3.3	SMW1	1.0146	0.9759
Morgan – Whyalla Pipeline 2	3.3	SMW2	1.0030	0.9766
Morgan – Whyalla Pipeline 3	3.3	SMW3	0.9897	0.9787
Morgan – Whyalla Pipeline 4	3.3	SMW4	0.9837	0.9751
Morphett Vale East	66	SMVE	1.0037	1.0025
Mount Barker South	66	SMBS	1.0027	1.0046
Mt Barker	66	SMBA	1.0027	1.0038
Mt Gambier	33	SMGA	0.9818	1.0235
Mt Gunson	33	SMGU	0.9869	0.9913
Mt Gunson South	132	SMGS	0.9874	0.9769
Munno Para	66	SMUP	0.9988	0.9996
Murray Bridge – Hahndorf Pipeline 1	11	SMH1	1.0089	1.0104
Murray Bridge – Hahndorf Pipeline 2 – Dual MLF (Generation)	11	SMH2	1.0127	0.9993
Murray Bridge – Hahndorf Pipeline 2 – Dual MLF (Load)	11	SMH2	1.0127	1.0133
Murray Bridge – Hahndorf Pipeline 3	11	SMH3	1.0105	1.0105
Neuroodla	33	SNEU	0.9656	0.9922
New Osborne	66	SNBN	1.0005	1.0003
North West Bend	66	SNWB	1.0155	0.9721
Northfield	66	SNFD	1.0016	1.0023
Para	66	SPAR	0.9994	0.9985
Parafield Gardens West	66	SPGW	0.9999	1.0004
Penola West 33	33	SPEN	0.9791	1.0201
Pimba	132	SPMB	0.9870	1.0058
Playford	132	SPAA	0.9867	0.9754
Port Lincoln	33	SPLN	0.9910	0.9798
Port Pirie	33	SPPR	0.9926	0.9851
Roseworthy	11	SRSW	1.0073	1.0058
Snuggery Industrial	33	SSNN	0.9950	1.0664
Snuggery Rural	33	SSNR	0.9533	0.9946
South Australian VTN	N/A	SJP1	0.9987	0.9950
Stony Point	11	SSPN	0.9930	0.9830
Tailem Bend	33	STAL	0.9974	1.0093
Templers	33	STEM	1.0252	1.0117
Torrens Island	66	STSY	1.0000	1.0000
Waterloo	33	SWAT	0.9790	0.9751

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Whyalla Central Substation	33	SWYC	0.9939	0.9826
Whyalla Terminal BHP	33	SBHP	0.9935	0.9831
Woomera	132	SWMA	0.9902	0.9947
Wudina	66	SWUD	0.9983	0.9915
Yadnarie	66	SYAD	0.9878	0.9792

Table 14 South Australia generation

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Adelaide Desalination Plant Hydro	66	ADPMH1	SMVE9D	SMVE	1.0037	1.0025
Adelaide Desalination Plant PV1	66	ADPPV1	SMVE6D	SMVE	1.0037	1.0025
Adelaide Desalination Plant PV2	66	ADPPV2	SMVE7D	SMVE	1.0037	1.0025
Adelaide Desalination Plant PV3	66	ADPPV3	SMVE8D	SMVE	1.0037	1.0025
Angaston Power Station	33	ANGAST1	SDRN1	SANG	1.0073	1.0094
Barker Inlet PS	275	BARKIPS1	SBPS1B	SBPS	0.9996	1.0001
Bolivar Power Station	66	BOLIVPS1	SPGG1B	SPGG	1.0000	0.9996
Bolivar WWT Plant	66	BOLIVAR1	SPGW1B	SPGW	0.9999	1.0004
Bolivar Wastewater Treatment Plant PV	66	BOWWPV1	SPGW2B	SPGW	0.9999	1.0004
Bolivar Wastewater Treatment Plant Reserve Diesel	66	BOWWDG1	SPGW5B	SPGW	0.9999	1.0004
Bungala One Solar Farm	132	BNGSF1	SBEM1B	SBEM	0.9725	0.9565
Bungala Two Solar Farm	132	BNGSF2	SBEM2B	SBEM	0.9725	0.9565
Canunda Wind Farm	33	CNUNDAWF	SSNN1	SCND	0.9333	0.9755
Cathedral Rocks Wind Farm	132	CATHROCK	SCRK	SCRK	0.9467	0.9309
Christies Beach Biogas	66	CBWWBG1	SMVE11	SMVE	1.0037	1.0025
Christies Beach Diesel 1	66	CBWWDG1	SMVE12	SMVE	1.0037	1.0025
Christies Beach Diesel 2	66	CBWWDG2	SMVE13	SMVE	1.0037	1.0025
Christies Beach Solar Farm 1	66	CBWWPV1	SMVE9C	SMVE	1.0037	1.0025
Christies Beach Solar Farm 2	66	CBWWPV2	SMVE10	SMVE	1.0037	1.0025
Clements Gap Wind Farm	132	CLEMGPWF	SCGW1P	SCGW	0.9604	0.9486
Cummins Lonsdale PS	66	LONSDALE	SMVE1	SMVE	1.0037	1.0025
Dry Creek PS Unit 1	66	DRYCGT1	SDCA1	SDPS	0.9988	0.9998
Dry Creek PS Unit 2	66	DRYCGT2	SDCA2	SDPS	0.9988	0.9998
Dry Creek PS Unit 3	66	DRYCGT3	SDCA3	SDPS	0.9988	0.9998
Goyder South Wind Farm 1A	275	GSWF1A	SROB1G	SROB	0.9697	0.9643
Goyder South Wind Farm 1B	275	GSWF1B1	SRAB1G	SRAB	0.9689	0.9641
Hallett 1 Wind Farm	275	HALLWF1	SHPS2W	SHPS	0.9663	0.9565
Hallett 2 Wind Farm	275	HALLWF2	SMOK1H	SMOK	0.9608	0.9526
Hallett PS	275	AGLHAL	SHPS1	SHPS	0.9663	0.9565
Happy Valley Solar Farm	66	HVWWPV1	SHVA3H	SHVA	1.0024	1.0043
Hornsdale Wind Farm Stage 1	275	HDWF1	SHDW1H	SHDW	0.9560	0.9423

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Hornsdale Wind Farm Stage 2	275	HDWF2	SHDW2H	SHDW	0.9560	0.9423
Hornsdale Wind Farm Stage 3	275	HDWF3	SHDW3H	SHDW	0.9560	0.9423
Ladbroke Grove PS Unit 1	132	LADBROK1	SPEW1	SPEW	0.9522	0.9712
Ladbroke Grove PS Unit 2	132	LADBROK2	SPEW2	SPEW	0.9522	0.9712
Lake Bonney Wind Farm	33	LKBONNY1	SMAY1	SMAY	0.9297	0.9709
Lake Bonney Wind Farm Stage 2	33	LKBONNY2	SMAY2	SMAY	0.9297	0.9709
Lake Bonney Wind Farm Stage 3	33	LKBONNY3	SMAY3W	SMAY	0.9297	0.9709
Lincoln Gap Wind Farm	275	LGAPWF1	SLGW1L	SLGW	0.9689	0.9576
Lincoln Gap Wind Farm Stage 2	275	LGAPWF2	SLGW4L	SLGW	0.9689	0.9576
Mannum Solar Farm 2	33	MANNSF2	SMAE1M	SMAE	0.9932	0.9937
Mannum – Adelaide Pipeline Pumping Station No 2 Solar Farm - Dual MLF (Generation)	3.3	MAPS2PV1	SMA21M	SMA2	1.0257	0.9926
Mannum – Adelaide Pipeline Pumping Station No 2 Solar Farm - Dual MLF (Load)	3.3	MAPS2PV1	SMA21M	SMA2	1.0257	1.0114
Mannum – Adelaide Pipeline Pumping Station No 3 Solar Farm	3.3	MAPS3PV1	SMA31M	SMA3	1.0252	0.9802
Mintaro PS	132	MINTARO	SMPS	SMPS	0.9651	0.9667
Morgan Whyalla 1 Solar Farm	3.3	MWPS1PV1	SMW11M	SMW1	1.0146	0.9759
Morgan Whyalla 2 Solar Farm	3.3	MWPS2PV1	SMW21M	SMW2	1.0030	0.9766
Morgan Whyalla 3 Solar Farm	3.3	MWPS3PV1	SMW31M	SMW3	0.9897	0.9787
Morgan Whyalla 4 Solar Farm	3.3	MWPS4PV1	SMW41M	SMW4	0.9837	0.9751
Morphett Vale East 66	66	SATGS1	SMVG1L	SMVG	1.0018	1.0012
Mt Millar Wind Farm	33	MTMILLAR	SMTM1	SMTM	0.9403	0.9162
Murray Bridge – Hahndorf Pipeline Solar Farm 2 – Dual MLF (Generation)	11	MBPS2PV1	SMH21M	SMH2	1.0127	0.9993
Murray Bridge – Hahndorf Pipeline Solar Farm 2 – Dual MLF (Load)	11	MBPS2PV1	SMH21M	SMH2	1.0127	1.0133
North Brown Hill Wind Farm	275	NBHWF1	SBEL1A	SBEL	0.9579	0.9467
O.C.P.L. Unit 1	66	OSB-AG	SNBN1	SOCP	0.9995	0.9994
Para 66 Generation	66	SATGN1	SPAG1E	SPAG	0.9992	0.9977
Pelican Point PS	275	PPCCGT	SPPT	SPPT	0.9983	0.9988
Port Augusta Renewable Energy Park – Solar	275	PAREPS1	SDAP2P	SDAP	0.9735	0.9608
Port Augusta Renewable Energy Park – Wind	275	PAREPW1	SDAP1P	SDAP	0.9735	0.9608
Port Lincoln 3	33	POR03	SPL31P	SPL3	0.9916	0.9724
Port Lincoln PS	132	POR01	SPLN1	SPTL	0.9895	0.9679
Pt Stanvac PS	66	PTSTAN1	SMVE3P	SMVE	1.0037	1.0025
Quarantine PS Unit 1	66	QPS1	SQPS1	SQPS	0.9957	0.9949
Quarantine PS Unit 2	66	QPS2	SQPS2	SQPS	0.9957	0.9949
Quarantine PS Unit 3	66	QPS3	SQPS3	SQPS	0.9957	0.9949
Quarantine PS Unit 4	66	QPS4	SQPS4	SQPS	0.9957	0.9949
Quarantine PS Unit 5	66	QPS5	SQPS5Q	SQPS	0.9957	0.9949

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Snapper Point PS	275	SNAPPER1	SNPT1S	SNPT	0.9987	0.9996
Snowtown Wind Farm	33	SNOWTWN1	SNWF1T	SNWF	0.9157	0.8932
Snowtown Wind Farm Stage 2 – North	275	SNOWNTH1	SBLWS1	SBLW	0.9695	0.9613
Snowtown Wind Farm Stage 2 – South	275	SNOWSTH1	SBLWS2	SBLW	0.9695	0.9613
Snuggery PS Units 1 to 3	132	SNUG1	SSGA1	SSPS	0.9723	0.9608
Starfish Hill Wind Farm	66	STARHLWF	SMVE2	SMVE	1.0037	1.0025
Tailem Bend Solar Farm	132	TBSF1	STBS1T	STBS	0.9952	1.0090
Tailem Bend Solar Farm 2	132	TB2SF1	STBB1T	STBB	0.9945	1.0102
Tatiara Meat Co	33	TATIARA1	SKET1E	SKET	0.9925	1.0151
The Bluff Wind Farm	275	BLUFF1	SBEL2P	SBEL	0.9579	0.9467
Torrens Island PS B Unit 1	275	TORRB1	STSB1	STPS	0.9992	0.9998
Torrens Island PS B Unit 2	275	TORRB2	STSB2	STPS	0.9992	0.9998
Torrens Island PS B Unit 3	275	TORRB3	STSB3	STPS	0.9992	0.9998
Torrens Island PS B Unit 4	275	TORRB4	STSB4	STPS	0.9992	0.9998
Torrens Island PS Load	66	TORNL1	STSYL	STSY	1.0000	1.0000
Waterloo Wind Farm	132	WATERLWF	SWLE1R	SWLE	0.9624	0.9547
Wattle Point Wind Farm	132	WPWF	SSYP1	SSYP	0.8456	0.8179
Willogoleche Wind Farm	275	WGWF1	SWGL1W	SWGL	0.9601	0.9498
Wingfield 1 LFG PS	66	WINGF1_1	SKLB1W	SKLB	1.0013	1.0023
Wingfield 2 LFG PS	66	WINGF2_1	SNBN2W	SNBN	1.0005	1.0003

Table 15 South Australia bidirectional units

Generator	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 Import MLF	2025-26 Export MLF	2024-25 Import MLF	2024-25 Export MLF
Adelaide Desalination BESS	66	ADPBA1	SMVE14	SMVE	1.0037	1.0037	1.0025	1.0025
Blyth BESS	275	BLYTHB1	SBYW1B	SBYW	1.0072	0.9778	0.9866	0.9711
Bolivar BESS	66	BOWWBA1	SPGW6B	SPGW	0.9999	0.9999	1.0004	1.0004
Christies Beach BESS	66	CBWWBA1	SMVE15	SMVE	1.0037	1.0037	1.0025	1.0025
Dalrymple North BESS	33	DALNTH1	SDAN3D	SDAN	0.9337	0.9290	0.9005	0.9092
Happy Valley BESS	66	HVWWBA1	SHVA4H	SHVA	1.0024	1.0024	1.0043	1.0043
Hornsdale BESS	275	HPR1	SMTL3H	SMTL	0.9806	0.9761	0.9625	0.9657
Lake Bonney BESS	33	LBB1	SLBB3L	SLBB	0.9905	0.9502	1.0370	0.9841
Tailem Bend 2 BESS	132	TB2B1	STBB4T	STBB	0.9959	0.9959	1.0102	1.0102
Torrens Island BESS	275	TIB1	STPB3T	STPB	0.9993	0.9992	0.9996	0.9998

1.5 Tasmania marginal loss factors

Table 16 Tasmania loads

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Arthurs Lake	6.6	TAL2	0.9891	0.9846
Avoca	22	TAV2	1.0121	1.0111
Boyer SWA	6.6	TBYA	1.0164	1.0161
Boyer SWB	6.6	TBYB	1.0239	1.0254
Bridgewater	11	TBW2	1.0202	1.0275
Burnie	22	TBU3	0.9883	0.9835
Chapel St.	11	TCS3	1.0086	1.0147
Comalco	220	TCO1	1.0006	1.0006
Creek Road	33	TCR2	1.0099	1.0150
Derby	22	TDE2	0.9576	0.9625
Derwent Bridge	22	TDB2	0.9375	0.9324
Devonport	22	TDP2	0.9895	0.9842
Electrona	11	TEL2	1.0208	1.0294
Emu Bay	11	TEB2	0.9873	0.9817
Emu Bay 22	22	TEB3	0.9881	0.9831
Fisher (Rowallan)	220	TFI1	0.9533	0.9642
Fisher 220 DNSP	220	TFI2	0.9533	0.9642
George Town	22	TGT3	1.0015	1.0019
George Town (Basslink)	220	TGT1	1.0000	1.0000
Gordon	22	TGO2	0.9918	0.9892
Greater Hobart Area VTN	N/A	TVN1	1.0117	1.0167
Hadspen	22	THA3	0.9917	0.9937
Hampshire	110	THM2	0.9863	0.9798
Huon River	11	THR2	1.0225	1.0285
Kermandie	11	TKE2	1.0266	1.0330
Kingston	11	TKI2	1.0167	1.0248
Kingston	33	TK13	1.0136	1.0206
Knights Road	11	TKR2	1.0247	1.0307
Lindisfarne	33	TLF2	1.0127	1.0172
Meadowbank	22	TMB2	0.9971	0.9957
Mornington	33	TMT2	1.0123	1.0184
Mowbray	22	TMY2	0.9909	0.9930
New Norfolk	22	TNN2	1.0092	1.0142
Newton	11	TNT3	0.9586	0.9542
Newton	22	TNT2	0.9765	0.9683
North Hobart	11	TNH2	1.0096	1.0143

Location	Voltage (kV)	TNI code	2025-26 MLF	2024-25 MLF
Norwood	22	TNW2	0.9894	0.9923
Palmerston	22	TPM3	0.9834	0.9748
Port Latta	22	TPL2	0.9779	0.9615
Que	22	TQU2	0.9833	0.9741
Queenstown	11	TQT3	0.9690	0.9526
Queenstown	22	TQT2	0.9649	0.9565
Railton	22	TRA2	0.9908	0.9847
Risdon	11	TRI3	1.0147	1.0187
Risdon	33	TRI4	1.0146	1.0183
Rokeby	11	TRK2	1.0154	1.0221
Rosebery	44	TRB2	0.9734	0.9666
Savage River	22	TSR2	1.0061	0.9994
Scottsdale	22	TSD2	0.9699	0.9740
Sheffield	22	TSH3	0.9761	0.9761
Smithton	22	TST2	0.9666	0.9486
Sorell	22	TSO2	1.0179	1.0362
St Leonard	22	TSL2	0.9902	0.9925
St Leonards 22kV - Scheduled Load	22	TSL3	0.9906	0.9921
St. Marys	22	TSM2	1.0245	1.0316
Starwood	110	TSW1	1.0003	1.0008
Tamar Region VTN	N/A	TVN2	0.9918	0.9942
Temco	110	TTE1	1.0047	1.0039
Trevallyn	22	TTR2	0.9910	0.9941
Triabunna	22	TTB2	1.0282	1.0452
Tungatinah	22	TTU2	0.9381	0.9335
Ulverstone	22	TUL2	0.9866	0.9819
Waddamana	22	TWA2	0.9494	0.9440
Wayatinah	11	TWY2	0.9919	0.9920
Wesley Vale	22	TWV2	0.9859	0.9810

Table 17 Tasmania generation

Generator description	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Basslink (George Town)	220	BLNKTAS	TGT11	TGT1	1.0000	1.0000
Bastyan	220	BASTYAN	TFA11	TFA1	0.9340	0.9313
Bell Bay Three No.1	110	BBTHREE1	TBB11	TBB1	0.9986	0.9977
Bell Bay Three No.2	110	BBTHREE2	TBB12	TBB1	0.9986	0.9977
Bell Bay Three No.3	110	BBTHREE3	TBB13	TBB1	0.9986	0.9977
Bluff Point and Studland Bay Wind Farms	110	WOOLNTH1	TST11	TST1	0.9224	0.8951
Butlers Gorge	110	BUTLERSG	TBG11	TBG1	0.9396	0.9269

Generator description	Voltage (kV)	DUID	Connection Point ID	TNI code	2025-26 MLF	2024-25 MLF
Catagunya	220	LI_WY_CA	TLI11	TLI1	0.9855	0.9899
Cethana	220	CETHANA	TCE11	TCE1	0.9473	0.9580
Cluny	220	CLUNY	TCL11	TCL1	0.9857	0.9922
Devils Gate	110	DEVILS_G	TDG11	TDG1	0.9616	0.9628
Fisher	220	FISHER	TFI11	TFI1	0.9533	0.9642
Gordon	220	GORDON	TGO11	TGO1	0.9594	0.9622
Granville Harbour Wind Farm	220	GRANWF1	TGH11G	TGH1	0.9555	0.9473
John Butters	220	JBUTTERS	TJB11	TJB1	0.9386	0.9245
Lake Echo	110	LK_ECHO	TLE11	TLE1	0.9314	0.9293
Lemonthyme	220	LEM_WIL	TSH11	TSH1	0.9676	0.9678
Liapootah	220	LI_WY_CA	TLI11	TLI1	0.9855	0.9899
Mackintosh	110	MACKNTSH	TMA11	TMA1	0.9200	0.9190
Meadowbank	110	MEADOWBK	TMB11	TMB1	0.9811	0.9872
Musselroe	110	MUSSELR1	TDE11M	TDE1	0.9101	0.9199
Paloona	110	PALOONA	TPA11	TPA1	0.9648	0.9657
Poatina	110	POAT110	TPM21	TPM2	0.9763	0.9641
Poatina	220	POAT220	TPM11	TPM1	0.9845	0.9802
Reece No.1	220	REECE1	TRCA1	TRCA	0.9203	0.9212
Reece No.2	220	REECE2	TRCB1	TRCB	0.9187	0.9202
Repulse	220	REPULSE	TCL12	TCL1	0.9857	0.9922
Rowallan	220	ROWALLAN	TFI12	TFI1	0.9533	0.9642
Tamar Valley Closed Cycle Gas Turbine (CCGT)	220	TVCC201	TTV11A	TTV1	1.0000	1.0000
Tamar Valley Open Cycle Gas Turbine (OCGT)	110	TVPP104	TBB14A	TBB1	0.9986	0.9977
Tarraleah	110	TARRALEA	TTA11	TTA1	0.9419	0.9315
Trevallyn	110	TREVALLN	TTR11	TTR1	0.9852	0.9900
Tribute	220	TRIBUTE	TTI11	TTI1	0.9265	0.9246
Tungatinah	110	TUNGATIN	TTU11	TTU1	0.9061	0.9078
Wayatinah	220	LI_WY_CA	TLI11	TLI1	0.9855	0.9899
Wild Cattle Hill Wind Farm	220	CTHLWF1	TWC11C	TWC1	0.9924	0.9908
Wilmot	220	LEM_WIL	TSH11	TSH1	0.9676	0.9678

2 Changes in marginal loss factors

2.1 Marginal loss factors in the NEM

The MLF for a connection point represents the marginal electrical transmission losses in electrical power flow between that connection point and the Regional Reference Node (RRN) for the region in which the connection point is located.

An MLF below 1 indicates that an incremental increase in power flow from the connection point to the RRN would increase total losses in the network. An MLF above 1 indicates the opposite.

According to the current NEM design, the difference between the cost of electricity at a connection point remote from the RRN and the cost of electricity at the RRN is directly proportional to the MLF for the connection point. For example, if the MLF for a connection point is 0.9, then the effective values of electricity purchased or sold at that connection point will be 90% of the regional reference price. Consequently, a fall in MLF at a connection point is likely to have a positive impact on customers and a negative impact on generators.

More information on the treatment of electricity losses in the NEM is available on AEMO's website[9].

2.2 Reasons marginal loss factors change

There are three main reasons why the MLF for a connection point changes from year to year:

1. Changes to projected power flows over the transmission network caused by projected changes to power system generation, storage and demand. This includes the commencement of operation of new generation and storage capacity, the retirement of existing power stations, and revised electricity consumption forecasts.
   - If the projected power flow from a connection point towards the RRN increases, then the MLF for that connection point would be expected to decrease. Conversely, if the projected power flow from a connection point towards the RRN decreases, then the MLF for that connection point would be expected to increase.
2. Forecast variations in seasonal patterns, diurnal patterns, intra-year commencement of operation, intra-year cessation of operation.
   - As MLF outcomes are volume weighted, year-on-year variations in patterns of either consumption or export (load and generation respectively) can result in material variations in MLF outcomes. For further detail on the impact of volume weighting on MLF outcomes, please refer to Appendix A3.
   - Increasingly variations in diurnal trends in power flows (driven by solar, wind, storage and a changing demand profile) are driving MLF outcomes, resulting in technology-based rather than location-based movements. Movements in MLF outcomes are increasingly observed as impacting a technology type (solar generation in particular), where the variation in the shape of projected power flows coincides with the output or consumption patterns of a given technology.

[9] AEMO, Treatment of Loss Factors in the National Electricity Market,1 July 2012, at https://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Loss_Factors_and_Regional_Boundaries/2016/Treatment_of_Loss_Factors_in_the_NEM.pdf.

3. Changes to the impedance of the transmission network caused by augmentation of the transmission network, such as building new transmission lines.
   - If augmentations decrease the impedance of the transmission network between a connection point and the RRN, then the MLF for the connection point would be expected to move closer to 1.

The location of new generation projects and load developments on the transmission and distribution network has a significant impact on the MLFs in an area. As more generation is connected to electrically weak areas of the network that are remote from the RRN, MLFs in these areas will continue to decline.

2.3 Changes between the draft 2025-26 MLFs and the final 2025-26 MLFs

In March 2025, AEMO published a draft report containing indicative MLFs for 2025-26. While the draft report is intended to provide stakeholders with early insight into possible future MLF outcomes, there are several variances between the input data utilised in the draft and final MLF studies.

Following the publication of the draft report, AEMO was provided with updated information regarding the timing of the commencement of operation of a committed project (storage) in northern Queensland. The revised assumptions led to variations in flows, and notably decreased local consumption during daylight hours. This in turn led to a reduction in outcomes for several solar farms in northern and central Queensland.

On 25 March 2025, AEMO published a revised draft report following the identification of a network model error in the underlying network model that has since been corrected. This correction led to a reduction in the increases previously seen in south-west New South Wales and north-west Victoria.

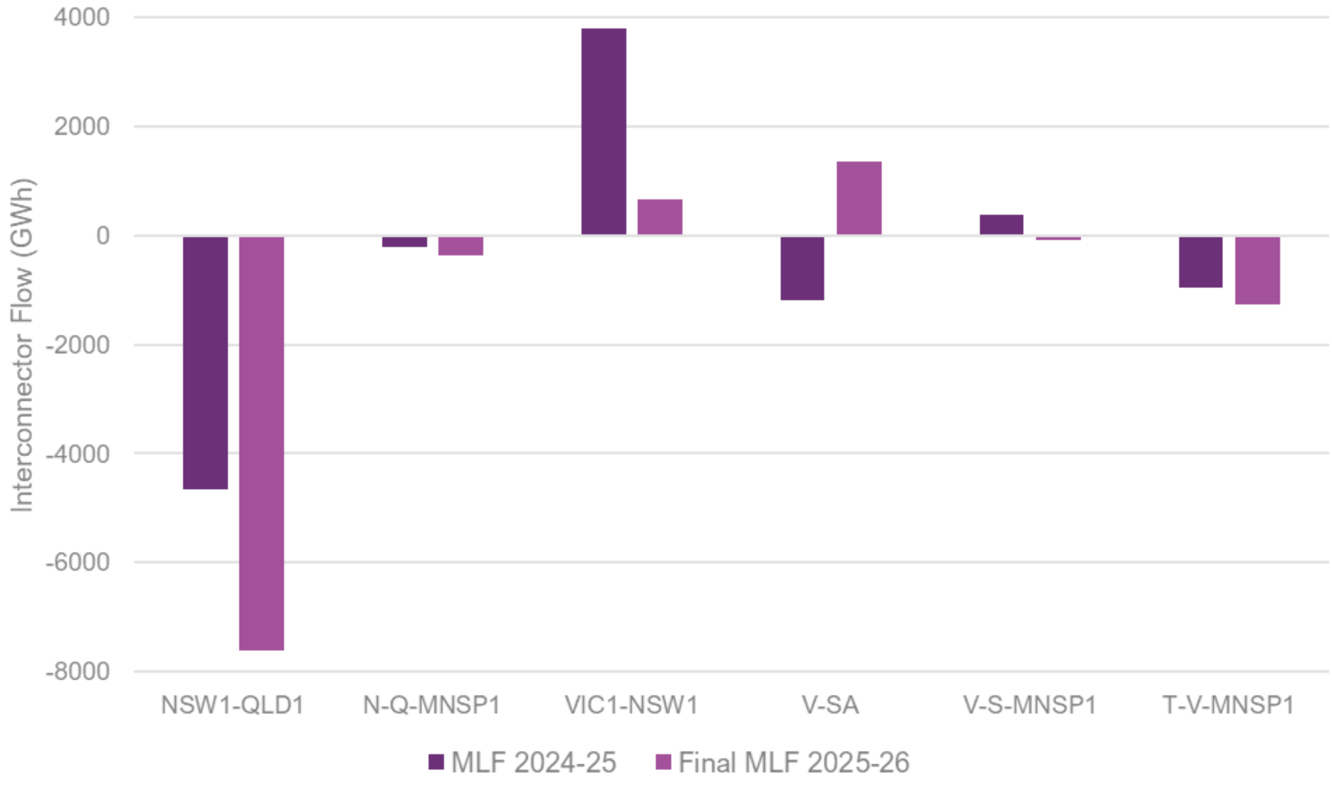
2.4 Changes between 2024-25 MLFs and 2025-26 MLFs

This section summarises the changes in MLFs for 2024-25 compared to the 2025-26 MLFs at a sub-regional level, and the general trends driving the changes. Appendix A2 provides more detailed information on the inputs, methodology, and assumptions for the 2025-26 calculations, and key changes from 2024-25.

For further details on how MLFs are calculated, refer to Section A1.2.

Figure 3 shows the annual projected gigawatt-hours (GWh) flows for all interconnectors within the NEM for both the 2024-25 and 2025-26 MLF studies.

Figure 3 2024-25 versus 2025-26 MLF interconnector flow projections



2.4.1 Changes to marginal loss factors in Queensland

Figure 4 shows a geographical representation of MLF variations at Queensland connection points between 2024-25 and 2025-26. Table 18 shows the average sub-regional year-on-year MLF variations between 2024-25 and 2025-26.

Primary drivers of changes

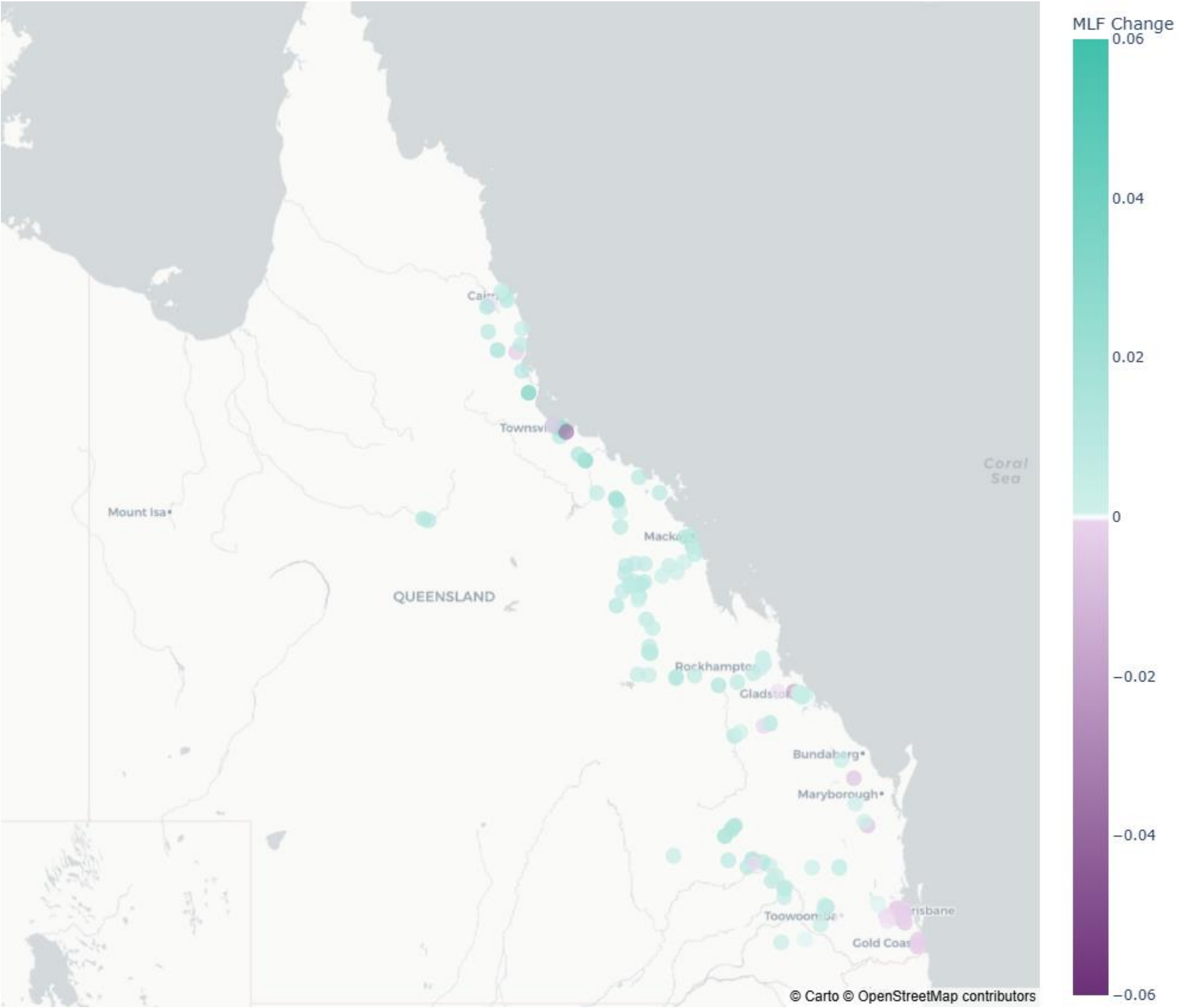
The primary drivers of change in Queensland are variations in projected generation and storage within Queensland. As shown in Figure 3, exports to New South Wales are projected to increase; however, as this increase is largely driven by new generation connecting in the south of the state, it has not had much impact on MLF changes in Queensland.

The cause of these variations is largely a projected change in generation, storage and the subsequent impact to the shape of flows within Queensland rather than variations to net flows. The addition of committed storage and a projected increase in economic curtailment has resulted in variations in projected flow patterns that impact certain generation technologies more than others in terms of MLF outcomes. Specifically, the projected increase in storage and economic curtailment results in lower projected power flow at times of high solar generation and low demand.

Notable changes

While the sub-regional average percentage changes are all within a percent, there has been a notable trend of increase in the MLF outcomes for solar generation in northern Queensland. This has been driven by projected economic curtailment levels of solar generation and a projected increase in local storage, both of which have resulted in favourable variations in projected southerly flow toward the RRN for solar generation, which have seen year-on-year increases of over 1%.

Figure 4 Queensland changes compared to 2025-26 MLFs



Note: Map data from OpenSteetMap at openstreetmap.org/copyright.

Table 18 Queensland sub-region year-on-year average MLF variation

Sub-region	Average MLF change 2024-25 to 2025-26	
	Generation	Load
Central	0.33%	0.31%
North	0.82%	0.88%
South-east	0.08%	-0.13%
South-west	0.56%	0.89%

2.4.2 Changes to marginal loss factors in New South Wales

Figure 5 shows a geographical representation of MLF variations at New South Wales connection points between 2024-25 and 2025-26. Table 19 shows the average sub-regional year-on-year MLF variations between 2024-25 and 2025-26.

Primary drivers of changes

The primary drivers of change in New South Wales are variations in projected imports from Queensland, a projected increase in economic curtailment, new storage capacity and the subsequent impact on the projected shape of flows.

A projected increase in the flow south on the Queensland – New South Wales Interconnector (QNI) and Terranora interconnector has resulted in an increase in projected power flow from northern New South Wales to the RRN in Sydney. This projected increase in flows decreases loss factors in the north of the state.

The commissioning of the first stage of Project Energy Connect (PEC) between Buronga in south-west New South Wales and Robertstown in northern South Australia has resulted in a reduction in projected power flow to the RRN on the 220 kilovolts (kV) network in south-west New South Wales between Broken Hill and Darlington Point.

A projected increase in new storage capacity in Victoria, increases in projected interconnector import from Queensland, and higher levels of projected economic curtailment of solar generation are leading to reduced projected interconnector import from Victoria to New South Wales.

Notable changes

The northern New South Wales sub-region average MLFs have decreased for both generation and load, by 1.21% and 3.23% respectively. This has been driven by both a projected variation in the diurnal pattern of New South Wales – Queensland flows and a net increase in projected southerly flow. The projected diurnal variation has resulted in a projected increase in flow that is weighted toward nighttime. This variation has resulted in reductions predominately to wind generation which have seen reductions in MLF outcomes of up to 5% in northern New South Wales.

The south-western New South Wales sub-region average MLFs have increased for both generation and load, by 4.72% and 5.18% respectively. This has been driven by an increase in projected economic curtailment and to a lesser extent a projected increase in the capacity of local storage and a projected decrease in net imports from Victoria.

The Snowy sub-region average MLFs have increased for both generation and load, by 2.13% and 2.34% respectively. This has been driven by a projected decrease in net imports from Victoria.

Figure 5 New South Wales changes compared to 2025-26 MLFs

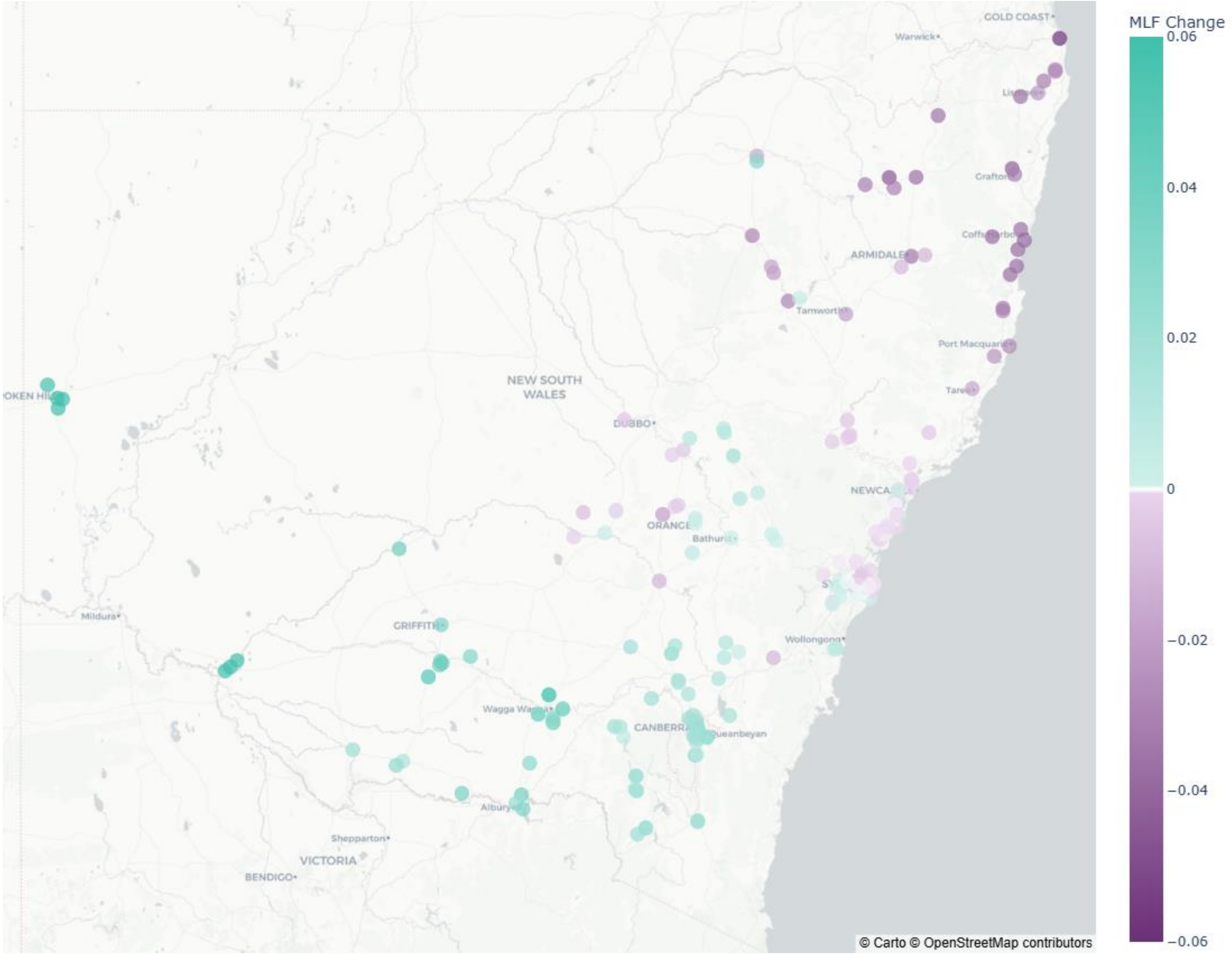


Table 19 New South Wales sub-region year-on-year average MLF variation

Sub-region	Average MLF change 2024-25 to 2025-26	
	Generation	Load
ACT	1.78%	2.11%
Hunter	0.06%	-0.14%
North	-1.21%	-3.23%
South-west	4.72%	5.18%
Snowy	2.13%	2.34%
Sydney	0.91%	-0.05%
West	0.97%	0.14%

2.4.3 Changes to marginal loss factors in Victoria

Figure 6 shows a geographical representation of MLF variations at Victorian connection points between 2024-25 and 2025-26. Table 20 shows the average sub-regional year on year MLF variations between 2024-25 and 2025-26.

Primary drivers of changes

The primary drivers of change are a projected increase in new storage capacity in Victoria and higher levels of projected economic curtailment of solar generation, which are leading to reduced projected interconnector export from Victoria to New South Wales.

Projected increases in power system demand in South Australia is changing the projected power flow on the Heywood interconnector from net import into Victoria to being net export to South Australia.

Notable changes

The central Victoria sub-region MLFs have increased for both generation and load, by 1.32% and 1.11% respectively. This has primarily been driven by a projected increase in economic curtailment.

The northern Victoria sub-region MLFS have decreased for both generation and load, by 0.87% and 1.13% respectively. This has been driven by a projected decrease in net exports to New South Wales.

The north-western Victoria sub-region average MLFs have increased for both generation and load, by 8.02% and 6.1% respectively. This has been driven by a projected increase in economic curtailment and to a lesser extent a projected increase in the capacity of local storage.

Figure 6 Victoria changes compared to 2025-26 MLFs

Table 20 Victoria sub-region year-on-year average MLF variation

Sub-region	Average MLF change 2024-25 to 2025-26	
	Generation	Load
Central	1.32%	1.11%
Latrobe Valley	0.00%	0.07%
Melbourne	-0.01%	0.06%
North	-0.87%	-1.13%
North-west	8.02%	6.11%
West	1.23%	0.52%

2.4.4 Changes to marginal loss factors in South Australia

Figure 7 shows a geographical representation of MLF variations at South Australian connection points between 2024-25 and 2025-26. Table 21 shows the average sub-regional year on year MLF variations between 2024-25 and 2025-26.

Primary drivers of changes

The primary driver of change in South Australia is increased projected consumption within South Australia and a projected shift from net exporter to net importer, driven in part by projected power flows over Stage 1 of PEC. This shift leads to a projected reversal in flow and projected net flows from Victoria to South Australia on the Victoria – South Australia interconnector which now comprises both Heywood and Stage 1 of PEC.

Notable changes

The northern South Australia sub-region average MLFs have increased for generation and load by 1.95% and 0.68% respectively.

The Riverina sub-region average MLFs have increased for load by 3.86%. This has predominantly been driven by a reversal from projected net imports to projected net exports to Victoria via Murraylink [10].

The south-eastern South Australia sub-region average MLFs have decreased for generation and load by 3.26% and 4.36% respectively. This has predominantly been driven by a change from projected net exports to projected net imports from Victoria via Victoria – South Australia.

[10] Murraylink outcomes are determined via historical observations of trends between historical Murraylink and Victoria – South Australia; additionally, dynamic ratings apply in the South Australia to Victoria direction dependant on the load at Northwest Bend and Berri.

Figure 7 South Australia changes to 2025-26 MLFs

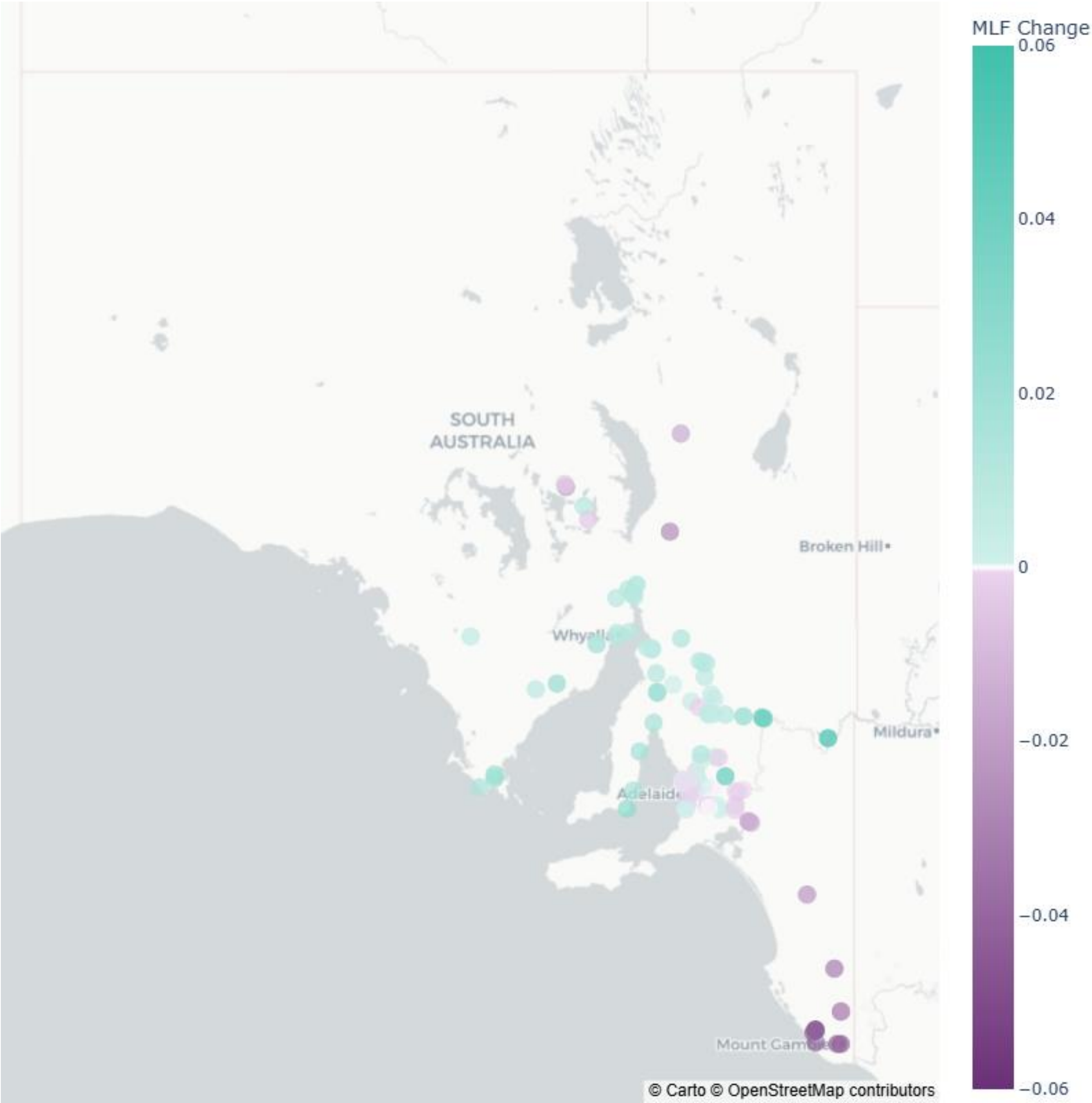


Table 21 South Australia sub-region year-on-year average MLF variation

Sub-region	Average MLF change 2024-25 to 2025-26	
	Generation	Load
Adelaide	0.18%	0.14%
North	1.95%	0.68%
Riverland	NA	3.85%
South-east	-3.26%	-4.36%

2.4.5 Changes to marginal loss factors in Tasmania

Figure 8 shows a geographical representation of MLF variations at Tasmanian connection points between 2024-25 and 2025-26. Table 22 shows the average sub-regional year on year MLF variations between 2024-25 and 2025-26.

Primary drivers of changes

The primary drivers of change in Tasmania are a projected variation in generation within Tasmania which is driven by variations in water storage levels, projected generation availability, and a projected increase in imports from the mainland via Basslink.

Notable changes

An decrease in average MLFs in south-eastern Tasmania, driven by a projected increase generation and a projected decrease in consumption.

An increase in average MLFs in western Tasmania due to a projected decrease in generation in the area.

Figure 8 Tasmania changes to 2025-26 MLFs

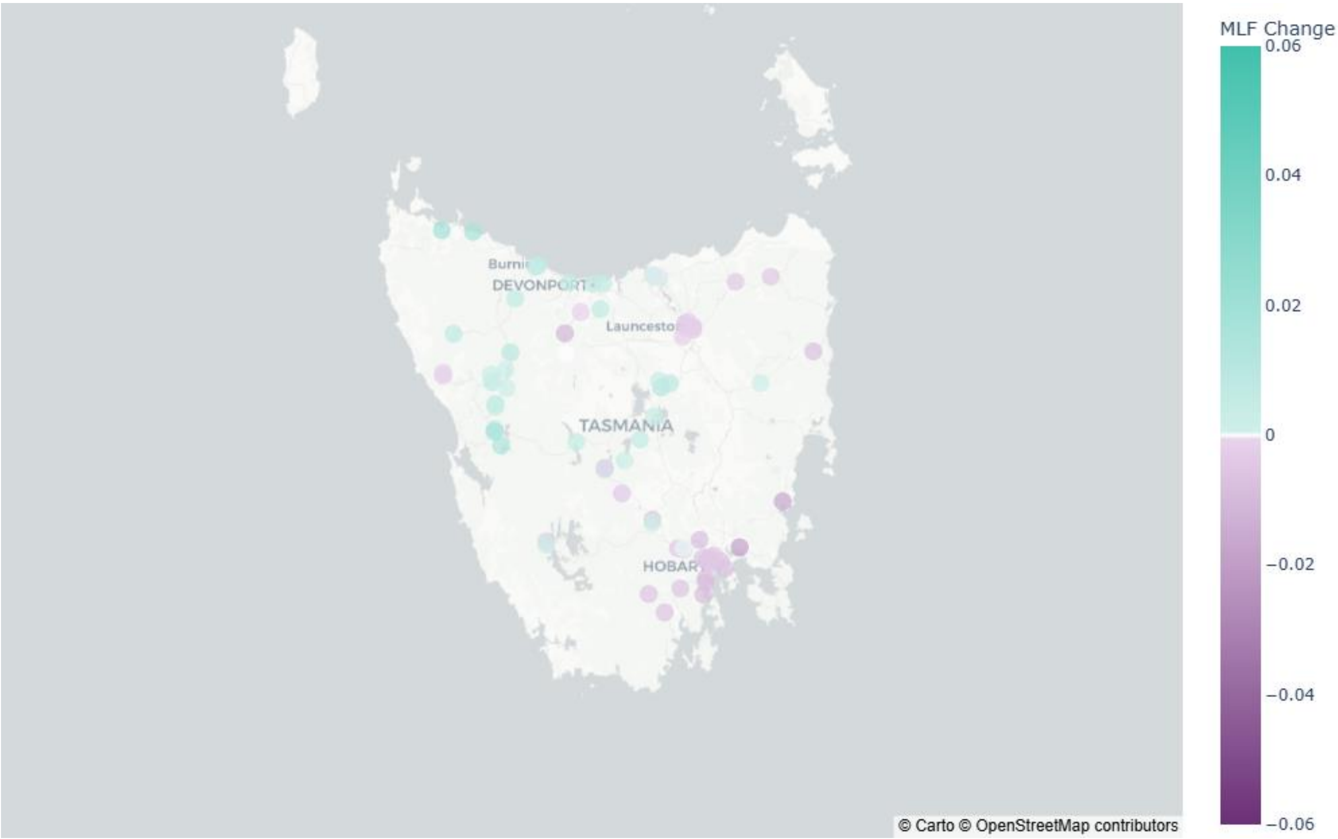


Table 22 Tasmania sub-region year-on-year average MLF variation

Sub-region	Average MLF change 2024-25 to 2025-26	
	Generation	Load
George Town	0.05%	0.00%
North-west	0.09%	0.44%
North	0.04%	-0.13%
South	0.08%	-0.42%
West coast	0.39%	0.89%

3 Inter-regional loss factor equations

This section describes the inter-regional loss factor equations.

Inter-regional loss factor equations describe the variation in loss factor at one RRN with respect to an adjacent RRN. These equations are necessary to cater for the large variations in loss factors that may occur between RRNs as a result of different power flow patterns. This is important in minimising the distortion of economic dispatch of generating units.

Loss factor equation (South Pine 275 referred to Sydney West 330)

= 0.8901 + 1.7965E-04*NQ_t + 3.8443E-06*Nd + 1.5932E-05*Qd

Loss factor equation (Sydney West 330 referred to Thomastown 66)

= 1.0556 + 1.5761E-04*VNt - 6.6712E-06*Vd + 1.3820E-05*Nd - 6.0293E-05*Sd

Loss factor equation (Torrens Island 66 referred to Thomastown 66)[11]

= 0.9721 + 2.6801E-04*VSA_t - 1.4896E-05*Vd + 5.1080E-05*Sd + 1.6981E-06*Nd

Where:

Qd = Queensland demand

Vd = Victorian demand

Nd = New South Wales demand

Sd = South Australian demand

NQ_t = transfer from New South Wales to Queensland

VN_t = transfer from Victoria to New South Wales

VSA_t = transfer from Victoria to South Australia

[11] An additional term, New South Wales demand (Nd), is included for FY2025-26 with the modelling of PEC.

Figure 9 MLF (South Pine 275 referred to Sydney West 330)

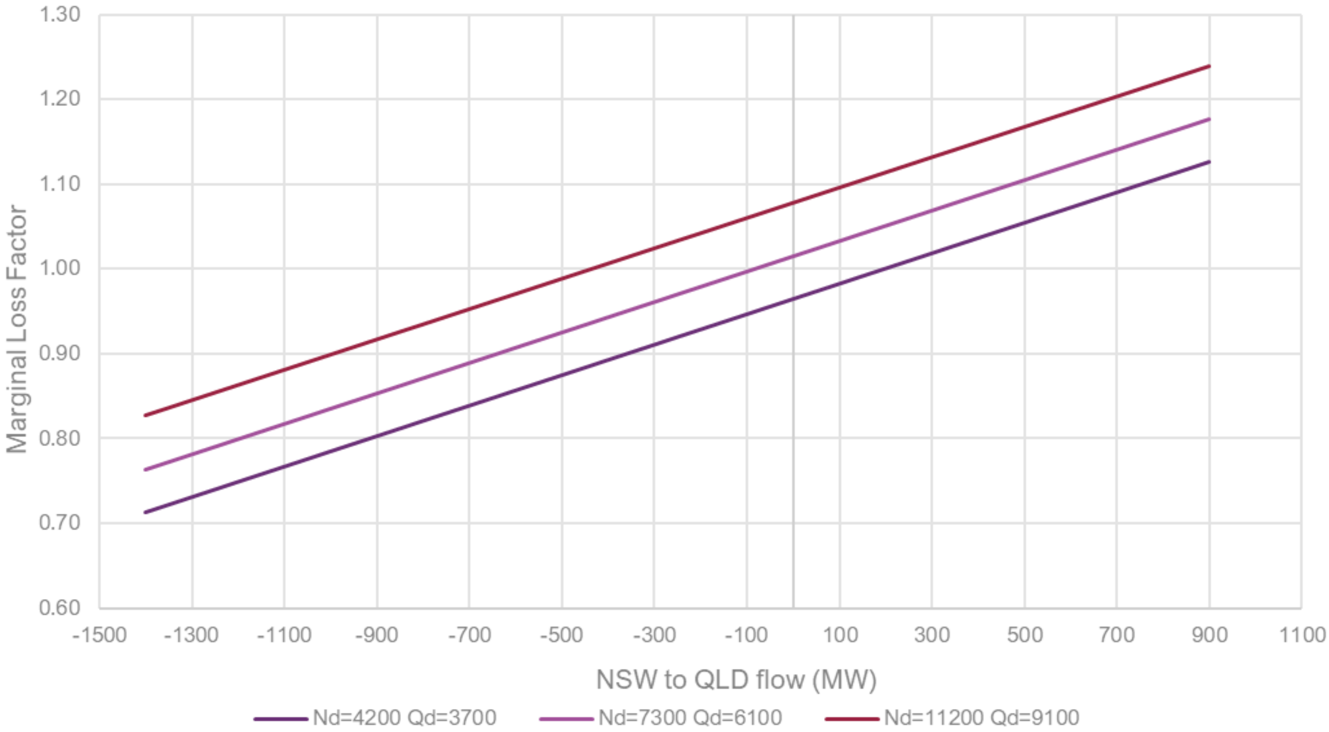


Table 23 South Pine 275 referred to Sydney West 330 MLF versus New South Wales to Queensland flow coefficient statistics

Coefficient	Qd	Nd	NQt	Constant
Coefficient value	1.5932E-05	3.8443E-06	1.7965E-04	0.8901

Figure 10 MLF (Sydney West 330 referred to Thomastown 66)

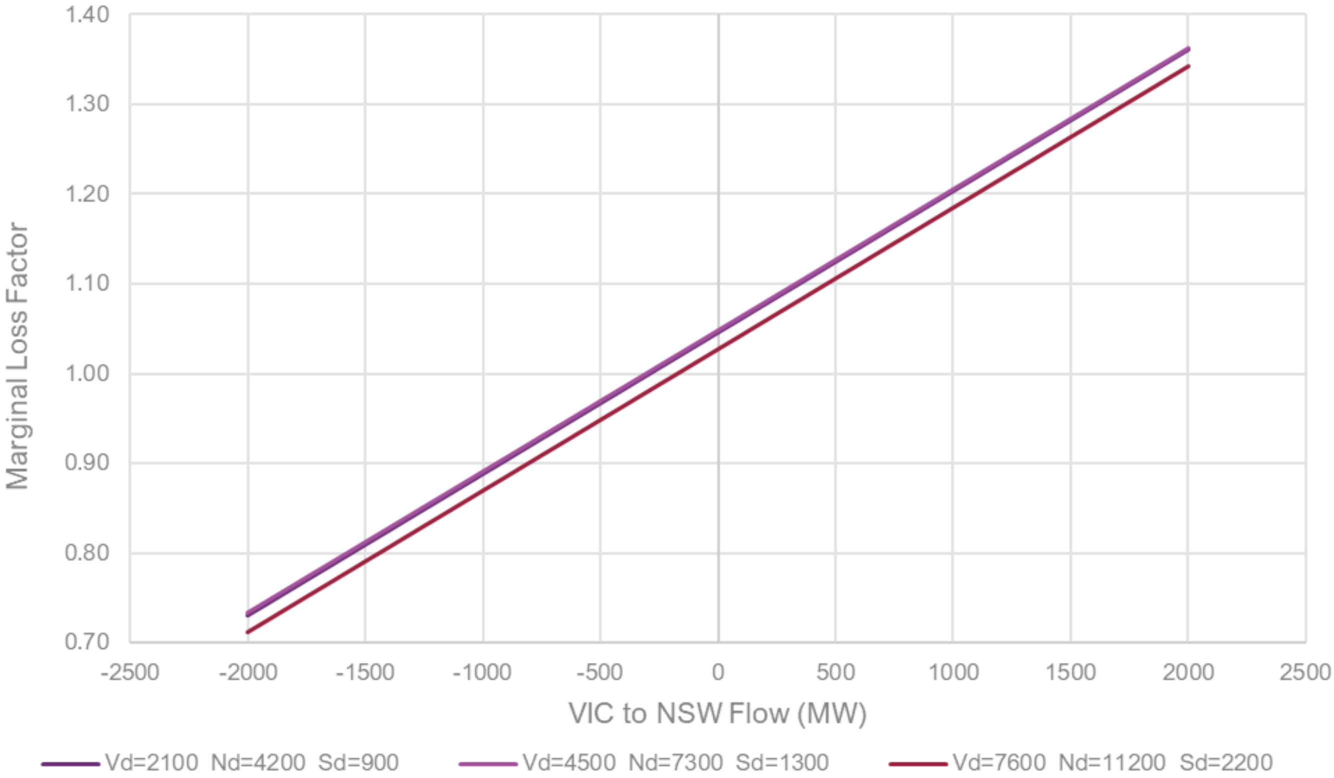


Table 24 Sydney West 330 referred to Thomastown 66 MLF versus Victoria to New South Wales flow coefficient statistics

Coefficient	Sd	Nd	Vd	VNt	Constant
Coefficient value	-6.0293E-05	1.3820E-05	-6.6712E-06	1.5761E-04	1.0556

Figure 11 MLF (Torrens Island 66 referred to Thomastown 66)

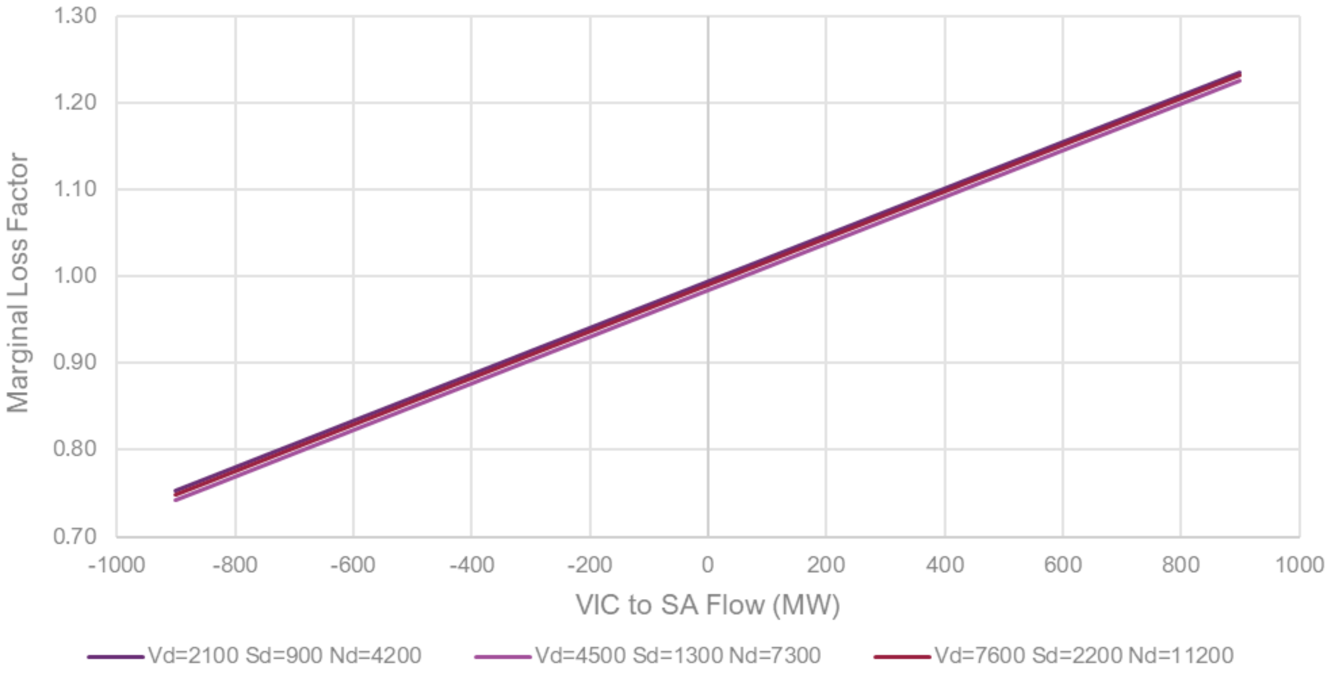


Table 25 Torrens Island 66 referred to Thomastown 66 MLF versus Victoria to South Australia flow coefficient statistics

Coefficient	Sd	Vd	Nd	VSAt	Constant
Coefficient value	5.1080E-05	-1.4896E-05	1.6981E-06	2.6801E-04	0.9721

4 Inter-regional loss equations

This section describes how inter-regional loss equations are derived.

Inter-regional loss equations are derived by integrating the equation (Loss factor – 1) with respect to the interconnector flow, that is:

$$\text{Losses} = \int(\text{Loss factor} - 1)\, d\text{Flow}$$

South Pine 275 referred to Sydney West 330 notional link average losses

$= (-0.1099 + 3.8443E\text{-}06*Nd + 1.5932E\text{-}05*Qd)*NQ_t + 8.9827E\text{-}05*NQ_t^2$

Sydney West 330 referred to Thomastown 66 notional link average losses

$= (0.0556 - 6.6712E\text{-}06*Vd + 1.3820E\text{-}05*Nd - 6.0293E\text{-}05*Sd)*VN_t + 7.8803E\text{-}05*VN_t^2$

Torrens Island 66 referred to Thomastown 66 notional link average losses[12]

$= (-0.0279 - 1.4896E\text{-}05*Vd + 5.1080E\text{-}05*Sd + 1.6981E\text{-}06*Nd)*VSA_t + 1.3400E\text{-}04*VSA_t^2$

Where:

Qd = Queensland demand

Vd = Victorian demand

Nd = New South Wales demand

Sd = South Australia demand

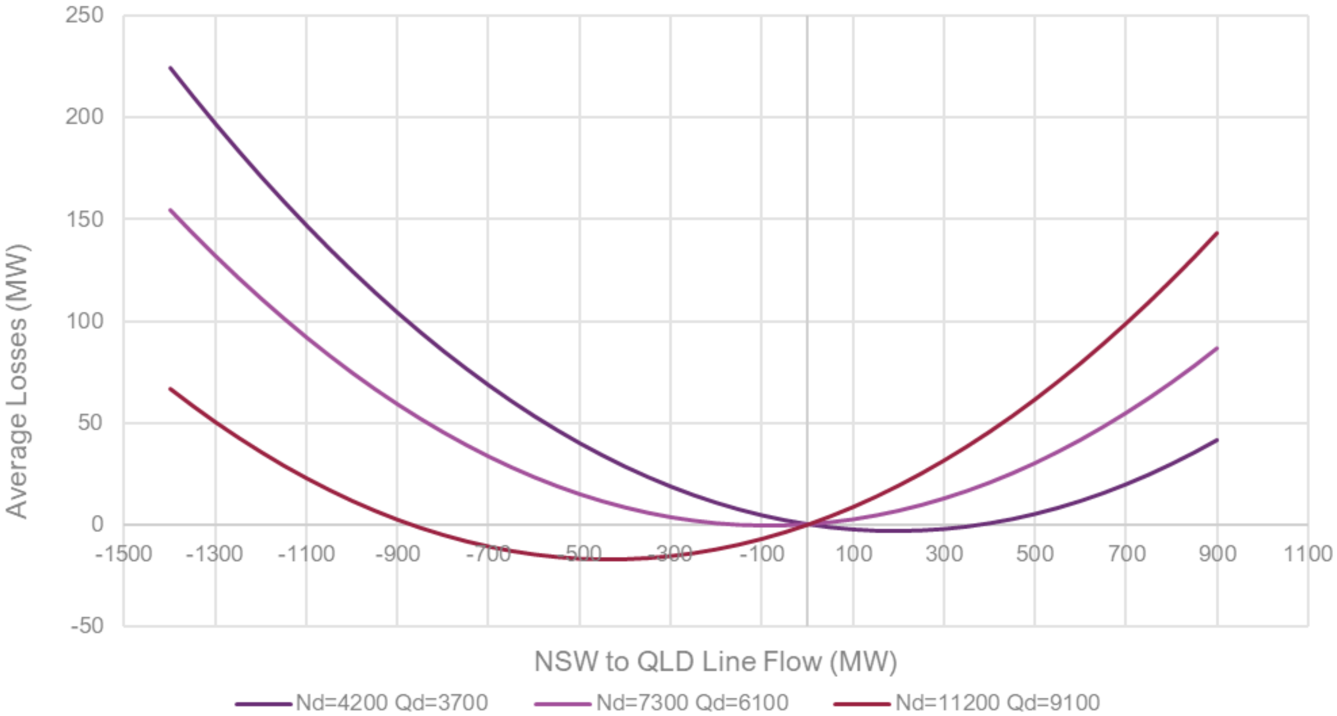
NQ_t = transfer from New South Wales to Queensland

VN_t = transfer from Victoria to New South Wales

VSA_t = transfer from Victoria to South Australia

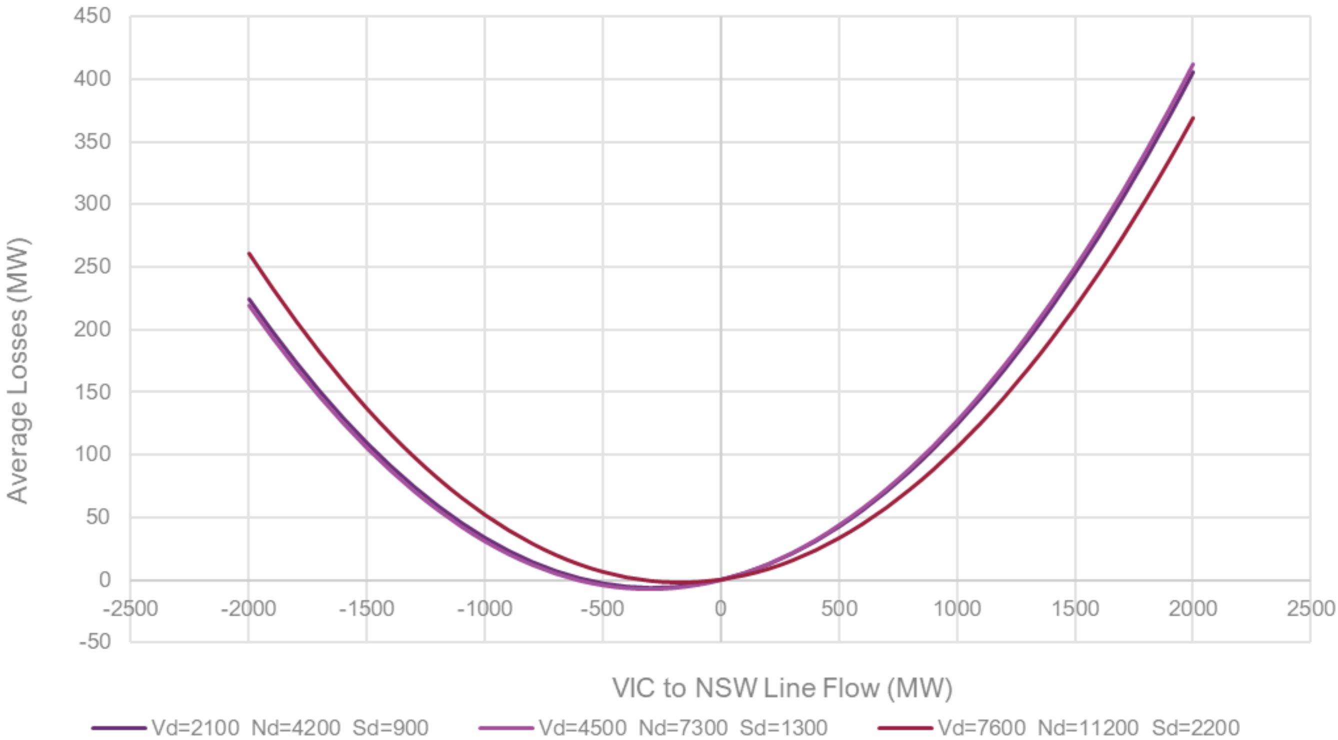
[12] An additional term, New South Wales demand (Nd), is included for FY2025-26 with the modelling of PEC.

Figure 12 Average losses for New South Wales – Queensland notional link



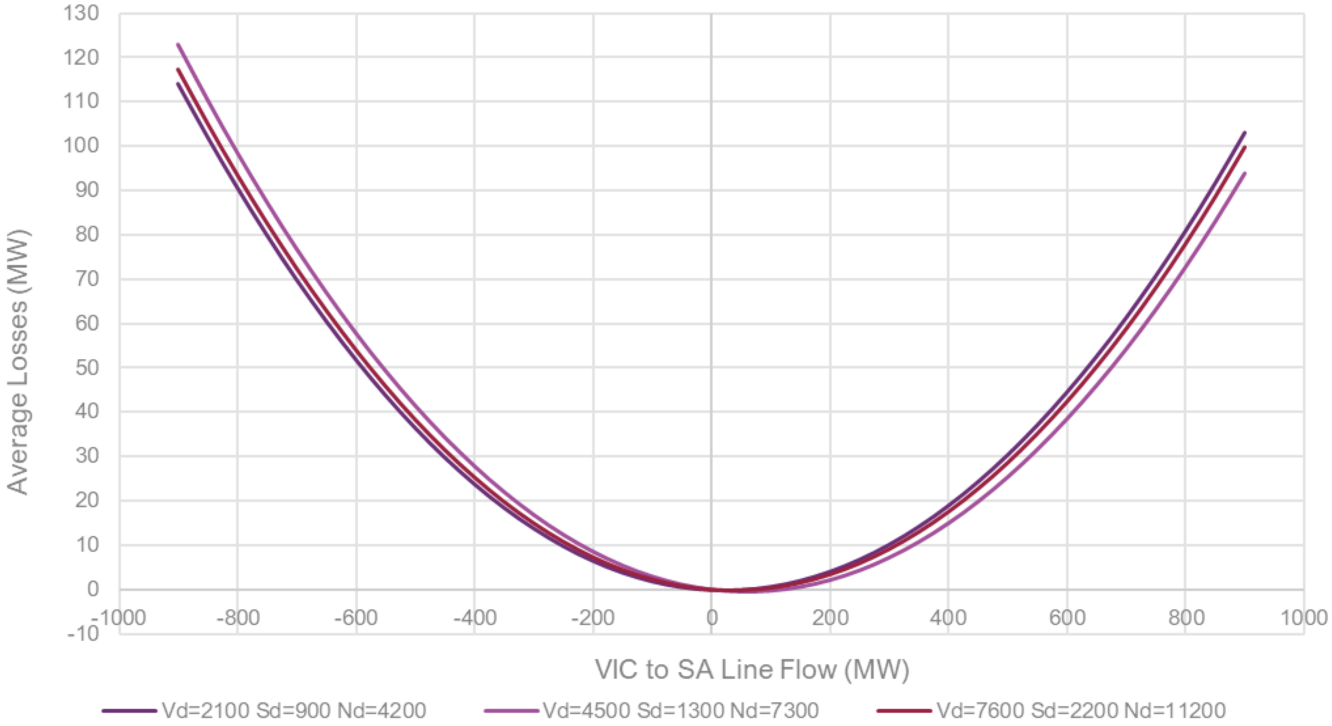
New South Wales to Queensland notional link losses versus New South Wales to Queensland notional link flow.

Figure 13 Average losses for Victoria – New South Wales notional link



Victoria to New South Wales notional link losses versus Victoria to New South Wales notional link flow.

Figure 14 Average losses for Victoria – South Australia notional link



Victoria to South Australia notional link losses versus Victoria to South Australia notional link flow.

5 Basslink, Murraylink, Terranora loss equations

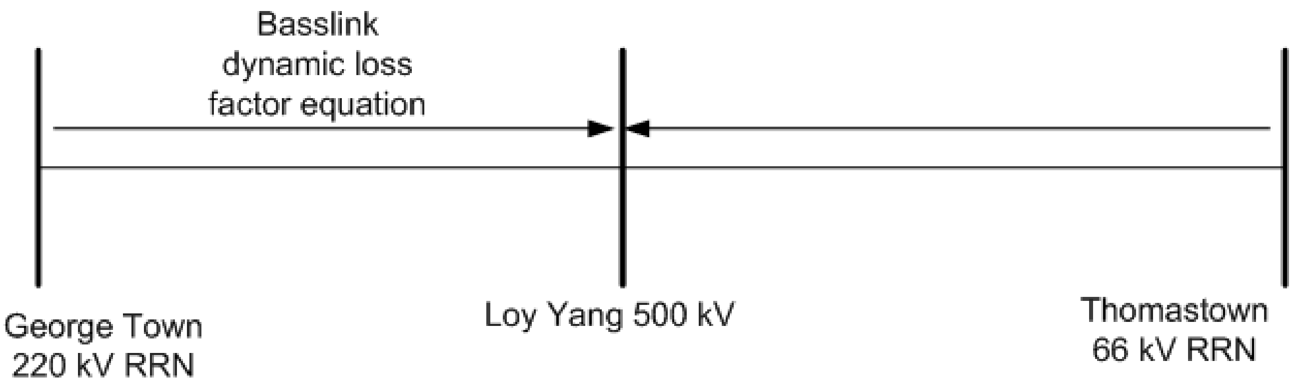
This section describes the loss equations for the direct current (DC) interconnectors.

5.1 Basslink

The loss factor model for Basslink is made up of the following parts:

- George Town 220 kV MLF referred to Tasmania RRN = 1.0000.
- Basslink (Loy Yang Power Station [PS] Switchyard) 500 kV MLF referred to Victorian RRN is 0.9907 when exporting power to Tasmania and 0.9907 when importing power from Tasmania.
- Receiving end dynamic loss factor referred to the sending end = 0.99608 + 2.0786 * 10^{-4} * P(receive), where P(receive) is the Basslink flow measured at the receiving end.

Figure 15 Basslink loss factor model



The equation describing the losses between the George Town 220 kV and Loy Yang 500 kV connection points can be determined by integrating the (loss factor equation – 1), giving:

$$P(send) = P(receive) + [\ (-3.92\times10^{-3}) * P(receive) + (1.0393\times10^{-4}) * P(receive)^2 + 4]$$

where:

P(send): Power in megawatts (MW) measured at the sending end,

P(receive): Power in MW measured at the receiving end.

The model is limited from 40 MW to 630 MW. When the model falls below 40 MW, this is within the ±50 MW ‘no-go zone’ requirement for Basslink operation.

5.2 Murraylink

Murraylink is a regulated interconnector. In accordance with clause 3.6.1(a) of the Rules, the Murraylink loss model consists of a single dynamic MLF from the Victorian RRN to the South Australian RRN.

The measurement point is the 132 kV connection to the Monash converter, which effectively forms part of the boundary between the Victorian and South Australian regions.

The losses between the Red Cliffs 220 kV and Monash 132 kV connection points are given by the following equation:

$$\text{Losses} = (0.0039 * \text{Flow}_t + 2.8177 * 10^{-4} * \text{Flow}_t^2)$$

AEMO determined the following Murraylink MLF model using regression analysis:

$$\text{Murraylink MLF (Torrens Island 66 referred to Thomastown 66)} = 0.975 + 2.9988\text{E-}03 * \text{Flow}_t$$

This model, consisting of a constant and a Murraylink flow coefficient, is suitable because most of the loss is due to variations in the Murraylink flow, and other potential variables do not improve the model.

The regression statistics for this Murraylink loss factor model are presented in the following table:

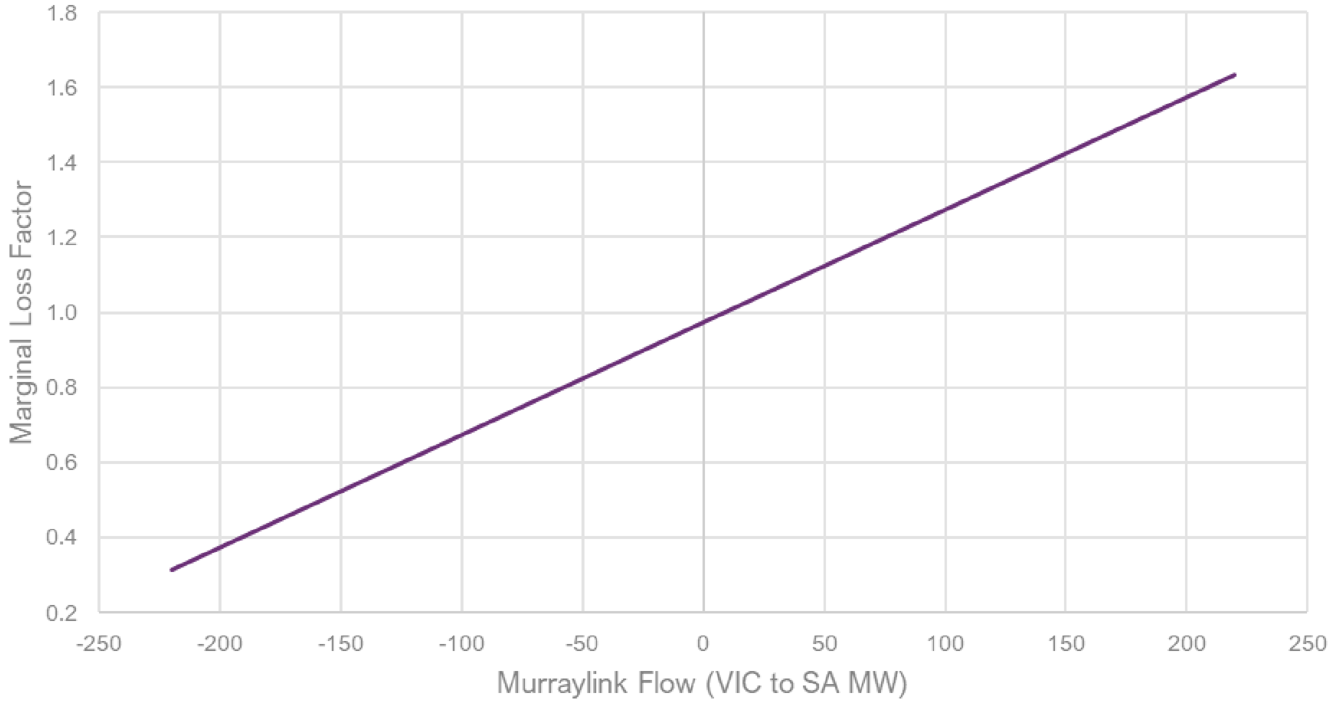
Table 26 Regression statistics for Murraylink

Coefficient	Murraylink flow	Constant
Coefficient value	2.9988E-03	0.975

The loss model for a regulated Murraylink interconnector can be determined by integrating (MLF-1), giving:

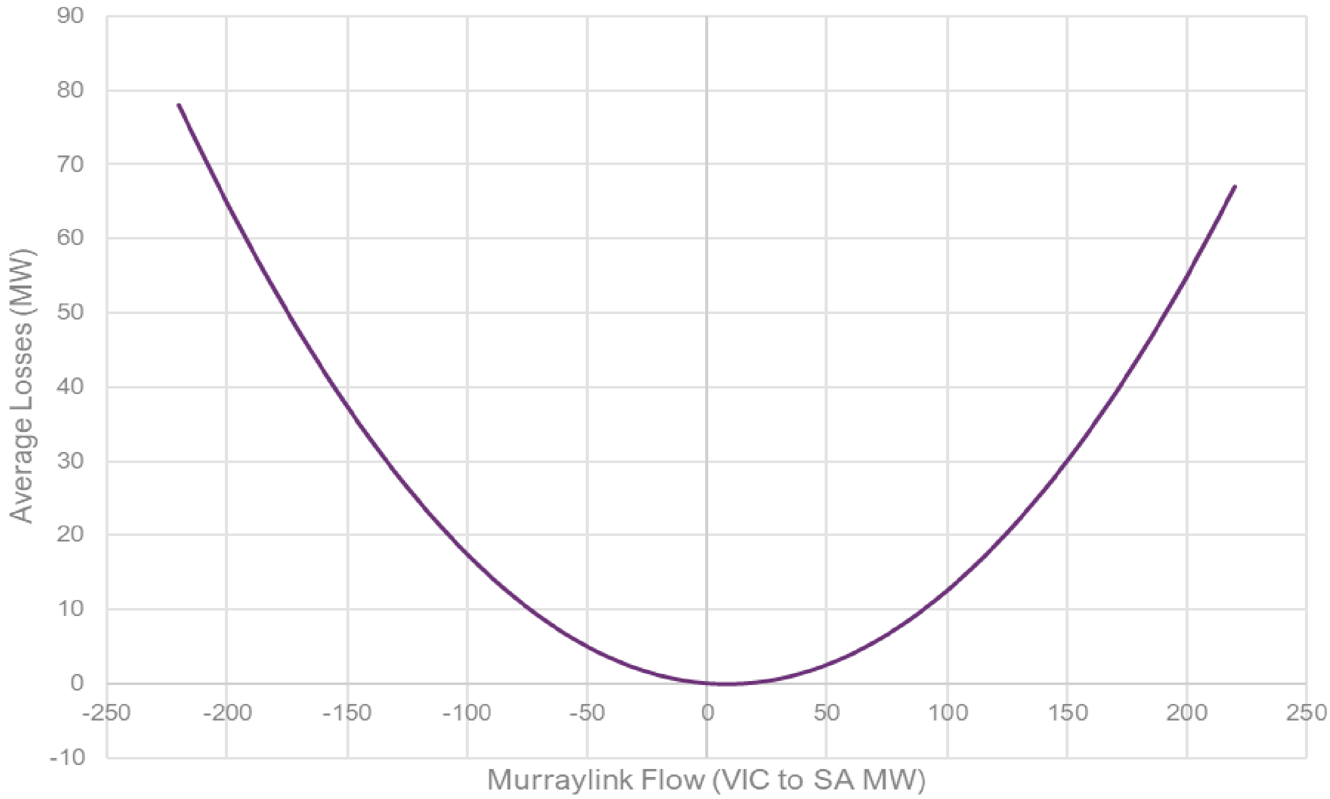
$$\text{Murraylink loss} = -0.025 * \text{Flow}_t + 1.4994\text{E-}03 * (\text{Flow}_t)^2$$

Figure 16 Murraylink MLF (Torrens Island 66 referred to Thomastown 66)



Torrens Island 66 referred to Thomastown 66 versus Murraylink interconnector flow (Victoria to South Australia).

Figure 17 Average losses for Murraylink interconnector (Torrens Island 66 referred to Thomastown 66)



Murraylink notional link losses versus Murraylink flow (Victoria to South Australia).

5.3 Terranora

Terranora is a regulated interconnector. In accordance with clause 3.6.1(a) of the Rules, the Terranora loss model consists of a single dynamic MLF from the New South Wales RRN to the Queensland RRN.

The measurement point is 10.8 km north from Terranora on the two 110 kV lines between Terranora and Mudgeeraba, which effectively forms part of the boundary between the New South Wales and Queensland regions.

The losses between the Mullumbimby 132 kV and Terranora 110 kV connection points are given by the following equation:

$$Losses = (-0.0013 * Flow_t + 2.7372 * 10^{-4} * Flow_t^2)$$

AEMO determined the following Terranora MLF model using regression analysis:

Terranora interconnector MLF (South Pine 275 referred to Sydney West 330)

$$= 0.9966 + 2.6975E\text{-}03 * Flow_t$$

This model consisting of a constant and a Terranora flow coefficient is suitable because most of the loss is due to variations in the Terranora flow and other potential variables do not improve the model.

The regression statistics for this Terranora loss factor model are presented in the following table:

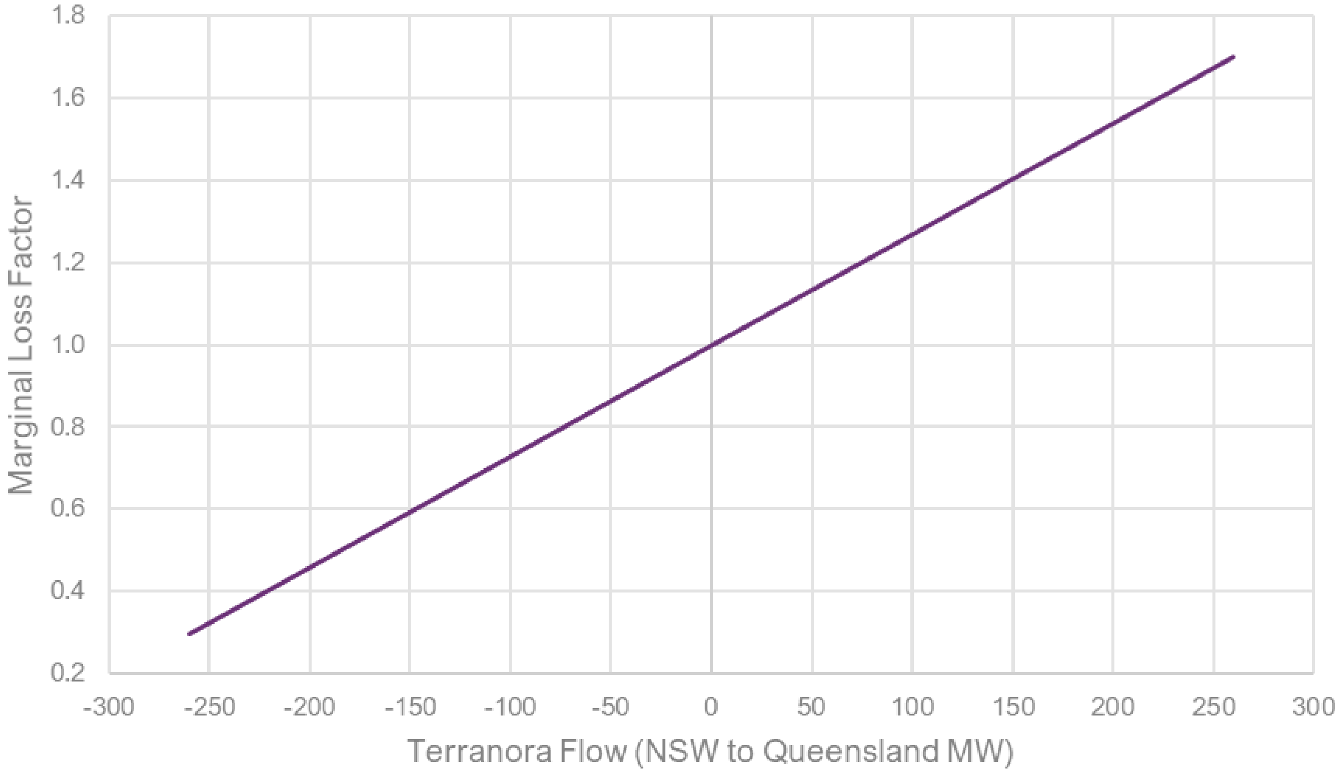
Table 27 Regression statistics for Terranora

Coefficient	Terranora flow	Constant
Coefficient value	2.6975E-03	0.9966

The loss model for a regulated Terranora interconnector can be determined by integrating (MLF-1), giving:

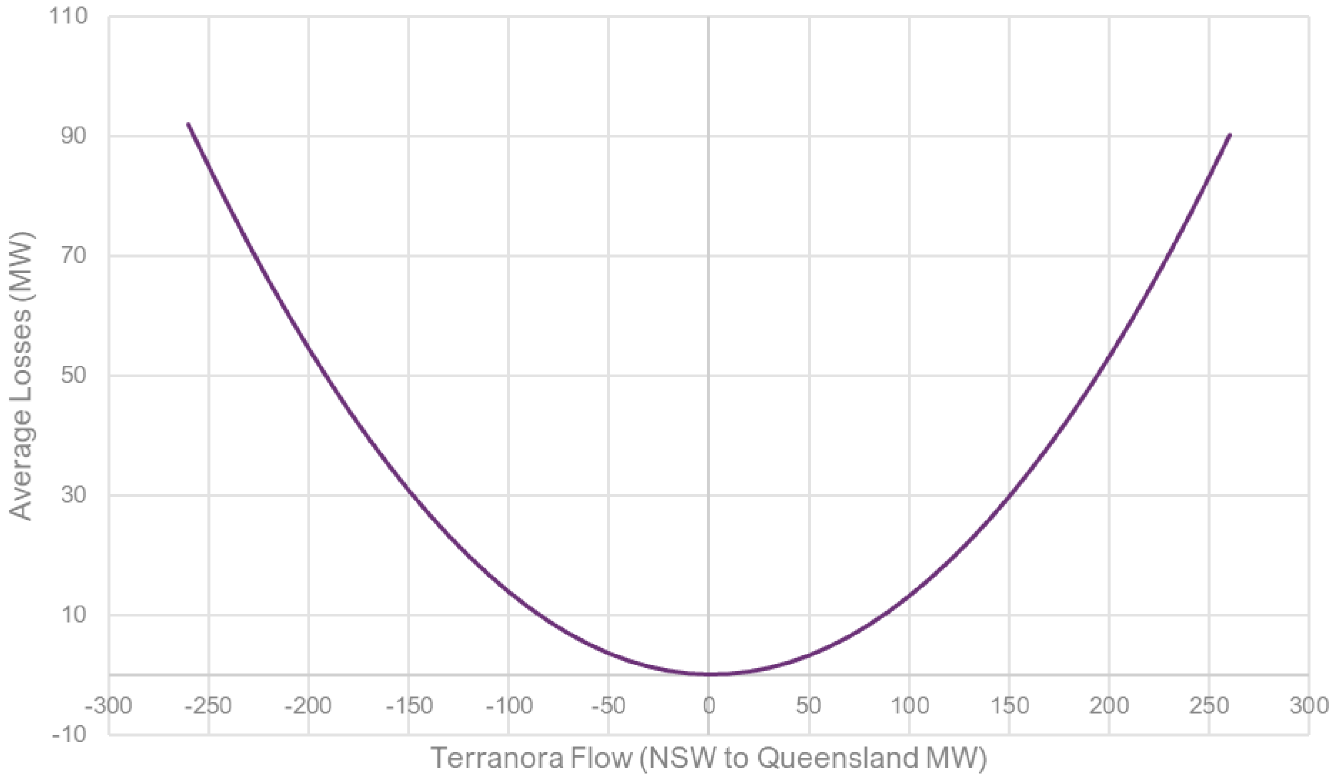
$$\text{Terranora loss} = -0.0034 * Flow_t + 1.3487E\text{-}03 * (Flow_t)^2$$

Figure 18 Terranora interconnector MLF (South Pine 275 referred to Sydney West 330)



South Pine 275 referred to Sydney West 330 MLF versus Terranora interconnector flow (New South Wales to Queensland)

Figure 19 Average losses for Terranora interconnector (South Pine 275 referred to Sydney West 330)



Terranora interconnector notional link losses versus flow (New South Wales to Queensland).

6 Proportioning of inter-regional losses to regions

This section details how the inter-regional losses are proportioned by the National Electricity Market Dispatch Engine (NEMDE).

NEMDE implements inter-regional loss factors by allocating the inter-regional losses to the two regions associated with a notional interconnector.

The proportioning factors are used to allocate the inter-regional losses to two regions by an increment of load at one RRN from the second RRN. The incremental changes to the inter-regional losses in each region are found from changes to interconnector flow and additional generation at the second RRN.

The average proportion of inter-regional losses in each region constitutes a single static loss factor.

Table 28 provides the factors used to allocate inter-regional losses to the associated regions for the 2025-26 financial year.

Table 28 Factors for inter-regional losses

Notional interconnector	Proportioning factor	Applied to
Queensland – New South Wales (QNI)	0.6815	New South Wales
Queensland – New South Wales (Terranora Interconnector)	0.6595	New South Wales
Victoria – New South Wales (VNI)	0.6622	Victoria
Victoria – South Australia (Heywood and PEC)	0.8192	Victoria
Victoria – South Australia (Murraylink)	0.8871	Victoria

7 Regions and regional reference nodes

This section describes the NEM regions, the RRN for each region and regional boundaries.

7.1 Regions and regional reference nodes

Table 29 Regions and regional reference nodes

Region	Regional reference node
Queensland	South Pine 275 kV node
New South Wales	Sydney West 330 kV node
Victoria	Thomastown 66 kV node
South Australia	Torrens Island Power Station 66 kV node
Tasmania	George Town 220 kV node

7.2 Region boundaries

Physical metering points defining the region boundaries are at the following locations.

7.2.1 Between the Queensland and New South Wales regions

- At Dumaresq Substation on the 8L and 8M Dumaresq to Bulli Creek 330 kV lines[13].
- 10.8 km north of Terranora on the two 110 kV lines between Terranora and Mudgeeraba (lines 757 & 758). Metering at Mudgeeraba adjusted for that point.

7.2.2 Between the New South Wales and Victoria regions

- At Wodonga Terminal Station (WOTS) on the 060 Wodonga to Jindera 330 kV line.
- At Red Cliffs Terminal Station (RCTS) on the Red Cliffs to Buronga 220 kV line.
- At Murray Switching Station (MSS) on the MSS to Upper Tumut Switching Station (UTSS) 330 kV lines.
- At MSS on the MSS to Lower Tumut Switching Station (LTSS) 330 kV line.
- At Guthega Switching Station on the Guthega to Jindabyne PS 132 kV line.
- At Guthega Switching Station on the Guthega to Geehi Dam Tee 132 kV line.
- At Buronga Switching Station on the Buronga to Bundey 330 kV line.

7.2.3 Between the Victoria and South Australia regions

- At South East Switching Station (SESS) on the SESS to Heywood 275 kV lines.

[13] The metering at Dumaresq is internally scaled to produce an equivalent flow at the New South Wales/Queensland State borders.

- At Monash Switching Station on the Berri (Murraylink) converter 132 kV line.
- At Buronga Switching Station on the Buronga to Bundey 330 kV line.

7.2.4 Between the Victoria and Tasmania regions

Basslink is not a regulated interconnector. It has the following metering points:

- At Loy Yang 500 kV Power Station.
- At George Town 220 kV Switching Station.

8 Virtual transmission nodes

This section describes the configuration of the different virtual transmission nodes (VTNs) that have been advised to AEMO at time of publication.

VTNs are aggregations of adjacent transmission network connection points for which a single MLF is applied. AEMO has considered the following VTNs which have been agreed with the Australian Energy Regulator (AER).

8.1 New South Wales virtual transmission nodes

Table 30 New South Wales virtual transmission nodes

VTN TNI code	Description	Associated transmission connection points (TCPs)
NEV1	Far North	Muswellbrook 132, Liddell 33
NEV2	North of Broken Bay	Brandy Hill 11, Charmhaven 11, Gosford 66, Gosford 33, West Gosford 11, Munmorah STS 33, Lake Munmorah 132, Newcastle 132, Ourimbah 132, Ourimbah 66, Ourimbah 33, Somersby 11, Tomago 132, Tuggerah 132, Vales Pt 132, Waratah 132, Wyong 11
NEV3	South of Broken Bay	Alexandria 33, Beaconsfield North 132, Beaconsfield South 132, Belmore Park 11, Bunnerong 132, Bunnerong 33, Belmore Park 132, Campbell Street 11, Campbell Street 132, Canterbury 33, Green Square 11, Homebush Bay 11, Hurstville North 11, Haymarket 132, Kurnell 132, Kogarah 11, Lane Cove 132, Meadowbank 11, Marrickville 11, Mason Park 132, Peakhurst 33, Macquarie Park 11, Macquarie Park 33, Potts Hill 132, Potts Hill 11, Rockdale 11, Rookwood Road 132, Rose Bay 11, Strathfield South 11, Sydney East 132, Sydney North 132, St Peters 11, Sydney West 132, Sydney South 132, Top Ryde 11, Waverley 11
AAVT	ACT	Angle Crossing 132, Belconnen 132, City East 132, Civic 132, East Lake 132, Gilmore 132, Gold Creek 132, Latham 132, Telopea Park 132, Theodore 132, Wanniassa 132, Woden 132

8.2 South Australia virtual transmission nodes

The SJP1 VTN for South Australia includes all South Australian load transmission connection points, excluding:

- Snuggery Industrial, as nearly its entire capacity services an industrial facility at Millicent.
- Whyalla MLF, as its entire capacity services an industrial plant in Whyalla.

8.3 Tasmania virtual transmission nodes

Table 31 Tasmania virtual transmission nodes

VTN TNI code	Description	Associated TCPs
TVN1	Greater Hobart Area	Chapel Street 11, Creek Road 33, Lindisfarne 33, Mornington 33, North Hobart 11, Risdon 33 and Rokeby 11.
TVN2	Tamar Region	Hadspen 22, Mowbray 22, Norwood 22, St Leonards 22, Trevallyn 22, George Town 22

A1. Background to marginal loss factors

This section summarises the method AEMO uses to account for electricity losses in the NEM. It also specifies AEMO's Rules responsibilities related to regions, calculation of MLFs, and calculation of inter-regional loss factor equations.

The NEM uses marginal costs to set electricity prices that need to include pricing of transmission electrical losses.

For electricity transmission, electrical losses are a transport cost that needs to be recovered. A feature of electrical losses is that they also increase with an increase in the electrical power transmitted. That is, the more a transmission line is loaded, the higher the percentage losses. Thus, the price differences between the sending and receiving ends is not determined by the average losses, but by the marginal losses of the last increment of electrical power delivered.

Electrical power in the NEM is traded through the spot market managed by AEMO. The central dispatch process schedules generation to meet demand to maximise the value of trade.

Static MLFs represent intra-regional electrical losses of transporting electricity between a connection point and the RRN. In the dispatch process, generation prices within each region are adjusted by MLFs to determine dispatch of generation.

Dynamic inter-regional loss factor equations calculate losses between regions. Depending on flows between regions, inter-regional losses also adjust the prices in determining generation dispatch to meet demand.

AEMO calculates the Regional Reference Price (RRP) for each region, which is then adjusted by reference to the MLFs between customer connection points and the RRN.

A1.1 Rules requirements

Clause 2A.1.3 of the Rules requires AEMO to establish, maintain, review and publish by 1 April each year a list of regions, RRNs, and the market connection points (represented by TNIs) in each region.

Rule 3.6 of the Rules requires AEMO to calculate the inter-regional loss factor equations (clause 3.6.1) and intra-regional loss factors (MLFs) (clause 3.6.2) by 1 April each year that will apply for the next financial year.

Clauses 3.6.1, 3.6.2 and 3.6.2A specify the requirements for calculating the inter-regional loss factor equations and MLFs, and the data used in these calculations.

The Rules generally require AEMO to calculate and publish a single, volume-weighted average, intra-regional MLF for each connection point. However, clause 3.6.2(b)(2)(i) requires AEMO to calculate and publish dual MLFs for a connection point where AEMO determines, in accordance with its Methodology, that one MLF does not represent, as closely as is reasonably practicable, the average marginal transmission network losses for active energy generation and consumption at that connection point.

A1.2 Application of marginal loss factors

Under marginal pricing, the spot price for electricity is the incremental cost of additional generation (or demand reduction) for each spot market trading interval.

Consistent with this, the marginal losses are the incremental increase in total losses for each incremental additional unit of electricity. The MLF of a connection point represents the marginal losses to deliver electricity to that connection point from the RRN.

The tables in Section 1 show the MLFs for each region. The price of electricity at a TNI is the price at the RRN multiplied by the MLF. Depending on network and loading configurations MLFs vary, ranging from below 1.0 to above 1.0.

A1.2.1 Marginal loss factors greater than 1.0

At any instant at a TNI, the marginal value of electricity will equal the cost of generating additional electrical power at the RRN and transmitting it to that point. Any increase or decrease in total losses is then the marginal loss associated with transmitting electricity from the RRN to this TNI. If the marginal loss is positive, less power can be taken from this point than at the RRN, the difference having been lost in the network. In this case, the MLF is above 1.0. This typically applies to loads but would also apply to generation in areas where the local load is greater than the local level of generation.

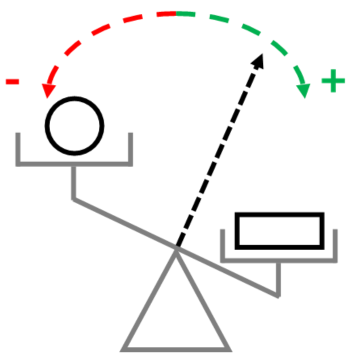
For example, a generating unit supplying an additional 1 MW at the RRN may find that a customer at a connection point can only receive an additional 0.95 MW. Marginal losses are 0.05 MW, or 5% of generation, resulting in an MLF of 1.05.

Marginal loss factors greater than 1.0 – simplified

Figure 20 shows this effect in a simple manner using a scale as an analogy. While this is an oversimplification of the underlying drivers of MLF outcomes, thinking of changes as being driven by localised shifts in load/generation balance can be a helpful way to understand MLF outcomes.

In particular, expanding this thinking to interconnector behaviour – where an interconnector exporting can be thought of as ‘load’ and importing as ‘generation’ – can help with understanding year-on-year variations in MLF outcomes at connection points in close proximity to interconnectors.

Figure 20 MLFs greater than 1.0 simplified



A1.2.2 Marginal loss factors less than 1.0

Losses increase with distance, so the greater the distance between the RRN and a connection point, the higher the MLF. However additional line flow only raises total losses if it moves in the same direction as existing net flow.

At any instant, when additional flow is against net flow, total network losses are reduced. In this case, the MLF is below 1.0. This typically applies to generation but would also apply to loads in areas where the local generation level is greater than local load.

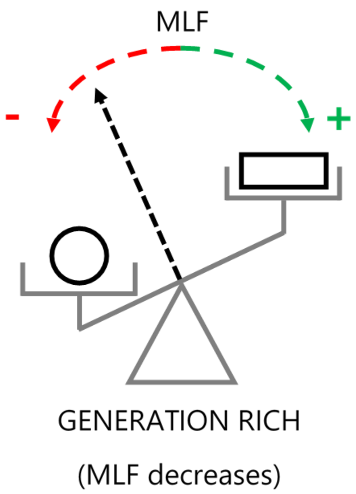
Using the example above, if net flow is in the direction from the connection point to the RRN, a generating unit at the RRN is only required to supply an additional 0.95 MW to meet an additional load of 1 MW at the connection point. Marginal losses are then -0.05 MW, or 5% reduction in generation, resulting in an MLF of 0.95.

Marginal loss factors less than 1.0 – simplified

Figure 21 shows this effect in a simple manner using a scale as an analogy. While this is an oversimplification of the underlying drivers of MLF outcomes, thinking of changes as being driven by localised shifts in load/generation balance can be a helpful way to understand MLF outcomes.

In particular, expanding this thinking to interconnector behaviour – where an interconnector exporting can be thought of as 'load' and importing as 'generation' – can help with understanding year-on-year variations in MLF outcomes at connection points in close proximity to interconnectors.

Figure 21 MLFs less than 1.0 simplified



A1.2.3 Marginal loss factors impact on National Electricity Market settlements

For settlement purposes, the value of electricity purchased or sold at a connection point is multiplied by the connection point MLF. For example:

- A **Market Customer** at a connection point with an MLF of 1.05 purchases $1,000 of electricity. The MLF of 1.05 multiplies the purchase value to 1.05 x 1,000 = $1,050. The higher purchase value covers the cost of the electrical losses in transporting electricity to the Market Customer's connection point from the RRN.
- A **Market Generator** at a connection point with an MLF of 0.95 sells $1,000 of electricity. The MLF of 0.95 multiplies the sales value to 0.95 x 1,000 = $950. The lower sales value covers the cost of the electrical losses in transporting electricity from the Market Generator's connection point to the RRN.

Therefore, it follows that in the settlements process:

- Higher MLFs tend to advantage, and lower MLFs tend to disadvantage, generation connection points.
- Higher MLFs tend to disadvantage, and lower MLFs tend to advantage, load connection points.

A2. Methodology, inputs, and assumptions

This section outlines the principles underlying the MLF calculation, the load and generation data inputs AEMO obtains and uses for the calculation, and how AEMO checks the quality of this data. It also explains how networks and interconnectors are modelled in the MLF calculation.

A2.1 Marginal loss factors calculation methodology

AEMO uses a forward-looking loss factor (FLLF) methodology (Methodology)[14] for calculating MLFs. The Methodology uses the principle of “minimal extrapolation”. The high-level steps in this can be summarised as:

- Develop a load flow model of the transmission network that includes committed augmentations for the year that the MLFs will apply.
- Obtain connection point demand forecasts for the year that the MLFs will apply.
- Estimate the dispatch of committed new generating units.
- Adjust the dispatch of new and existing generating units to restore the supply-demand balance in accordance with Section 5.5 of the Methodology.
- Calculate the MLFs using the resulting power flows in the transmission network.

A2.2 Load data requirements for the MLF calculation

The annual energy targets used in load forecasting for the 2025-26 MLF calculation are in Table 32 below.

Table 32 Operational consumption

Region	2024-25 forecast operational consumption (GWh)[A]	2025-26 forecast operational consumption (GWh)[A]
Queensland	50,161	50,404
New South Wales	63,748	63,679
Victoria	39,917	40,557
South Australia	11,367	12,005
Tasmania	10,763	10,479

A. Forecasting operational energy – as sent out energy was sourced from the most recent published Electricity Statement of Opportunities (2023 ESOO for 2024-25 and 2024 ESOO for 2025-26), at http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/NEM-Electricity-Statement-of-Opportunities.

[14] Forward Looking Transmission Loss Factors (Version 8), at https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/loss_factors_and_regional_boundaries/forward-looking-loss-factor-methodology.pdf?la=en.

A2.2.1 Historical data accuracy and due diligence of the forecast data

AEMO regularly verifies the accuracy of historical connection point data. AEMO calculates the losses using this historical data by adding the summated generation values to the interconnector flow and subtracting the summated load values. These transmission losses are used to verify that no large errors occur in the data.

AEMO also performs due diligence checks of connection point load traces to ensure that:

- The demand forecast is consistent with the latest ESOO.
- Load profiles are reasonable, and the drivers for load profiles that have changed from the historical data are identifiable.
- The forecast for connection points is inclusive of any relevant embedded generators, where the embedded generators are not considered as part of operational demand[15].
- Industrial and auxiliary type loads are not scaled with residential drivers.

A2.3 Generation data requirements for the MLF calculation

AEMO obtained historical real power (MW) and reactive power (megavolt-amperes-reactive [MVAr]) data from its settlements database for each trading interval (half-hour) covering every generation connection point in the NEM from 1 July 2023 to 30 June 2024.

AEMO also obtained the following data:

- Generation capacity data from AEMO's Generation Information page published on its website on 24 January 2025 (Generation Information report).
- Historical generation availability, as well as on-line and off-line status data from AEMO's Market Management System (MMS).
- Future generation availability based on the most recent medium term projected assessment of system adequacy (MT PASA) data, as of 1 January 2025, as a trigger for AEMO to request information from participants with the potential to use an adjusted generation profile for the loss factor calculation.

A2.3.1 New generation

The set of new generators included in the 2025-26 MLF report is taken from the Generation Information report published on 24 January 2025. Only projects listed as committed[10] (committed/committed*/commited[1]) and with a full commercial use date (FCUD) that suggest generation occurring in the study year are included. These generators are added into the network model. For solar and wind projects, forecasted generation profiles are created. For new thermal generation and energy storage systems, proponents are required to provide a forecasted generation profile.

For the new solar and wind generation projects, AEMO creates half-hourly generation profiles of generation occurring in the reference year using historical weather data from this reference year. Maximum generation of

[15] Demand Terms in EMMS Data Model, at https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/dispatch-information/policy-and-process-documentation#demandterms.

these profiles is based on the nameplate capacity reported in the Generation Information report. For projects that have a FCUD occurring within the study period, a default commissioning profile is added prior to the FCUD, after which point, an unconstrained generation profile is used.

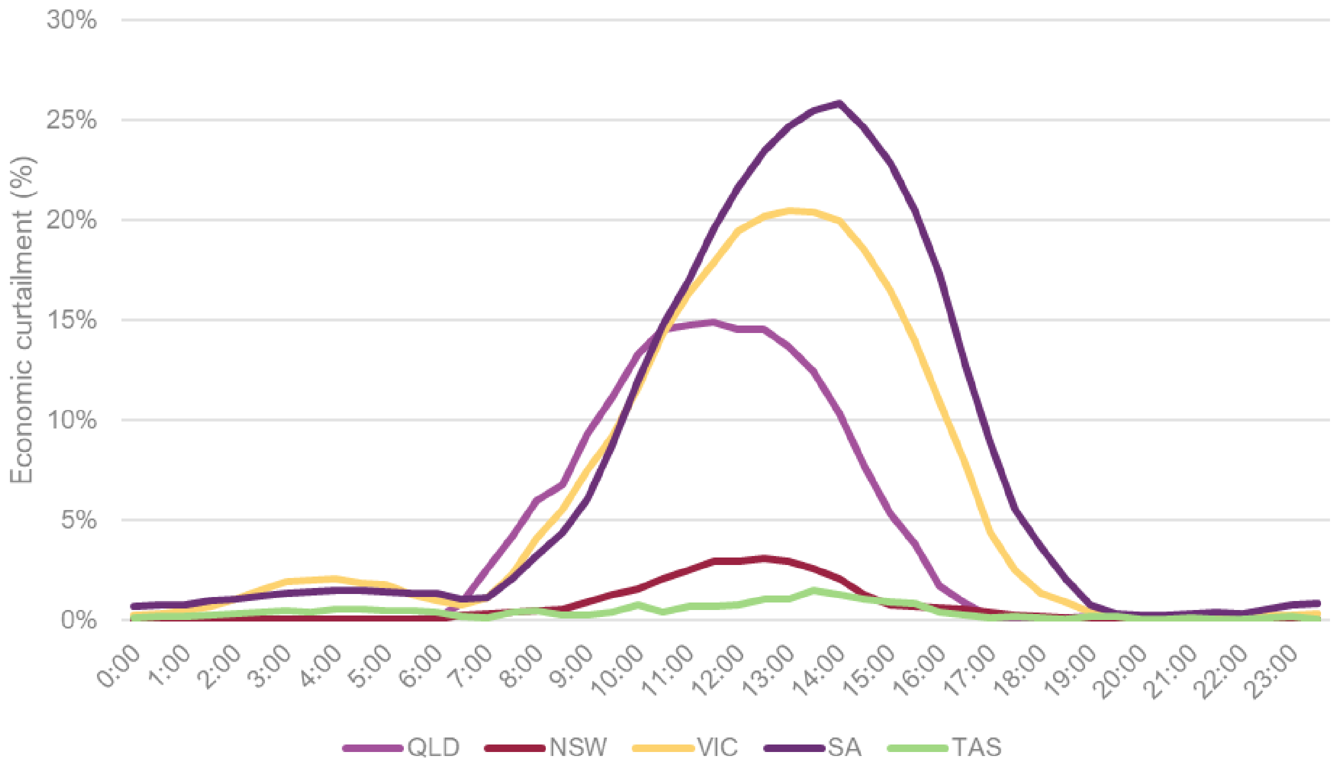
For projects which have available historical generation in the reference year, this generation is favoured over forecast generation. Throughout the MLF process, all relevant proponents with new generation projects were consulted regarding generation profiles.

To ensure equity between existing and new solar and wind generation projects, AEMO:

- Identifies historical (from reference year) economic curtailment of semi-scheduled generation on a per region basis as a time-of-day average represented as a percentage of potential production on a regional basis.
- Applies the identified time-of-day economic curtailment as a percentage reduction to forecast solar and wind generation profiles.

Application of an economic curtailment baseline aims to ensure equitable treatment between both historical and forecast solar and wind generation. The historical economic curtailment applied to the forecast solar and wind profiles for the 2025-26 FY is shown in Figure 22.

Figure 22 Time of day average historical economic curtailment from 2023-24



The following committed generation was included in the modelling, however AEMO does not publish MLFs for connections that are not yet registered.

Queensland new generation

- Bundaberg Solar Farm
- Kidston Pumped Hydro
- Tarong Battery Energy Storage System (BESS)
- Ulinda Park BESS
- Wambo Wind Farm

New South Wales and Australian Capital Territory new generation

- Culcairn Solar Farm
- Hunter Power Station (Kurri Kurri GT)
- Liddell BESS
- Limondale BESS
- Lockhart Hybrid Facility – Solar
- Quorn Park Hybrid
- Riverina Solar Farm
- Tilbuster Solar Farm

Victoria new generation

- Golden Plains West Wind Farm
- Latrobe Valley BESS
- Melbourne Renewable Energy Hub (Side A)

South Australia new generation

- Clements Gap BESS
- Templers BESS

Tasmania new generation

- None

A2.3.2 Registered unit forecasts

AEMO created half-hourly profiles for registered solar and wind projects that did not operate at full capacity for the entire reference year or where historical generation data does not represent generation in the target year (due to unit-specific constraints). Forecast generation profiles for registered units were modelled using the reference year 2023-24 weather data and the registered maximum capacity for the project. Historical data from the reference year was incorporated into the profile where available.

Relevant proponents for each project were consulted during the process to provide feedback or propose their own generation profile. Where applicable, adjustments based on the feedback received were made or the proponent modelled profiles were implemented where deemed appropriate.

For registered thermal and storage projects where operation was not at full capacity for the entire reference year, relevant proponents were requested to provide forecasts. Where forecasts were not provided, the data utilised has been based on historical data.

A2.3.3 Abnormal generation patterns

AEMO replaced a number of historical generation profiles with adjusted profiles as an input to the 2025-26 MLF calculation process.

In accordance with Section 5.5.7 of the Methodology, AEMO used adjusted generation profiles based on verifiable information, where it was satisfied that the reference year profile was clearly unrepresentative of the expected generation for FY 2025-26. Historical generation patterns were adjusted to backfill historical outages and incorporate future outages identified through MT PASA data submitted as of 1 January 2025. This was performed where outages longer than 30 days have been identified, and only if deemed practicable. For example, highly variable sources of generation such as 'peakers' would not be backfilled due to the inconsistent nature of the generation.

A2.4 Intra-regional limit management

When performing MLF calculations, AEMO has identified several high impact system normal intra-regional limits that are likely to have a material impact on MLFs for the target year. To minimise deviations between the MLF calculations and actual market outcomes, AEMO incorporated these limits by reducing generation levels to ensure the limits are not exceeded.

Constraints were incorporated into the 2025-26 MLF study using the approaches discussed below.

Thermal/transfer limit

Where a thermal or transfer limit on a line or cut set is identified as relevant, this limit was first assessed using an unconstrained study with the relevant line flows being observed. The input profiles of relevant generators were then locationally grouped and reduced on a pro-rata basis (in line with MLF minimal extrapolation theory). The following limits were applied in this way:

- Balranald to Darlington Point voltage collapse limit (N^^N_NIL_X5_BEKG and N^^N_NIL_X5_BESH).
- Darlington Point to Wagga Wagga voltage collapse limit (N::N_NIL_63).
- Horsham – Murra Warra – Kiamal voltage collapse limit (V^^V_NIL_KGTS).
- Liddell to Tamworth transfer limit (N>>NIL_88_84_S).
- Molong to Orange North transfer limit (N>NIL_94T).
- Monash to North West Bend #2 transfer limit (S>NIL_MHNW1_MHNW2).

- Murray to Dederang transfer limit (V>>NIL_MSDD1_MSDD2 and V>>NIL_MSDD2_MSDD1).
- Parkes 132kV/66kV transformer transfer limit (N>NIL_PKTX_LV).
- Waubra to Ballarat transfer limit (V>>NIL_WBBA_KGBE).

AEMO continuously monitors and assesses the impact of other system normal limits. The following lists the limits which have been considered; the transfers associated with these limits have been monitored and analysed and observations indicate appropriate management via the supply and demand balancing process (minimal extrapolation):

- Finley to Mulwala transfer limit (N>NIL_9R4_99A).
- Gunnedah to Tamworth transfer limit (N>NIL_969).
- Port Macquarie to Herron Creek transfer limit (N>>NIL_964_84_S).
- Snowtown – Bungama transfer limit (S>NIL_HUWT_STBG3).
- Suntop to Wellington transfer limit (N>NIL_94K_1).
- Wagga North to Wagga transfer limit (N>NIL_9R6_9R5).
- Emerald to Comet transfer limit (Q>NIL_EMCM_6056).

A2.5 Network representation in the marginal loss factors calculation

An actual network configuration recorded by AEMO's Energy Management System (EMS) is used to prepare the NEM interconnected power system load flow model for the MLF calculation. This recording is referred to as a 'snapshot'. AEMO reviews the snapshot and modifies it where necessary to represent all normally connected equipment. AEMO also checks switching arrangements for the Victorian Latrobe Valley's 220 kV and 500 kV networks to ensure they reflect normal operating conditions.

AEMO adds relevant network augmentations that are scheduled to occur in FY 2025-26. The snapshot is thus representative of the anticipated normally operating power system in FY 2025-26.

A1.1.1 Network augmentation for 2025-26

Relevant transmission network service providers (TNSPs) advised of the following network augmentations to be completed within or prior to FY 2025-26.

Queensland network augmentations

Powerlink provided the following list of planned network augmentations in FY 2025-26 in Queensland:

- Decommissioning of transformer 4 at T051 Cairns.

New South Wales network augmentations

New South Wales NSPs provided the following list of planned and completed network augmentations of relevance to the FY 2025-26 in New South Wales:

- Establishment of a new transformer at existing (Macarthur substation) - MACARTHUR 330/132kV Txr-4H.
- Project Energy Connect Stage 1:
  - Establishment of Buronga to Red Cliffs 220 kV double circuit line.
  - A new Bundey to Buronga 330 kV line.

Victoria network augmentations

AEMO's Victorian Planning Group provided the following list of planned and completed network augmentations of relevance to the FY 2025-26 in Victoria:

- Mortlake Turn-in (to HGTS-TRTS 500 kV line) – Connection of the existing Haunted Gully to Tarrone 500 kV.
- Project Energy Connect Stage 1:
  - Establishment of new Buronga to Red Cliffs 220 kV double circuit line.

South Australia network augmentations

ElectraNet provided the following list of planned and completed network augmentations of relevance to the FY2025-26 in South Australia:

- Transmission Network Voltage Control Project – addition of reactors at Para, Magill and South East
- Project Energy Connect Stage 1 – establishment of:
  - A new Robertstown to Bundey 275 kV double circuit line.
  - A new Bundey to Buronga 330 kV line.
  - A new 330/275 kV substation and 2 x 400 megavolt-amperes (MVA) 275/330 kV transformers at Bundey.
  - A new 330/220 kV substation, 1 x 200 MVA 330/220 kV transformer and 1 x 200 MVA 330 kV phase shifting transformer at Buronga.

Tasmania network augmentations

TasNetworks provided the following list of planned network augmentations in FY 2025-26 in Tasmania:

- None.

A2.5.1 Treatment of Basslink interconnector

Basslink consists of a controllable network element that transfers power between Tasmania and Victoria.

In accordance with Sections 5.3.1 and 5.3.2 of the Methodology, AEMO calculated the Basslink connection point MLFs using historical data, adjusted to reflect any change in forecast generation in Tasmania.

A2.5.2 Treatment of Terranora interconnector

The Terranora interconnector is a regulated interconnector.

The boundary between Queensland and New South Wales between Terranora and Mudgeeraba is north of Directlink. The Terranora interconnector is in series with Directlink and, in the MLF calculation, AEMO manages the Terranora interconnector limit by varying the Directlink limit when necessary.

For the 2025-26 MLFs, the relationship between Terranora and QNI has been derived from historical system normal observations (excludes data where limits applied that were related to network outages) from 2023-24.

As Directlink resides entirely within New South Wales, considerations were made for load between Directlink and Terranora to ensure that the intended relationship between QNI and Terranora was achieved.

A2.5.3 Treatment of the Murraylink interconnector

The Murraylink interconnector is a regulated interconnector.

In accordance with Section 5.3 of the Methodology, AEMO treats the Murraylink interconnector as a controllable network element in parallel with the regulated Heywood interconnector.

For the 2025-26 MLFs, the relationship between Murraylink and Victoria – South Australia was derived from historical system normal (excludes data where limits applied that were related to network outages) observations from 2023-24.

A2.5.4 Treatment of Yallourn unit 1

Yallourn Power Station Unit 1 can be connected to either the 220 kV or 500 kV network in Victoria.

AEMO modelled Yallourn Unit 1 at the two connection points (one at 220 kV and the other one at 500 kV) and calculated loss factors for each connection point. AEMO then calculated a single volume-weighted loss factor for Yallourn Unit 1 based on the individual loss factors at 220 kV and at 500 kV, and the output of the unit.

A2.6 Interconnector capacity

In accordance with Section 5.5.4 of the Methodology, AEMO estimated nominal interconnector limits for summer peak, summer off-peak, winter peak, and winter off-peak periods. These values are in Table 33 below.

AEMO also sought feedback from relevant TNSPs as to whether there were any additional factors that might influence these limits.

Table 33 Inter-regional limits

From region	To region	Summer day (MW)[A]	Summer night (MW)[A]	Winter day (MW)[A]	Winter night (MW)[A]
Queensland	New South Wales[B]	1,400	1,400	1,400	1,400
New South Wales	Queensland[B]	850	850	850	850
New South Wales	Victoria	1,700	1,700	1,700	1,700
Victoria	New South Wales	1,670	1,670	1,670	1,670
Victoria[C]	South Australia[C]	800	800	800	800
South Australia[C]	Victoria[C]	800	800	800	800
Victoria (Murraylink)	South Australia (Murraylink)	220	220	220	220
South Australia (Murraylink)	Victoria (Murraylink)	188 minus Northwest Bend & Berri loads	198 minus Northwest Bend & Berri loads	215 minus Northwest Bend & Berri loads	215 minus Northwest Bend & Berri loads
Queensland (Terranora)	New South Wales (Terranora)	224	224	224	224
New South Wales (Terranora)	Queensland (Terranora)	107	107	107	107
Tasmania (Basslink)	Victoria (Basslink)[E]	594	594	594	594
Victoria (Basslink)	Tasmania (Basslink)[E]	478	478	478	478

A. The peak interconnector capability does not necessarily correspond to the network capability at the time of the maximum regional demand; it refers to average capability during daytime, which corresponds to 6.00 am to 6.00 pm (AEST) in MLF studies.
B. The "QNI minor" upgrade was modelled with an additional headroom of 100 MW in the northward day flow.
C. Stage 1 of PEC has been implemented as per the micro-slice option reflecting the anticipated limit applicable for the 2025-26 FY.
D. Limit referring to the receiving end.

A2.7 Calculation of MLFs

AEMO uses the NEMLF[16] software to calculate MLFs using the following method:

- Convert the half-hourly forecast load and historical generation data, generating unit capacity and availability data together with interconnector data into a format suitable for input to NEMLF.
- Adjust the load flow case to ensure a reasonable voltage profile in each region at times of high demand.
- Convert the load flow case into a format suitable for use in NEMLF.
- Feed into NEMLF, one trading interval at a time, the half-hourly generation and load data for each connection point, generating unit capacity and availability data, with interconnector data. NEMLF allocates the load and generation values to the appropriate connection points in the load flow case.

[16] NEMLF is a transmission pricing software package. It is capable of running a large number of consecutive load flow cases quickly. The program outputs loss factors for each trading interval as well as averaged over a financial year using volume weighting.

- NEMLF iteratively dispatches generation to meet forecast demand and solves each half-hourly load flow case subject to the rules in Section 5.5.2 of the Methodology and calculates the loss factors appropriate to the load flow conditions.
- Refer the loss factors at each connection point in each region to the RRN.
- Average the loss factors for each trading interval and for each connection point using volume weighting.

In accordance with Section 5.6.1 of the Methodology, AEMO calculates dual MLF values at connection points where one MLF does not satisfactorily represent active power generation and consumption.

A2.7.1 MLF calculation quality control

As with previous years, AEMO has engaged consultants to review the quality and accuracy of the MLF calculation. The consultant has performed the following work:

- An independent verification of AEMO's data inputs to the MLF calculation.
- A verification study using AEMO's input data to independently validate AEMO's calculation results. AEMO will use the verification study to ensure that AEMO's MLF calculation methods and results are accurate.

A3. Impact of technology on MLF outcomes

As discussed in Appendix A2, MLFs are calculated by simulating power flows on the network for every half-hour, in the next financial year, using forecast supply and demand values. The calculated raw loss factors for each half-hour are then weighted by the volume of energy at the TNI to calculate the MLF for that TNI.

Calculated raw MLFs reflect the supply and demand at each half-hour and, as with supply and demand outcomes, can vary drastically. In remote locations with material levels of grid-connected solar capacity, an increasingly stronger diurnal pattern in half-hourly MLFs is observed due to increased supply and low demand (driven by distributed photovoltaics [PV]) during daylight hours. The combination of increased generation and reduced local demand results in the energy produced needing to travel longer distances to supply load resulting in increased losses over the transmission network and lower MLF outcomes for these generators.

While this diurnal volatility in underlying half-hourly MLFs does result in poor outcomes for grid-connected solar, it can present potential opportunities for storage technologies which may be able to achieve a delta between load and generation MLFs that will complement arbitrage behaviour.

As a hypothetical example, Figure 23 shows the time-of-day average raw MLFs and generation (% of capacity) for several technologies, all connected to the same location within the shared transmission network.

Table 34 shows the MLF outcomes for the different technologies shown in Figure 23, highlighting that, despite all having the same underlying raw half-hourly MLFs, the outcomes vary drastically.

- Solar farm – the solar farm is generating into the middle of the day, when the underlying half-hourly MLFs are low, which reflects generation at this location needing to travel long distances to serve load during these times. The result is the second lowest MLF outcome; given the lowest MLF outcome is the battery load, the solar farm MLF outcome is the least favourable.
- Wind farm – the wind farm weighting tends toward the evening peak, when the underlying half-hourly MLFs are high, which reflects generation at this location not needing to travel long distances to serve load during these times. The result is the highest MLF outcome of all technologies, which is favourable.
- Battery (generation) – the battery is generating into both morning and evening peaks, when the underlying half-hourly MLFs are above average, which reflects generation at this location not needing to travel long distances to serve load during these times. The result is the second highest MLF outcome of all technologies, which is favourable.
- Battery (load) – the battery is loading into the middle of the day, when the underlying half-hourly MLFs are low, which reflects generation at this location needing to travel long distances to serve load during these times. As the battery is increasing local load, this decreases the volume of energy that is required to travel long distances to serve load. The result is the lowest outcome of all technologies, which is favourable.

Figure 23 Time-of-day impact of technology on MLF outcomes

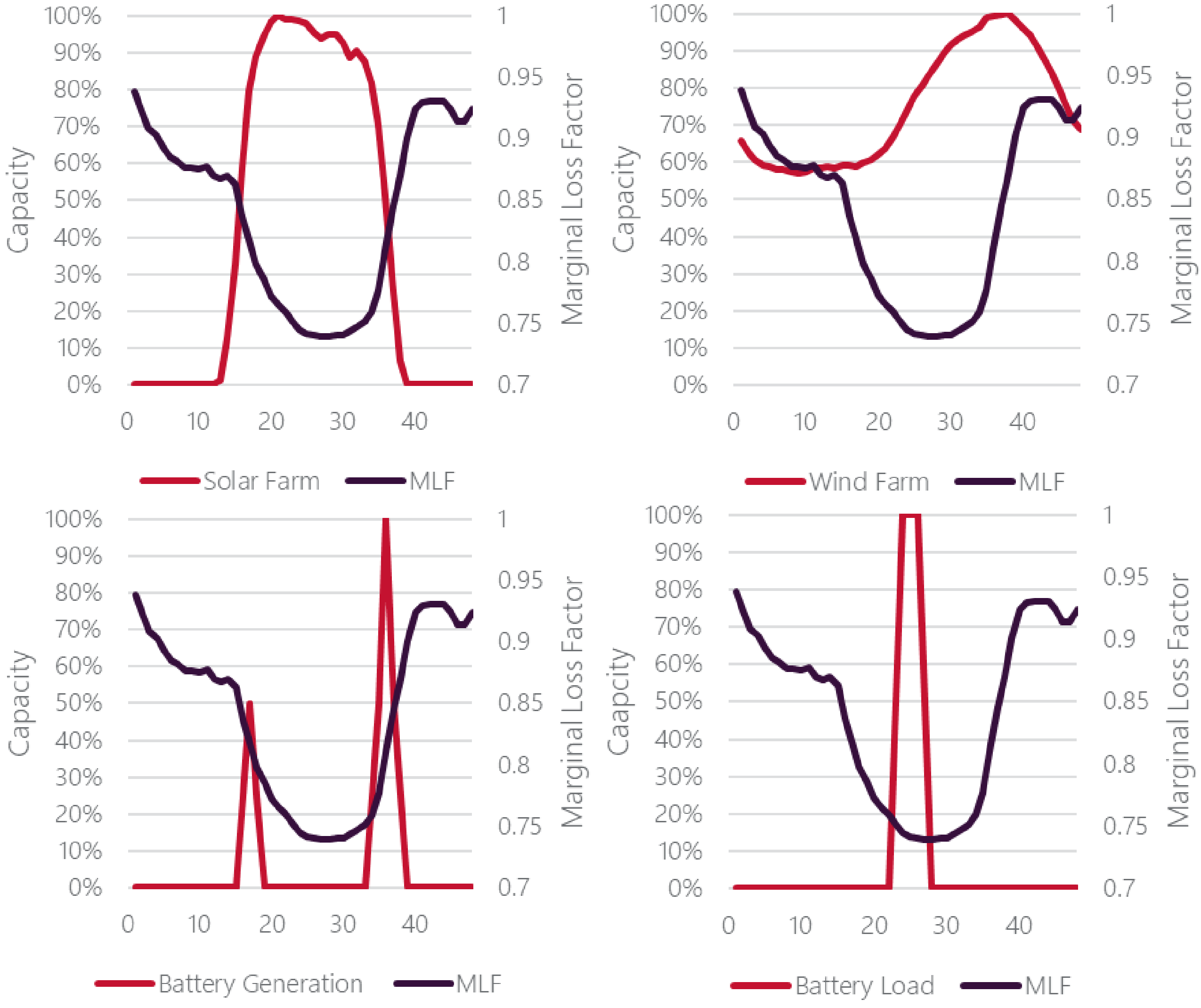


Table 34 Impact of technology on MLF outcomes

Technology	Indicative MLF
Solar farm	0.7657
Wind farm	0.8364
Battery (generation)	0.8130
Battery (load)	0.7431

A4. Impact of congestion on MLF outcomes

In recent years, the materiality of system normal congestion (congestion not associated with network outages) has increased year on year. Congestion in the NEM is managed via constraints. Constraints are effectively the tools which allow for representation of physical limits into NEMDE with the intent of ensuring the security and reliability of the power system is maintained at the lowest cost solution.

While there are a large variety of reasons that constraints exist (not all physical – negative residue management constraints being an example of a constraint type driven by financial considerations), constraints that curtail generation are the most pertinent to MLFs.

Each relevant limit and, in turn, constraint limits network flows either directly (intended to limit flow on lines pre or post contingency) or indirectly (by limiting output of relevant generation). By limiting flow, this limits losses and can effectively be considered as creating a collar on MLF outcomes in that it effectively sets both a floor and ceiling to MLF outcomes. Typically, it will be the floor component of this collar that is of relevance to MLF outcomes by limiting how low MLF outcomes can go.

Where limit advice is introduced or revised in a manner that is more restrictive and increases curtailment, MLF outcomes will either increase as a result of decreased flow and/or variations to weighting or reductions will be limited.

Where limit advice is revised in a manner that is less restrictive and decreases curtailment, MLF outcomes will decrease as a result of increased flow and/or variations to weighting.

Glossary

Term	Definition
ACT	Australian Capital Territory
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
BESS	battery energy storage system
DC	direct current
ESOO	*Electricity Statement Of Opportunities*
FLLF	forward looking loss factor
FY	financial year
GWh	gigawatt-hour/s
km	Kilometre/s
kV	Kilovolt/s
LNG	liquefied natural gas
MLF	marginal loss factor (intra-regional loss factor)
Methodology	Forward Looking Loss Factor Methodology
MVA	megavolt-ampere/s
MVAr	megavolt-amperes-reactive
MW	megawatt/s
NEM	National Electricity Market
NEMDE	National Electricity Market Dispatch Engine
NSP	network service provider
PS	power station
PV	photovoltaic
QNI	Queensland – New South Wales Interconnector
RRN	regional reference node
Rules	National Electricity Rules
TNI	transmission node identity
TNSP	transmission network service provider
VTN	virtual transmission node