# Appendix A4. Queensland

July 2025

Appendix to the 2025 Enhanced Locational Information Report

**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

This report has been published to implement the Energy Security Board (ESB) 'enhanced information' transmission access reforms. The report is intended to support more informed investment and decision-making processes in the National Electricity Market, by collating public metrics and indicators that represent important locational characteristics of the power system. This report includes only publicly available information from existing AEMO, industry, and stakeholder publications.

AEMO publishes this *Enhanced Locational Information (ELI) Report* pursuant to its functions in section 49(2)(c) of the National Electricity Law. This publication is generally based on information available to AEMO as at 1 April 2025, unless otherwise indicated.

## Disclaimer

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.

Modelling work performed as part of preparing this publication inherently requires assumptions about future behaviours and market interactions, which may result in forecasts that deviate from future conditions. There will usually be differences between estimated and actual results, because events and circumstances frequently do not occur as expected, and those differences may be material.

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## Version control

| Version | Release date | Changes |
|---|---|---|
| 1.0 | 09/07/2025 | Initial release. |

# Contents



# Figures

## A4.1 Introduction

This appendix provides detailed locational indicators and metrics for Queensland. This appendix contains the following information:

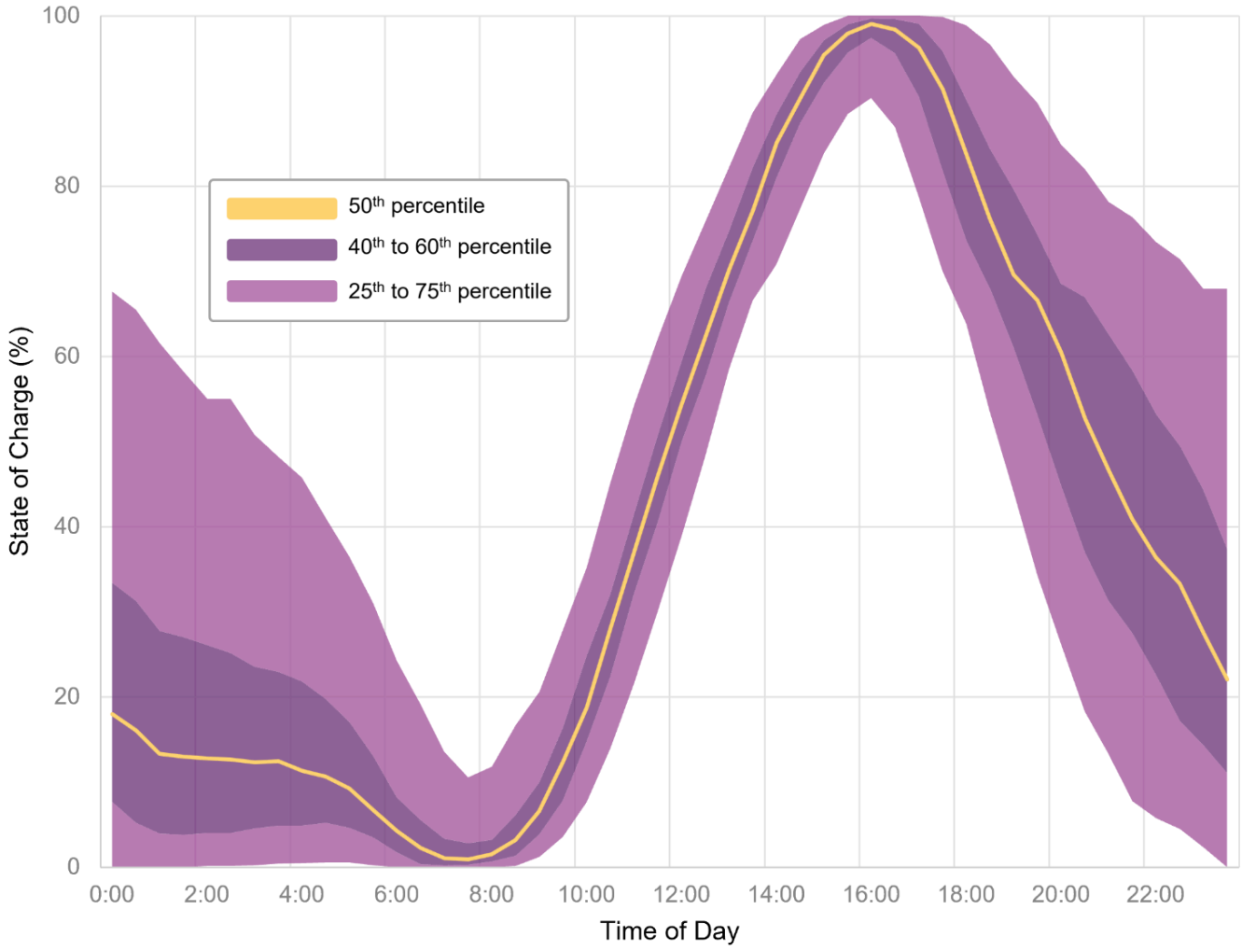
- The average forecast daily usable stage of charge (SoC) for batteries (planted under the 2024 ISP *Step Change* scenario) across Queensland in 2030 (Section A4.1).
- The generation and storage capacity and annual generation energy production across Queensland under the 2024 ISP *Step Change* projected build in 2024 (actual annual production) and 2025, 2030, and 2040 (Section A4.3).
- An overview map of the Queensland region and associated REZs (Section A4.4).
- Detailed locational indicators and metrics for each REZ within Queensland (Sections A4.5 to A4.14).

This appendix uses existing sources of publicly available information which includes the Final 2024 ISP.

## A4.2 Average forecast daily usable battery state of charge

**Figure 1** presents the average forecast daily usable stage of charge (SoC) for batteries (planted under the *Step Change* scenario) across Queensland in 2030.

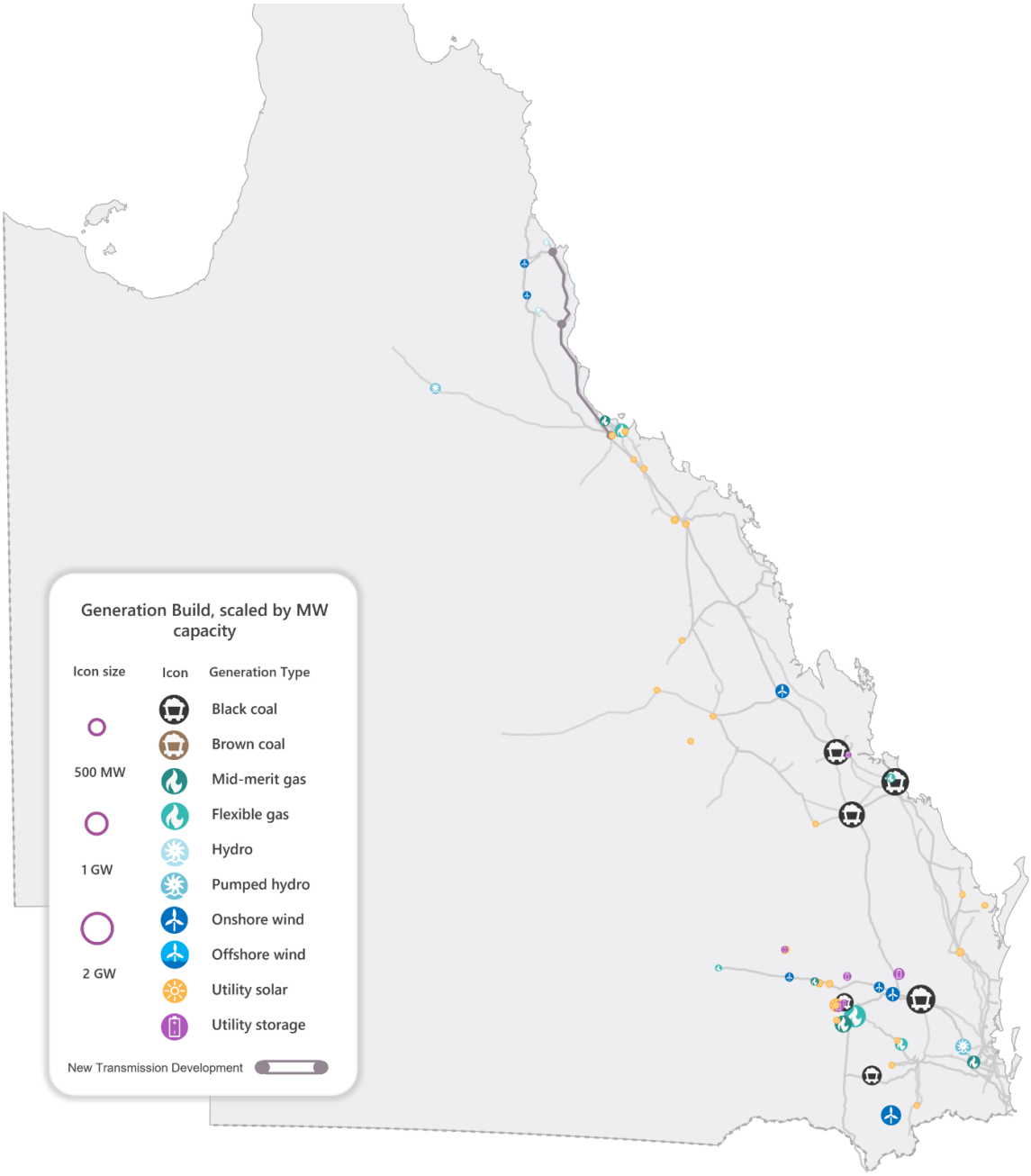
**Figure 1 Average forecast daily usable state of charge (SoC) for batteries across Queensland, 2024 ISP *Step Change* scenario, 2030 (%)**



## A4.3 Projected generation build

**Figure 2** to **Figure 7** show the generation and storage capacity and annual generation energy production across Queensland under the 2024 ISP *Step Change* projected build in 2024 (actual annual production) and 2025, 2030, and 2040[1].

**Figure 2 Projected generation capacity (MW) and across Queensland, under the 2024 ISP *Step Change* projected build, 2025**




[1] Units smaller than 50 MW have been omitted from the capacity map, and those smaller than 125 GWh annually have been omitted from the energy production maps. Icon sizes do not represent area of land usage. Icon locations have been arranged for visual clarity. ISP projects have been placed within their relevant ISP sub-region or REZ but do not represent specific anticipated connection points.

**Figure 3 Projected generation capacity (MW) and across Queensland, under the 2024 ISP *Step Change* projected build, 2030**

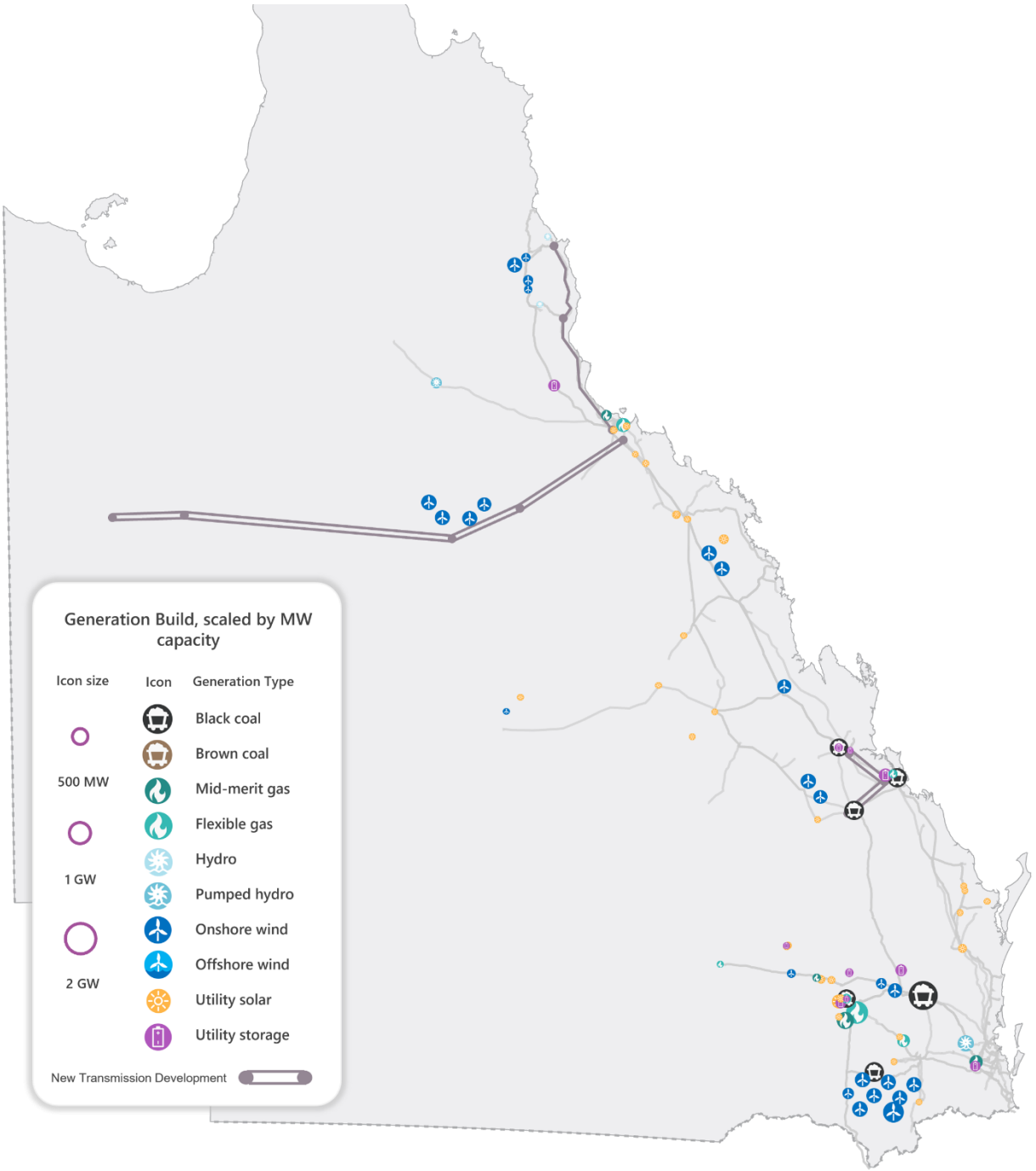


**Figure 4 Projected generation capacity (MW) and across Queensland, under the 2024 ISP *Step Change* projected build, 2040**

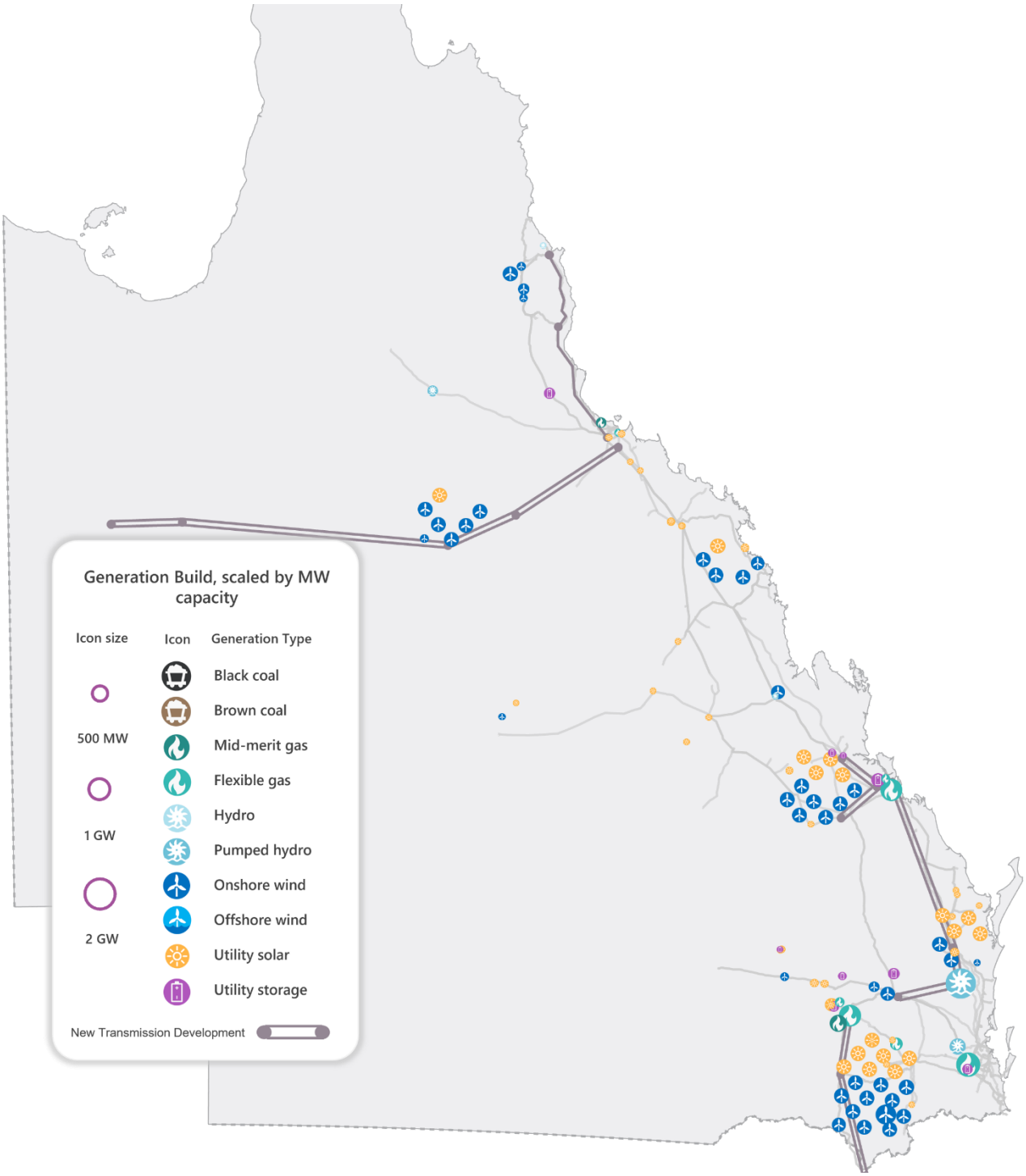
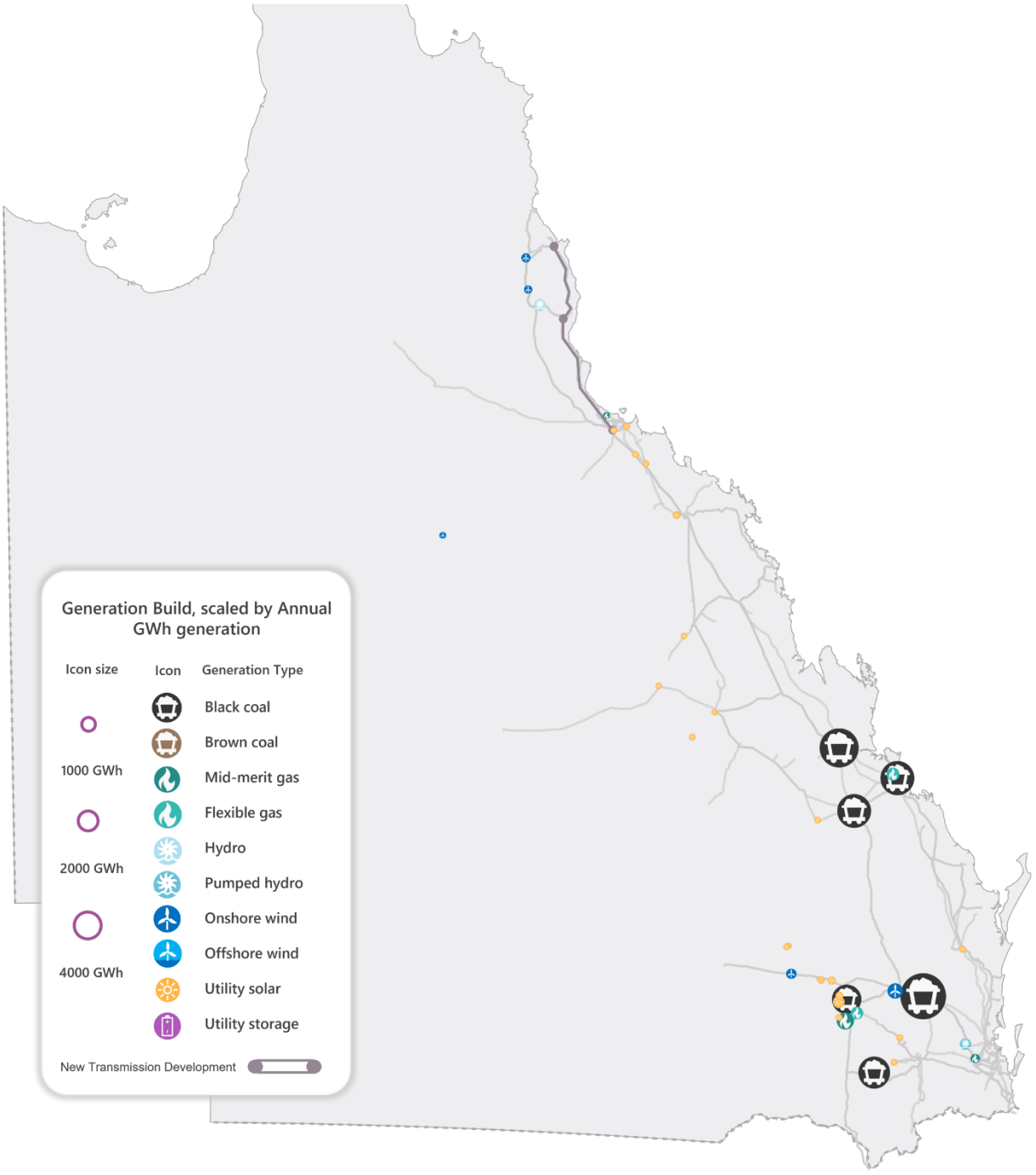


**Figure 5 Annual generation energy production (MWh) across Queensland, 2024**




Note: This figure makes use of historical calendar year generation data and is hence presented for the year 2024. All other build figures make use of the 2024 *ISP Step Change* projected build.

**Figure 6 Projected annual generation energy production (MWh) across Queensland, under the 2024 ISP *Step Change* projected build, 2030**

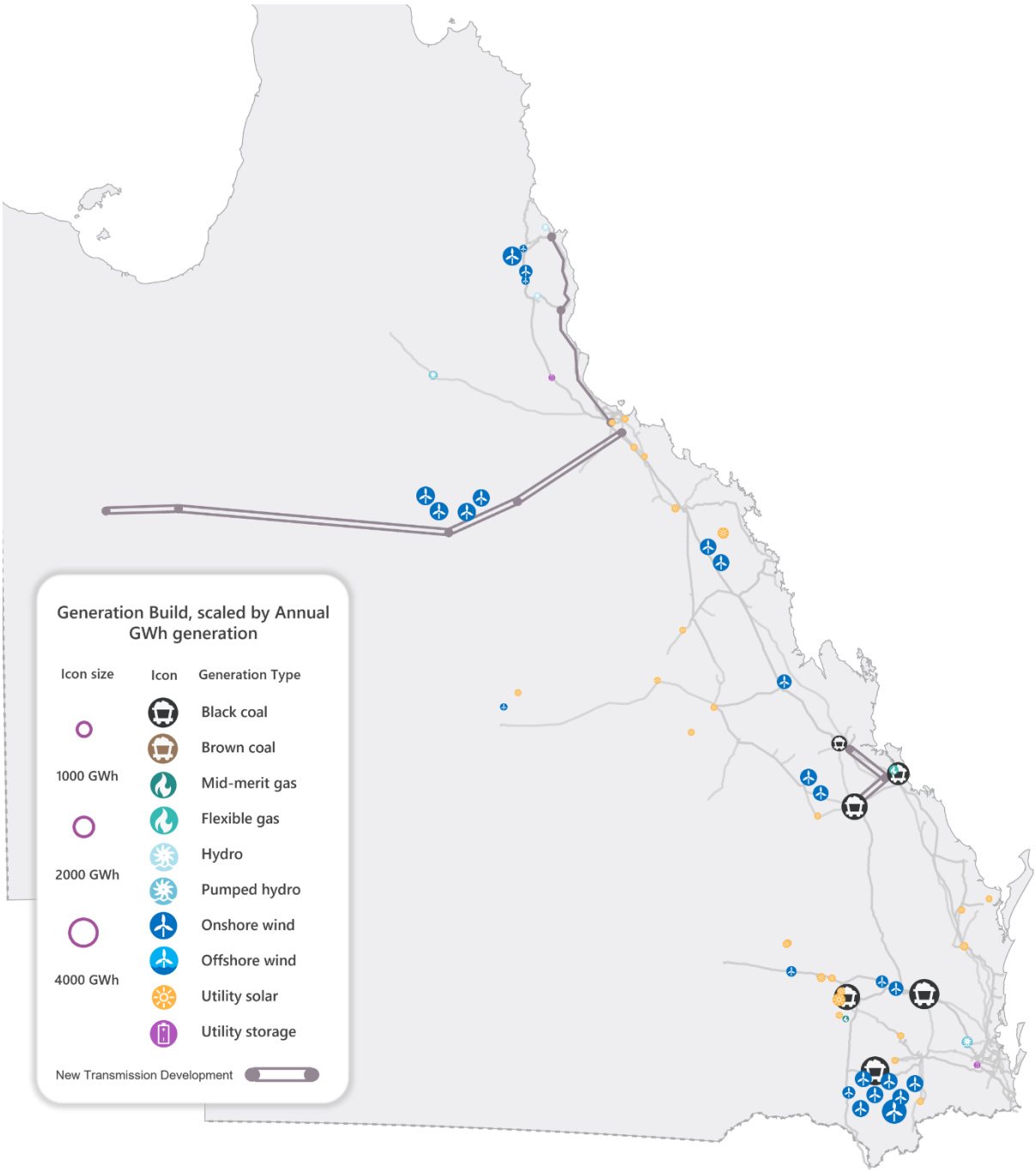
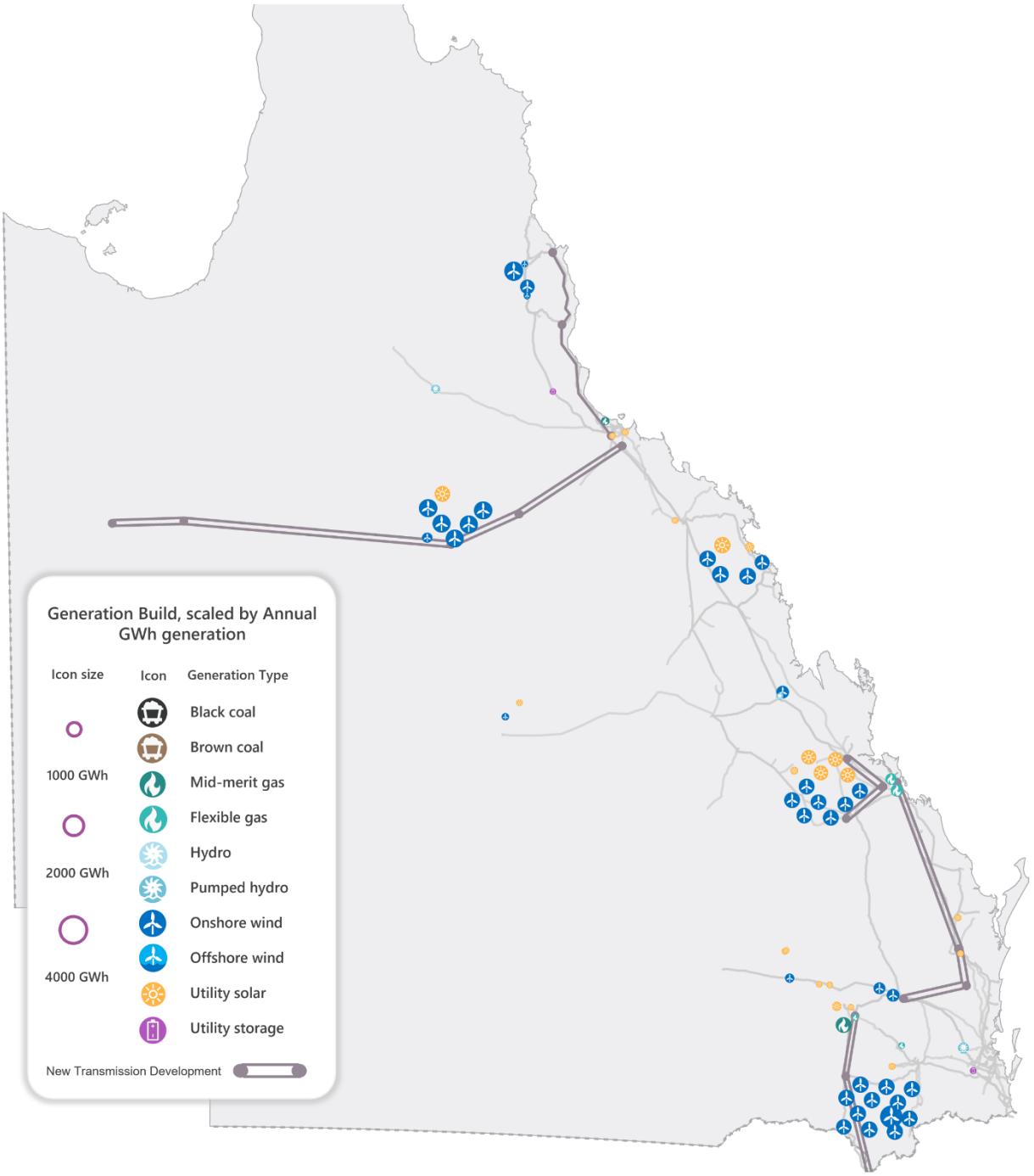


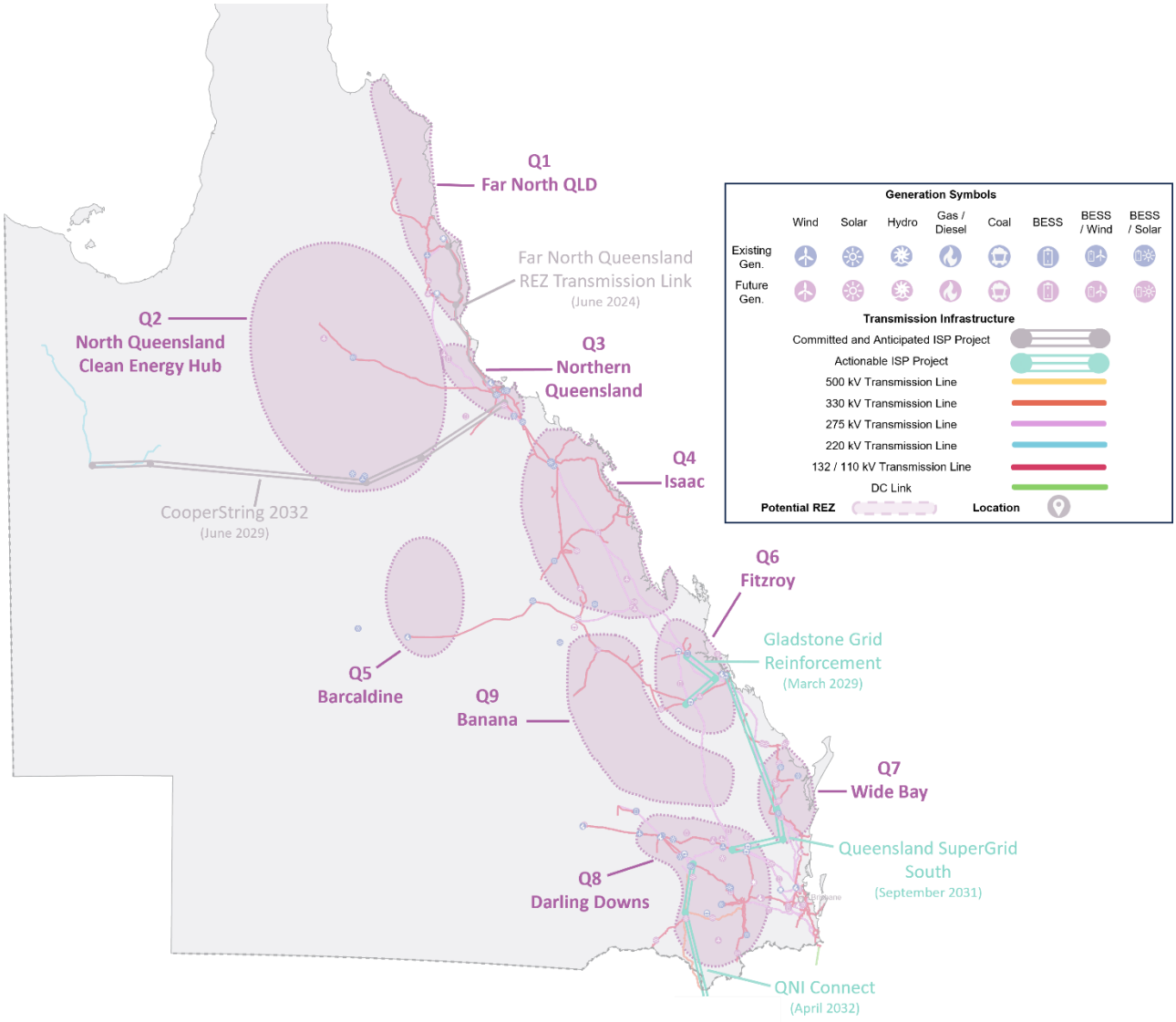
**Figure 7 Projected annual generation energy production (MWh) across Queensland, under the 2024 ISP *Step Change* projected build, 2040**



## A4.4 REZs overview

The following sections of this appendix provides detailed locational indicators and metrics for each REZ in Queensland. **Figure 8** provides an overview map of the Queensland region and associated REZs. Appendix A2 provides a guide to interpreting the REZ scorecards presented throughout the remainder of this appendix.

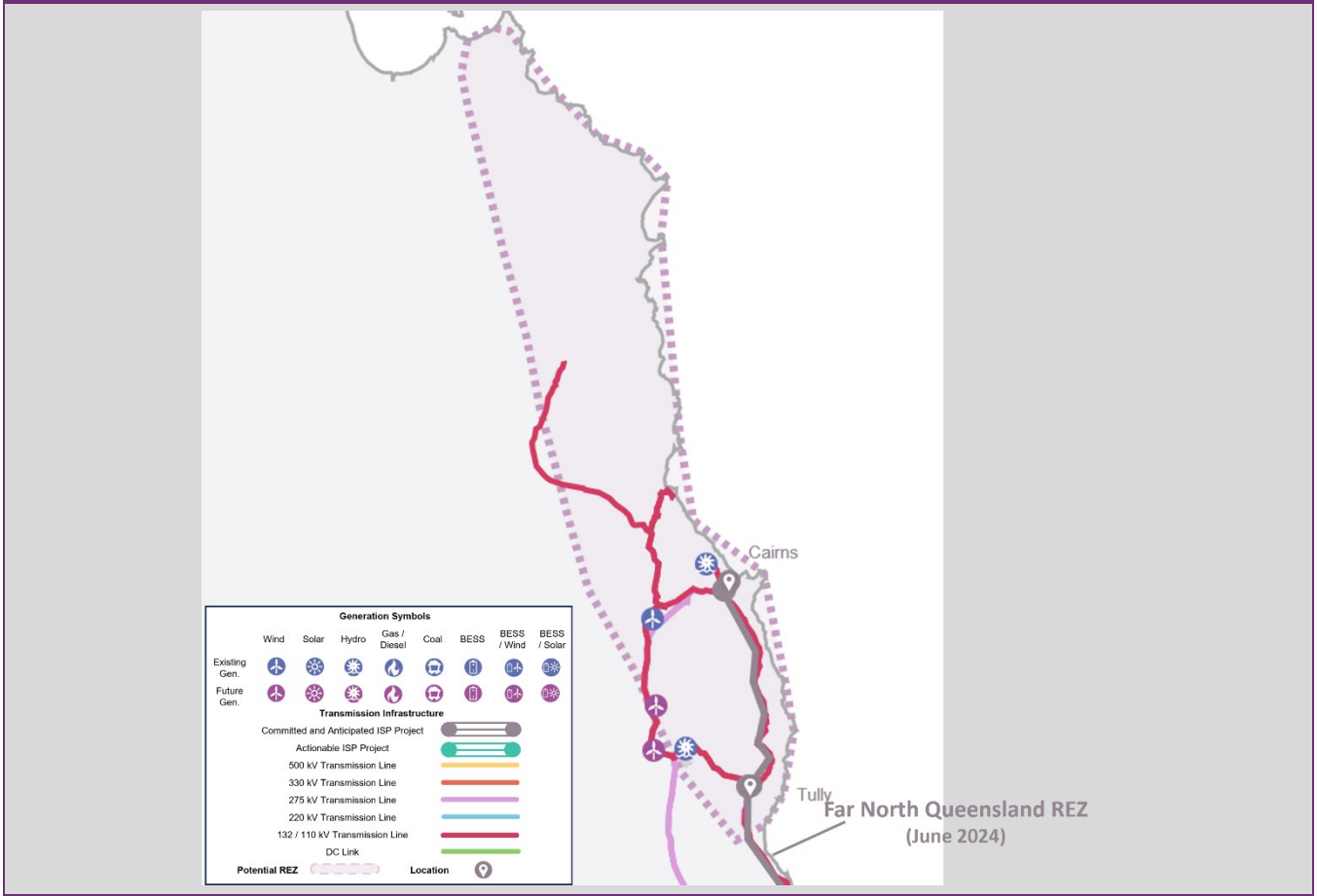
**Figure 8 Overview of Queensland region and REZs**



# A4.5 Q1 – Far North Queensland

## REZ information

**Far North QLD REZ map**




| Overview | Network Transfer Capability |
|---|---|
| The Far North Queensland (FNQ) REZ is at the most northerly section of Powerlink's network. It has grade A wind resource quality with C grade solar and existing hydroelectric power stations. Two options are proposed that progressively increase network capacity and allow for upgrades based on where generation develops. | The current total REZ transmission limit for existing and new VRE before any network upgrade in Far North Queensland is approximately 750 MW for peak demand, summer typical and winter reference conditions. |

| Jurisdictional body | Reference | Function |
|---|---|---|
| Queensland Government | Queensland Energy and Jobs Plan (QEJP)[2] | Overarching plan to reach targets for Queensland's clean energy system of 50% renewable energy by 2030, 70% by 2032 and 80% by 2035. Describes Powerlink's roles to:<br>• be the designated REZ Delivery Body (RDB) for transmission in Queensland Renewable Energy Zone (QREZ) regions (subject to legislation)<br>• progress early design and planning for the SuperGrid backbone transmission. |
| Queensland Government | Queensland SuperGrid infrastructure Blueprint[3] | Outlines the optimal infrastructure pathway for the QEJP, and includes the major electricity infrastructure investments required to |

[2] Queensland energy policies may be subject to change from state government review processes.

[3] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0030/32988/queensland-supergrid-infrastructure-blueprint.pdf.

| | | |
|---|---|---|
| | | transform the system in line with the Queensland clean energy targets described in the QEJP. The investments outlined in this document will build Queensland's SuperGrid. |
| Queensland Government | 2023 Queensland REZ Roadmap[4] | Outlines the pathway for connecting around 22 GW of new wind and solar generation. |
| Powerlink | Transmission Annual Planning Report[5] | Existing Transmission Planning Function. |

| **Resource metrics** | | | | | | |
|---|---|---|---|---|---|---|
| **Resource** | **Solar** | | | **Wind** | | |
| **Resource Quality** | C | | | A | | |
| **Renewable Potential (MW)** | 1,100 | | | 2,280 | | |
| **Demand Correlation** | **2029-30** | **2039-40** | **2049-50** | **2029-30** | **2039-40** | **2049-50** |
| | F | F | F | B | B | B |
| **Climate hazard** | | | | | | |
| **Temperature score** | B | | | **Bushfire score** | A | |

## Marginal loss factors

| **Marginal Loss Factor** | | |
|---|---|---|
| **Technology** | **Voltage (kV)** | **2025-26 MLF** |
| Wind | 275 | 0.9649 – 0.9696 |

| **Marginal Loss Factor Robustness** | | | |
|---|---|---|---|
| **MLF Robustness score** | **2029-30** | **2034-35** | **2039-40** |
| | E | E | E |

[4] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0036/49599/REZ-roadmap.pdf.

[5] See https://www.powerlink.com.au/planning-report/transmission-annual-planning-report-2024.

## Congestion and curtailment

| Congestion information – calendar year 2024 | | | |
|---|---|---|---|
| **Constraint ID** | **Binding hours** | **Marginal value ($)** | **Most affected generation** |
| - | - | - | - |

| VRE semi-scheduled curtailment – calendar year 2024 | | | | | |
|---|---|---|---|---|---|
| **DUID** | **Generator name** | **Maximum Capacity (MW)** | **Average curtailment (%)** | **Average curtailment (MW)** | **Curtailment (MWh)** |
| KABANWF1 | Kaban Wind Farm | 152 | 0.9 | 0.4 | 3,562 |
| MEWF1 | Mount Emerald Wind Farm | 178 | 1.4 | 0.7 | 6,491 |
| **Historical hosting capacity indicator for 20% network spill threshold[6]** | | | | | |
| **DUID** | **Generator name** | **HHCI Wind (MW)** | **HHCI Wind + BESS (MW)** | **HHCI Solar (MW)** | **HHCI Solar + BESS (MW)** |
| KABANWF1 | Kaban Wind Farm | 300 | 300 | 300 | 300 |
| MEWF1 | Mount Emerald Wind Farm | 300 | 300 | 300 | 300 |

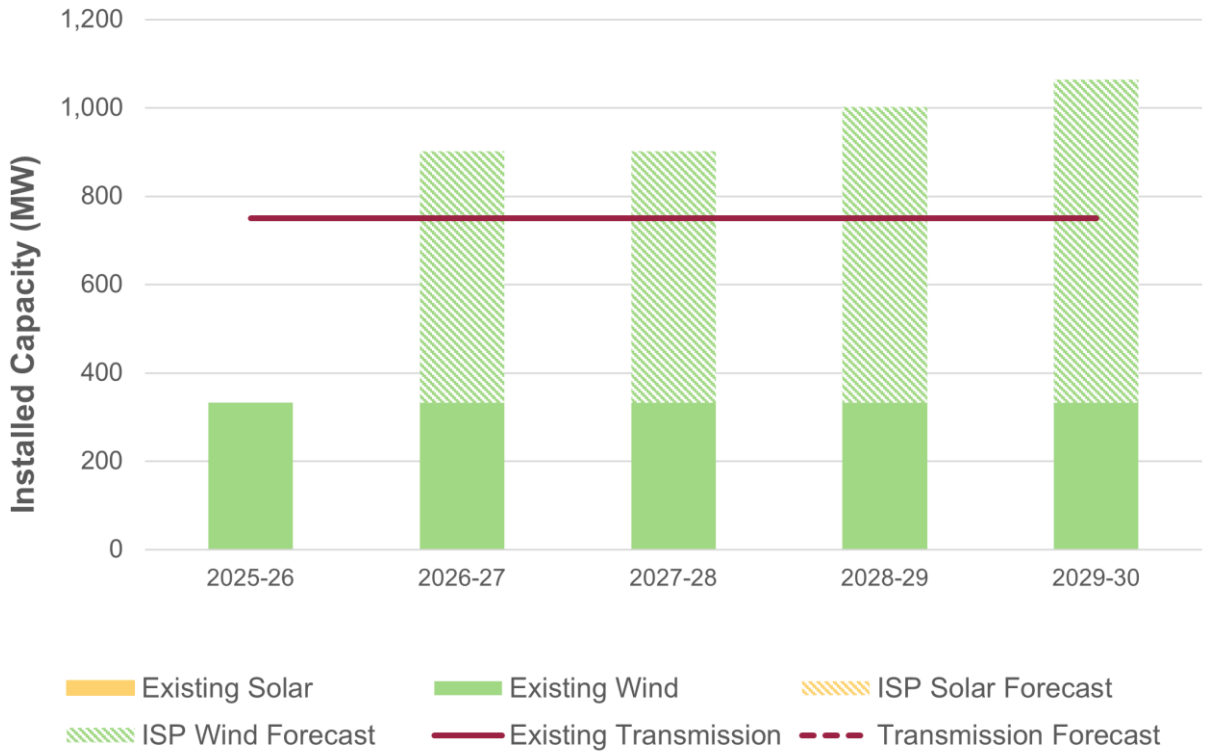
| VRE curtailment – ISP forecast | | | | | | |
|---|---|---|---|---|---|---|
| **Scenario** | **2025-2026** | | **2026-2027** | | **2027-2028** | |
| | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** |
| ***Step Change*** | 0 | 1 | 0 | 3 | 0 | 2 |

[6] The maximum hosting capacity was set to 300 MW for these studies. See Appendix A2.5 for the detailed methodology and see 2025 ELI Report chart data for information on the reference generation profiles used in this analysis.

## ISP forecast

| ISP forecast | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VRE outlook | Solar PV (MW) | | | | | | Wind (MW) | | | | | |
| | Existing/ committed/ anticipated | Projected | | | | | Existing/ committed/ anticipated | Projected | | | | |
| | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 |
| ***Step Change*** | - | - | - | - | - | - | 332 | - | 570 | 570 | 670 | 732 |

**Transmission access expansion for *Step Change***

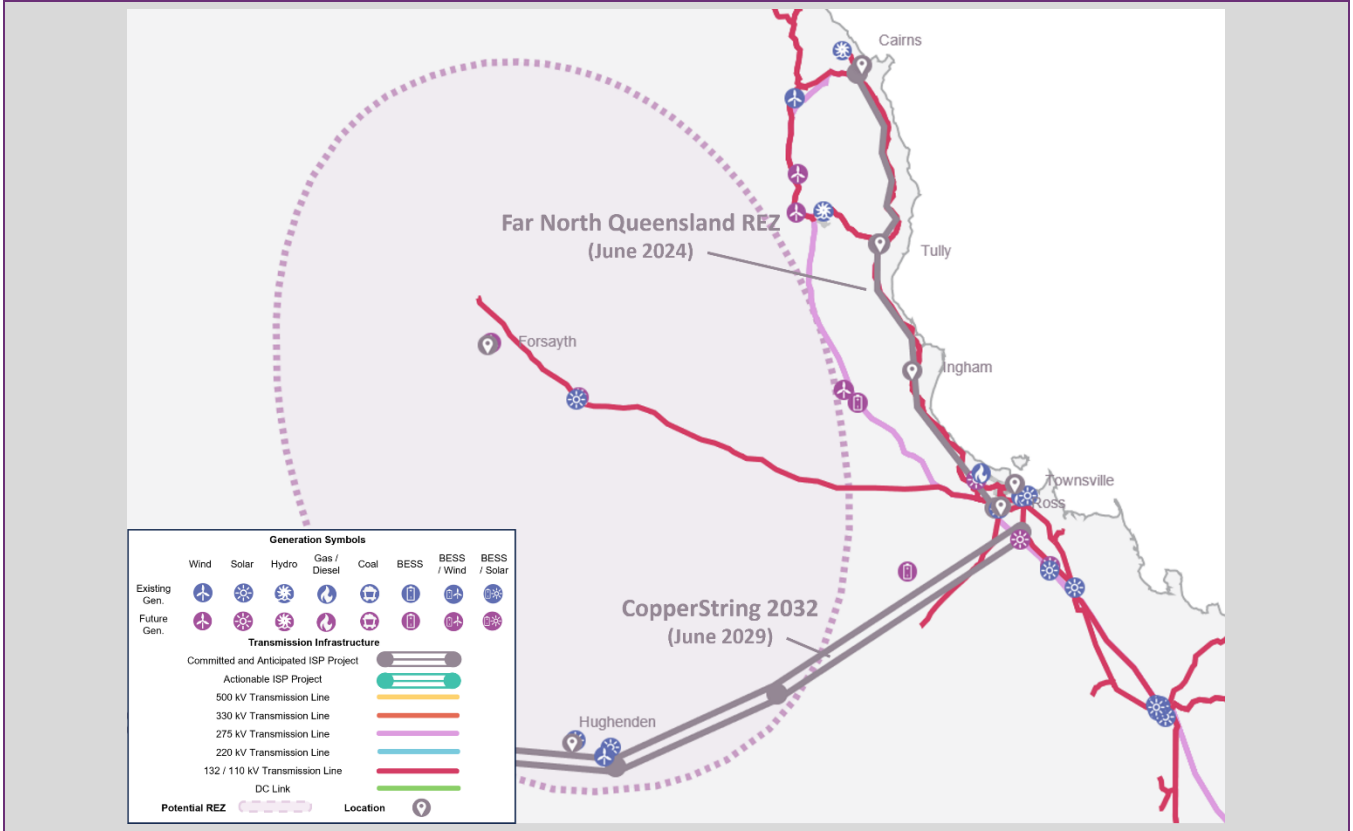



| Committed, Anticipated, and Actionable Transmission Projects | Timing | Status | Additional REZ hosting capacity provided (MW) |
|---|---|---|---|
| - | - | - | - |

# A4.6 Q2 – North Queensland Clean Energy Hub

## REZ information

**North Queensland Clean Energy Hub REZ map**




| Overview | Network Transfer Capability |
|---|---|
| The North Queensland Clean Energy Hub REZ is at the north-western section of Powerlink's network, and has grade A and B wind and solar resource quality.<br>The Queensland Government has announced that it will deliver the 840 km CopperString 2032 project. CopperString 2032 will connect the North-West Minerals Province of Queensland to the NEM via Woodstock near Townsville. The project scope includes 500 kV transmission capacity between Townsville and Hughenden to unlock the renewable energy potential of the region.<br>AEMO is now considering the CopperString 2032 project as an anticipated project after outcomes from joint planning with Powerlink and the Queensland Government. | The existing network capability is assumed to be approximately 2,200 MW, incorporating the anticipated CopperString 2032 project addition of 1,500 MW to the existing 700 MW of network capability. For the 2024 ISP, only the 500 kV section of CopperString 2032 was modelled. |

| Jurisdictional body | Reference | Function |
|---|---|---|
| Queensland Government | Queensland Energy and Jobs Plan (QEJP)[7] | Overarching plan to reach targets for Queensland's clean energy system of 50% renewable energy by 2030, 70% by 2032 and 80% by 2035. Describes Powerlink's roles to:<br>• be the Designated REZ Delivery Body (RDB) for transmission in QREZ regions (subject to legislation)<br>• progress early design and planning for the SuperGrid backbone transmission. |

[7] Queensland energy policies may be subject to change from state government review processes.

| | | |
|---|---|---|
| Queensland Government | Queensland SuperGrid infrastructure Blueprint[8] | Outlines the optimal infrastructure pathway for the QEJP, and includes the major electricity infrastructure investments required to transform the system in line with the Queensland clean energy targets described in the QEJP. The investments outlined in this document will build Queensland's SuperGrid. |
| Queensland Government | 2023 Queensland REZ Roadmap [9] | Outlines the pathway for connecting around 22 GW of new wind and solar generation. |
| Powerlink | Transmission Annual Planning Report[10] | Existing Transmission Planning Function. |

| **Resource metrics** | | | | | | |
|---|---|---|---|---|---|---|
| **Resource** | **Solar** | | | **Wind** | | |
| **Resource Quality** | A | | | B | | |
| **Renewable Potential (MW)** | 8,000 | | | 18,600 | | |
| **Demand Correlation** | **2029-30** | **2039-40** | **2049-50** | **2029-30** | **2039-40** | **2049-50** |
| | F | F | F | A | A | A |
| **Climate hazard** | | | | | | |
| **Temperature score** | D | | | **Bushfire score** | C | |

## Marginal loss factors

| **Marginal Loss Factor** | | |
|---|---|---|
| **Technology** | **Voltage (kV)** | **2025-26 MLF** |
| Solar | 132 | 0.9516 – 0.9816 |
| Wind | 132 | 0.9813 |

| **Marginal Loss Factor Robustness** | | | |
|---|---|---|---|
| **MLF Robustness score** | **2029-30** | **2034-35** | **2039-40** |
| | E | E | E |

[8] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0030/32988/queensland-supergrid-infrastructure-blueprint.pdf.

[9] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0036/49599/REZ-roadmap.pdf.

[10] See https://www.powerlink.com.au/planning-report/transmission-annual-planning-report-2024.

## Congestion and curtailment

| Congestion information – calendar year 2024 | | | |
|---|---|---|---|
| **Constraint ID** | **Binding hours** | **Marginal value ($)** | **Most affected generation** |
| - | - | - | - |

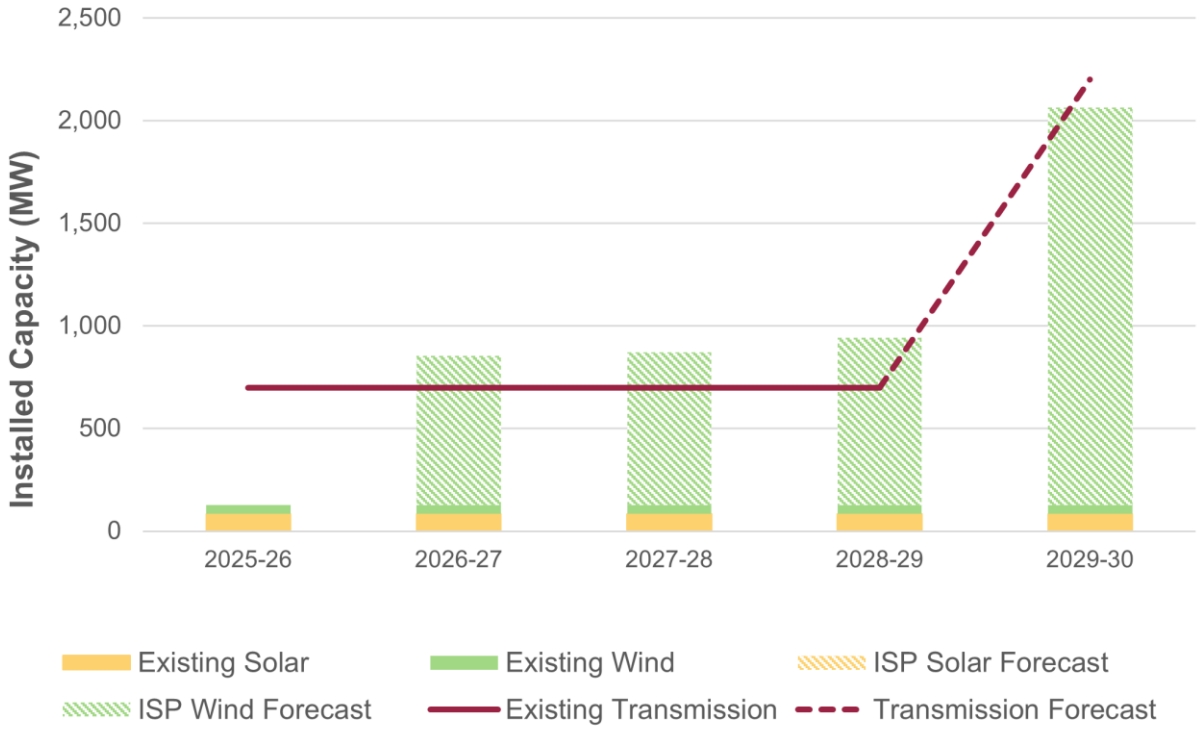
| VRE semi-scheduled curtailment – calendar year 2024 | | | | | |
|---|---|---|---|---|---|
| **DUID** | **Generator name** | **Maximum Capacity (MW)** | **Average curtailment (%)** | **Average curtailment (MW)** | **Curtailment (MWh)** |
| KEPSF1 | Kennedy Energy Park | 15 | 1.1 | 0.0 | 295 |
| KEPWF1 | Kennedy Energy Park | 43 | 0.3 | 0.1 | 454 |
| KSP1 | Kidston Solar Project | 47.7 | 1.0 | 0.1 | 1,160 |
| **Historical hosting capacity indicator for 20% network spill threshold** | | | | | |
| **DUID** | **Generator name** | **HHCI Wind (MW)** | **HHCI Wind + BESS (MW)** | **HHCI Solar (MW)** | **HHCI Solar + BESS (MW)** |
| - | - | - | - | - | - |

| VRE curtailment – ISP forecast | | | | | | |
|---|---|---|---|---|---|---|
| **Scenario** | **2025-2026** | | **2026-2027** | | **2027-2028** | |
| | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** |
| ***Step Change*** | 0 | 2 | 0 | 3 | 0 | 3 |

## ISP forecast

| ISP forecast | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VRE outlook | Solar PV (MW) | | | | | | Wind (MW) | | | | | |
| | Existing/ committed/ anticipated | Projected | | | | | Existing/ committed/ anticipated | Projected | | | | |
| | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 |
| ***Step Change*** | 84 | - | - | - | - | - | 43 | - | 728 | 743 | 814 | 1937 |

**Transmission access expansion for *Step Change***

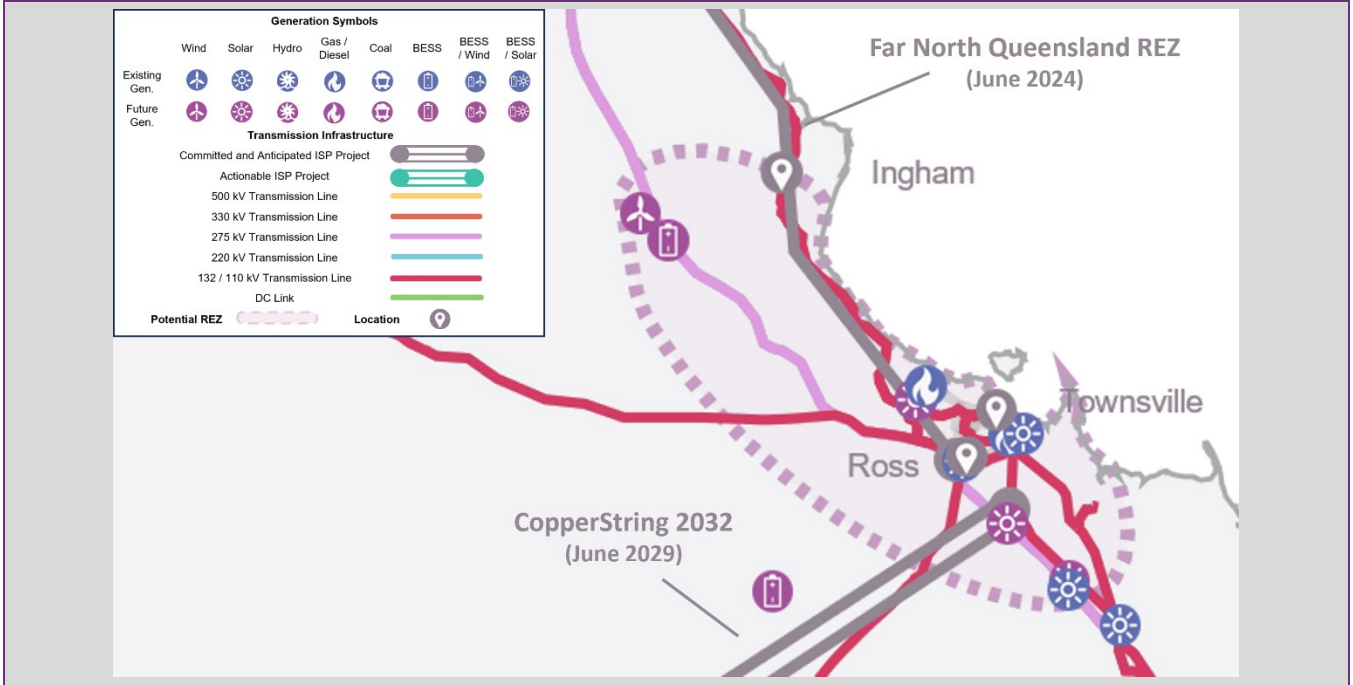



| Committed, Anticipated, and Actionable Transmission Projects | Timing | Status | Additional REZ hosting capacity provided (MW) |
|---|---|---|---|
| CopperString 2032 | June 2031 | Anticipated | 1,500 MW |

# A4.7 Q3 – Northern Queensland

## REZ information

**Northern Queensland REZ map**




| Overview | Network Transfer Capability |
|---|---|
| The Northern Queensland REZ encompasses Townsville and the surrounding area. It has B grade solar resource quality and is situated close to the high-capacity 275 kV network. There are already 450 MW of existing large-scale solar generation projects operational within this REZ. | Existing network capacity can allow for up to approximately 1,200 MW of new generator connections, shared between Q1, Q2 and Q3. Network limits are modelled by the Northern Queensland (NQ)-Central Queensland (CQ) flow path limits in the 2024 ISP. |

| Jurisdictional body | Reference | Function |
|---|---|---|
| Queensland Government | Queensland Energy and Jobs Plan (QEJP)[11] | Overarching plan to reach targets for Queensland's clean energy system of 50% renewable energy by 2030, 70% by 2032 and 80% by 2035. Describes Powerlink's roles to:<br>• be the Designated REZ Delivery Body (RDB) for transmission in QREZ regions (subject to legislation)<br>• progress early design and planning for the SuperGrid backbone transmission. |
| Queensland Government | Queensland SuperGrid infrastructure Blueprint[12] | Outlines the optimal infrastructure pathway for the QEJP, and includes the major electricity infrastructure investments required to transform the system in line with the Queensland clean energy targets described in the QEJP. The investments outlined in this document will build Queensland's SuperGrid. |
| Queensland Government | 2023 Queensland REZ Roadmap[13] | Outlines the pathway for connecting around 22 GW of new wind and solar generation. |

[11] Queensland energy policies may be subject to change from state government review processes.

[12] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0030/32988/queensland-supergrid-infrastructure-blueprint.pdf.

[13] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0036/49599/REZ-roadmap.pdf.

| | | | | | | |
|---|---|---|---|---|---|---|
| Powerlink | Transmission Annual Planning Report[14] | | Existing Transmission Planning Function. | | | |
| **Resource metrics** | | | | | | |
| **Resource** | **Solar** | | | **Wind** | | |
| **Resource Quality** | B | | | E | | |
| **Renewable Potential (MW)** | 3,400 | | | - | | |
| **Demand Correlation** | **2029-30** | **2039-40** | **2049-50** | **2029-30** | **2039-40** | **2049-50** |
| | F | F | F | A/B | A/B | A/B |
| **Climate hazard** | | | | | | |
| **Temperature score** | C | | | **Bushfire score** | E | |

## Marginal loss factors

| **Marginal Loss Factor** | | |
|---|---|---|
| **Technology** | **Voltage (kV)** | **2025-26 MLF** |
| Solar | 132 | 0.9363 – 1.0151 |
| | 275 | 0.9475 |
| **Marginal Loss Factor Robustness** | | |
| **MLF Robustness score** | **2029-30** | **2034-35** | **2039-40** |
| | E | E | E |

[14] See https://www.powerlink.com.au/planning-report/transmission-annual-planning-report-2024.

## Congestion and curtailment

| Congestion information – calendar year 2024 | | | |
|---|---|---|---|
| **Constraint ID** | **Binding hours** | **Marginal value ($)** | **Most affected generation** |
| Q>NIL_TV66 | 43.5 | 1,416,752.1 | Generation contributing to flows on 66 kV network in Townsville area |

| VRE semi-scheduled curtailment – calendar year 2024 | | | | | |
|---|---|---|---|---|---|
| **DUID** | **Generator name** | **Maximum Capacity (MW)** | **Average curtailment (%)** | **Average curtailment (MW)** | **Curtailment (MWh)** |
| CLARESF1 | Clare Solar Farm | 100 | 0.8 | 0.2 | 1,912 |
| HAUGHT11 | Haughton Solar Farm Stage 1 | 100 | 2.1 | 0.6 | 4,900 |
| RRSF1 | Ross River Solar Farm | 116 | 1.0 | 0.3 | 2,369 |
| SMCSF1 | Sun Metals Solar Farm | 121 | 0.9 | 0.2 | 1,943 |
| **Historical hosting capacity indicator for 20% network spill threshold[15]** | | | | | |
| **DUID** | **Generator name** | **HHCI Wind (MW)** | **HHCI Wind + BESS (MW)** | **HHCI Solar (MW)** | **HHCI Solar + BESS (MW)** |
| CLARESF1 | Clare Solar Farm | 300 | 300 | 300 | 300 |
| HAUGHT11 | Haughton Solar Farm Stage 1 | 150 | 300 | 300 | 300 |
| RRSF1 | Ross River Solar Farm | 300 | 300 | 300 | 300 |
| SMCSF1 | Sun Metals Solar Farm | 300 | 300 | 300 | 300 |

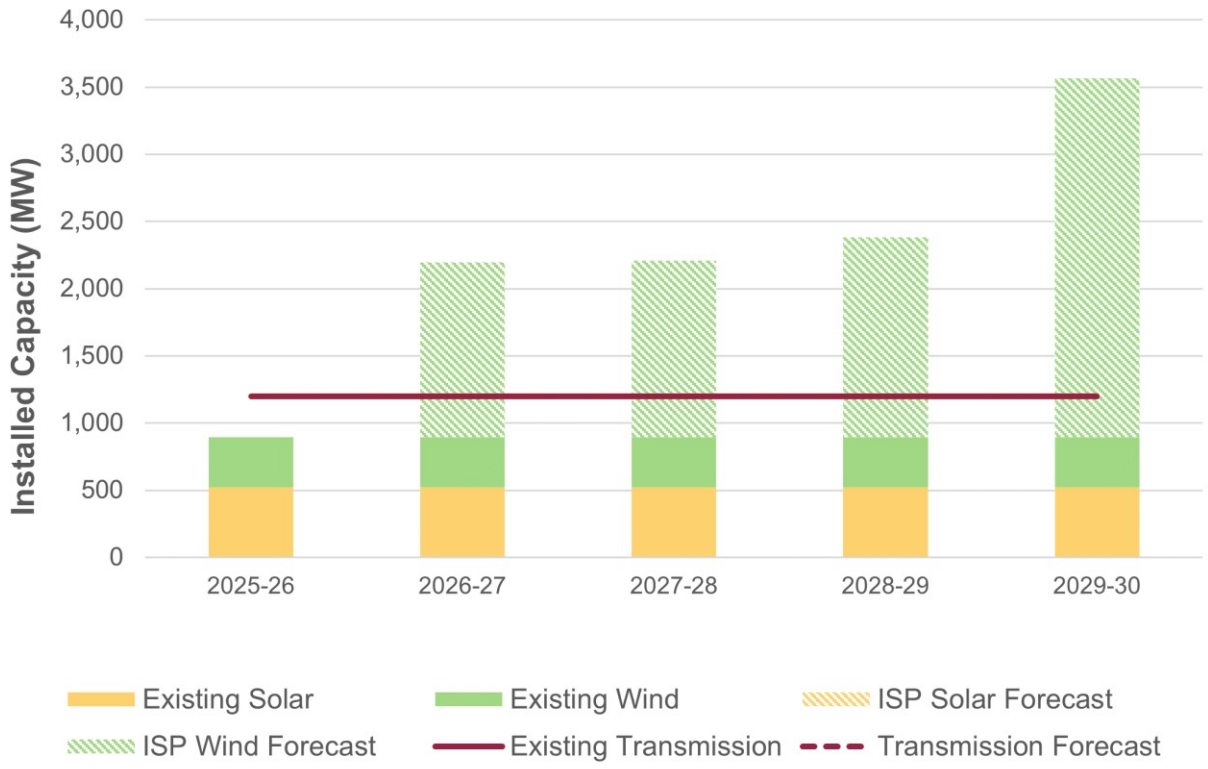
| VRE curtailment – ISP forecast | | | | | | |
|---|---|---|---|---|---|---|
| **Scenario** | **2025-2026** | | **2026-2027** | | **2027-2028** | |
| | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** |
| ***Step Change*** | 0 | 1 | 0 | 4 | 0 | 4 |

[15] The maximum hosting capacity was set to 300 MW for these studies. See Appendix A2.5 for the detailed methodology and see 2025 ELI Report chart data for information on the reference generation profiles used in this analysis.

## ISP forecast

| ISP forecast | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VRE outlook | Solar PV (MW) | | | | | | Wind (MW) | | | | | |
| | Existing/ committed/ anticipated | Projected | | | | | Existing/ committed/ anticipated | Projected | | | | |
| | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 |
| ***Step Change*** | 437 | - | - | - | - | - | - | - | - | - | - | - |

**Transmission access expansion for *Step Change***



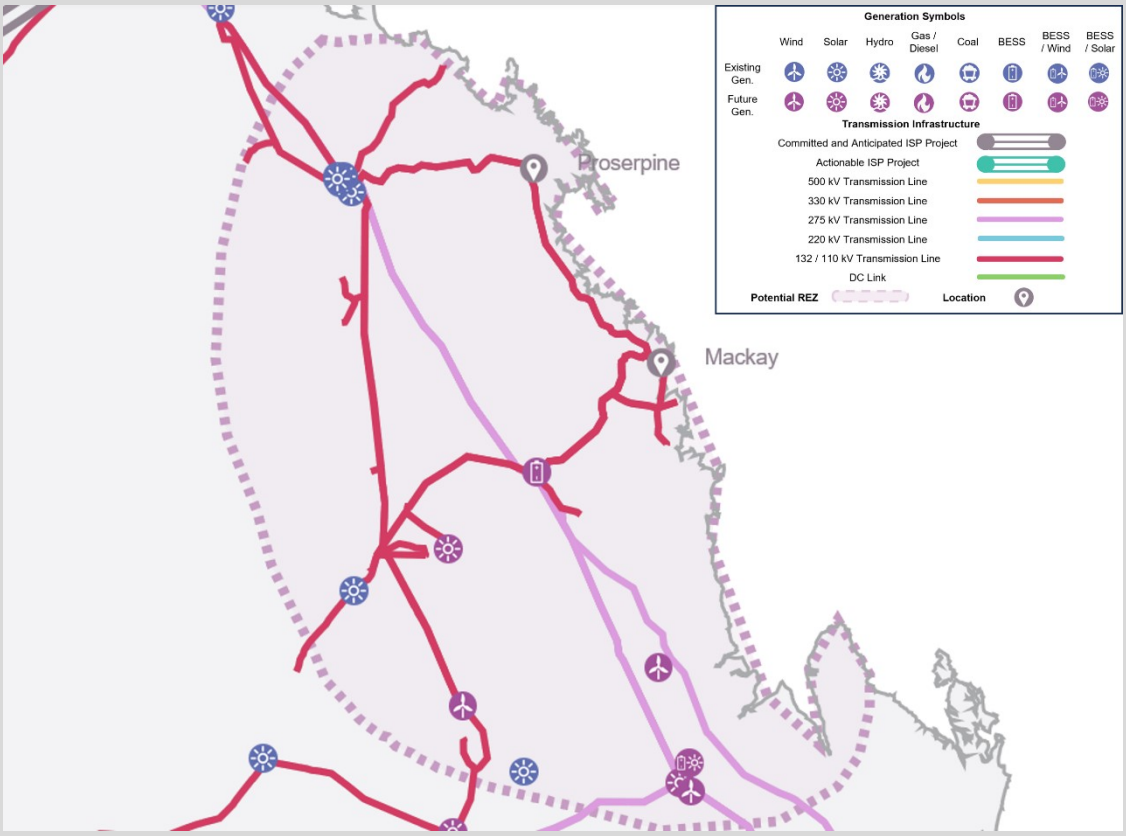

Note: The transmission limit modelled using the CQ-NQ flow path limit, and includes VRE projections for Q1, Q2 and Q3.

| Committed, Anticipated, and Actionable Transmission Projects | Timing | Status | Additional REZ hosting capacity provided (MW) |
|---|---|---|---|
| - | - | - | - |

# A4.8 Q4 – Isaac

## REZ information

**Isaac REZ map**




| Overview | Network Transfer Capability |
|---|---|
| The Isaac REZ has grade B solar resource quality covering Collinsville and Mackay, and has a number of large-scale solar generation projects already in operation. There are numerous potential pumped hydro locations to the north east and south east of Nebo. This REZ has a good diversity of resources – wind, solar and storage. Locating storage in this zone could maximise transmission utilisation towards Brisbane.<br>In September 2022, the Queensland Government released its QEJP and the SuperGrid Blueprint which calls for the large-scale pumped hydro station, Pioneer-Burdekin. Pioneer-Burdekin is currently progressing through Queensland Government assessment and decision-making processes and AEMO is yet to consider it an anticipated project (based on AEMO's criteria). AEMO recognises the Queensland Government's intention to build the project. Inclusion of Pioneer-Burdekin is expected to impact the ultimate REZ generation build and timings within this REZ. | The Isaac REZ forms part of the NQ transmission backbone from Nebo to Strathmore. Due to the existing high voltage infrastructure, there are no augmentation options specifically for this REZ. The associated augmentations are the NQ2 group constraint and CQ-NQ flow path augmentations that facilitate power from Q1 to Q5 to be transmitted south to the load centres. The network has a transmission limit of 2,500 MW in summer peak and summer typical conditions and 2,750 MW for winter reference conditions. |

| Jurisdictional body | Reference | Function |
|---|---|---|
| **Queensland Government** | Queensland Energy and Jobs Plan (QEJP)[16] | Overarching plan to reach targets for Queensland's clean energy system of 50% renewable energy by 2030, 70% by 2032 and 80% by 2035. Describes Powerlink's roles to: |

[16] Queensland energy policies may be subject to change from state government review processes.

| | | |
|---|---|---|
| | | • be the Designated REZ Delivery Body (RDB) for transmission in QREZ regions (subject to legislation)<br>• progress early design and planning for the SuperGrid backbone transmission. |
| **Queensland Government** | Queensland SuperGrid infrastructure Blueprint[17] | Outlines the optimal infrastructure pathway for the QEJP, and includes the major electricity infrastructure investments required to transform the system in line with the Queensland clean energy targets described in the QEJP. The investments outlined in this document will build Queensland's SuperGrid. |
| **Queensland Government** | 2023 Queensland REZ Roadmap[18] | Outlines the pathway for connecting around 22 GW of new wind and solar generation. |
| **Powerlink** | Transmission Annual Planning Report[19] | Existing Transmission Planning Function. |

| **Resource metrics** | | | | | | |
|---|---|---|---|---|---|---|
| **Resource** | **Solar** | | | **Wind** | | |
| **Resource Quality** | B | | | D | | |
| **Renewable Potential (MW)** | 6,900 | | | 3,800 | | |
| **Demand Correlation** | **2029-30** | **2039-40** | **2049-50** | **2029-30** | **2039-40** | **2049-50** |
| | F | F | F | A | A | A |
| **Climate hazard** | | | | | | |
| **Temperature score** | C | | | **Bushfire score** | C | |

## Marginal loss factors

| **Marginal Loss Factor** | | | |
|---|---|---|---|
| **Technology** | **Voltage (kV)** | **2025-26 MLF** | |
| Solar | 33 - 66 | 0.9379 – 0.9413 | |
| | 132 | 0.9410 – 0.9463 | |
| Wind | 275 | 0.9430 | |
| **Marginal Loss Factor Robustness** | | | |
| **MLF Robustness score** | **2029-30** | **2034-35** | **2039-40** |
| | B | A | A |

[17] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0030/32988/queensland-supergrid-infrastructure-blueprint.pdf.

[18] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0036/49599/REZ-roadmap.pdf.

[19] See https://www.powerlink.com.au/planning-report/transmission-annual-planning-report-2024.

## Congestion and curtailment

| Congestion information – calendar year 2024 | | | |
|---|---|---|---|
| **Constraint ID** | **Binding hours** | **Marginal value ($)** | **Most affected generation** |
| - | - | - | - |

| VRE semi-scheduled curtailment – calendar year 2024 | | | | | |
|---|---|---|---|---|---|
| **DUID** | **Generator name** | **Maximum Capacity (MW)** | **Average curtailment (%)** | **Average curtailment (MW)** | **Curtailment (MWh)** |
| CLERMSF1 | Clermont Solar Farm | 75 | 0.6 | 0.1 | 988 |
| CLRKCWF1 | Clarke Creek Wind Farm | 338 | 0.0 | 0.0 | 0 |
| CSPVPS1 | Collinsville Solar PV Power Station | 40 | 0.9 | 0.1 | 725 |
| DAYDSF1 | Daydream Solar Farm | 150 | 0.9 | 0.3 | 2,986 |
| HAMISF1 | Hamilton Solar Farm | 56 | 0.7 | 0.1 | 823 |
| HAYMSF1 | Hayman Solar Farm | 50 | 0.8 | 0.1 | 843 |
| LILYSF1 | Lilyvale Solar Farm | 100 | 0.3 | 0.1 | 488 |
| MIDDLSF1 | Middlemount Solar Farm | 26 | 1.0 | 0.1 | 512 |
| RUGBYR1 | Rugby Run Solar Farm | 65 | 1.2 | 0.2 | 2,050 |
| WHITSF1 | Whitsunday Solar Farm | 56 | 0.7 | 0.1 | 793 |
| **Historical hosting capacity indicator for 20% network spill threshold[20]** | | | | | |
| **DUID** | **Generator name** | **HHCI Wind (MW)** | **HHCI Wind + BESS (MW)** | **HHCI Solar (MW)** | **HHCI Solar + BESS (MW)** |
| CSPVPS1 | Collinsville Solar PV Power Station | 300 | 300 | 300 | 300 |
| DAYDSF1 | Daydream Solar Farm | 300 | 300 | 300 | 300 |
| HAMISF1 | Hamilton Solar Farm | 300 | 300 | 300 | 300 |
| HAYMSF1 | Hayman Solar Farm | 300 | 300 | 300 | 300 |
| LILYSF1 | Lilyvale Solar Farm | 300 | 300 | 300 | 300 |
| MIDDLSF1 | Middlemount Solar Farm | 300 | 300 | 300 | 300 |
| WHITSF1 | Whitsunday Solar Farm | 300 | 300 | 300 | 300 |

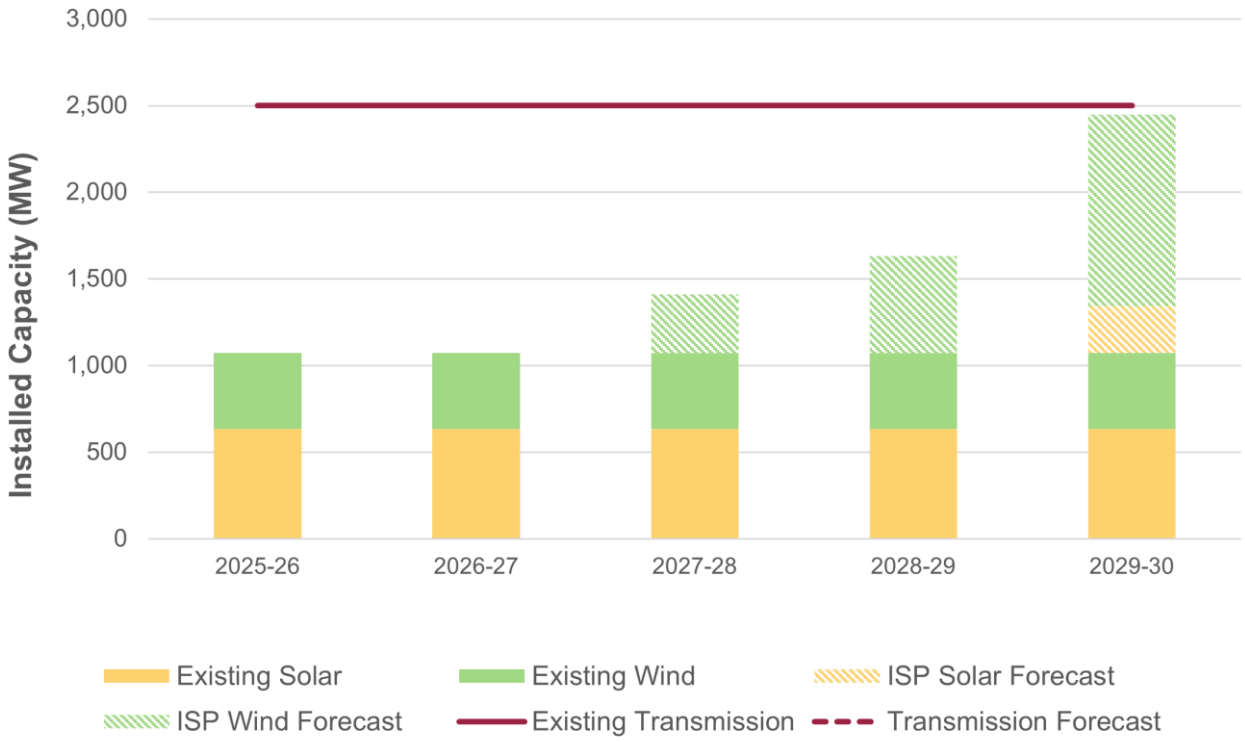
| VRE curtailment – ISP forecast | | | | | | |
|---|---|---|---|---|---|---|
| **Scenario** | **2025-2026** | | **2026-2027** | | **2027-2028** | |
| | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** |
| ***Step Change*** | 0 | 1 | 0 | 3 | 0 | 3 |

[20] The maximum hosting capacity was set to 300 MW for these studies. See Appendix A2.5 for the detailed methodology and see 2025 ELI Report chart data for information on the reference generation profiles used in this analysis.

## ISP forecast

| ISP forecast | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VRE outlook | Solar PV (MW) | | | | | | Wind (MW) | | | | | |
| | Existing/ committed/ anticipated | Projected | | | | | Existing/ committed/ anticipated | Projected | | | | |
| | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 |
| ***Step Change*** | 620 | - | - | - | - | 219 | 439 | - | - | 337 | 560 | 1,000 |

**Transmission access expansion for *Step Change***



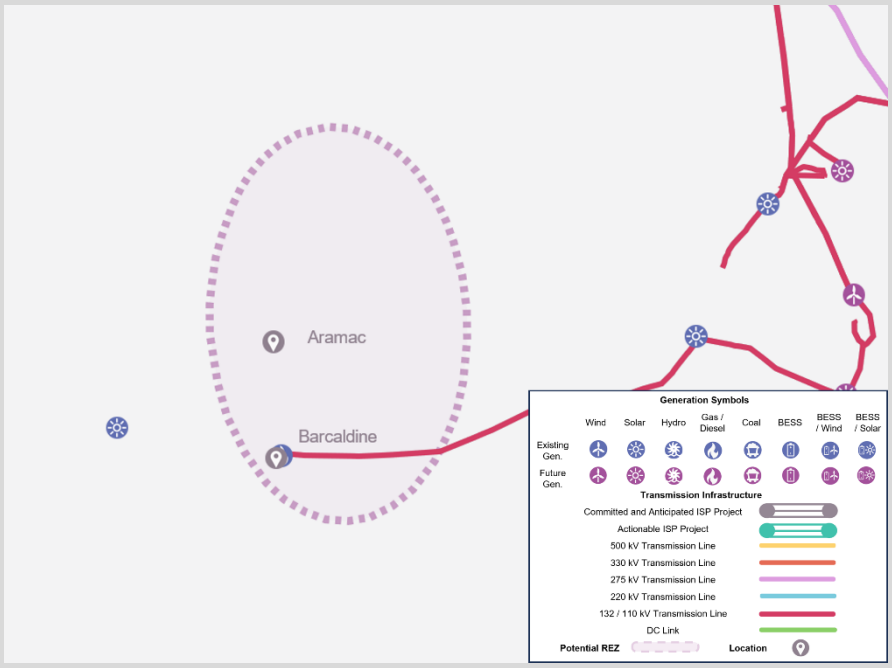

Note: The transmission access expansion forecasts show the results for NQ2 group constraint augmentation, which includes VRE projections for Q4 and Q5.

| Committed, Anticipated, and Actionable Transmission Projects | Timing | Status | Additional REZ hosting capacity provided (MW) |
|---|---|---|---|
| - | - | - | - |

# A4.9 Q5 – Barcaldine

## REZ information

**Barcaldine REZ map**




| Overview | Network Transfer Capability |
|---|---|
| This REZ has grade A solar resource quality but is remote from the Queensland transmission backbone. | The current total REZ transmission limit for existing and new VRE before any network upgrade in Barcaldine is approximately 85 MW. |

| Jurisdictional body | Reference | Function |
|---|---|---|
| Queensland Government | Queensland Energy and Jobs Plan (QEJP)[21] | Overarching plan to reach targets for Queensland's clean energy system of 50% renewable energy by 2030, 70% by 2032 and 80% by 2035. Describes Powerlink's roles to:<br>• be the Designated REZ Delivery Body (RDB) for transmission in QREZ regions (subject to legislation)<br>• progress early design and planning for the SuperGrid backbone transmission. |
| Queensland Government | Queensland SuperGrid infrastructure Blueprint[22] | Outlines the optimal infrastructure pathway for the Queensland Energy and Jobs Plan, and includes the major electricity infrastructure investments required to transform the system in line with the Queensland clean energy targets described in the QEJP. The investments outlined in this document will build Queensland's SuperGrid. |
| Queensland Government | 2023 Queensland REZ Roadmap[23] | Outlines the pathway for connecting around 22 GW of new wind and solar generation. |
| Powerlink | Transmission Annual Planning Report[24] | Existing Transmission Planning Function. |

[21] Queensland energy policies may be subject to change from state government review processes.

[22] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0030/32988/queensland-supergrid-infrastructure-blueprint.pdf.

[23] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0036/49599/REZ-roadmap.pdf.

[24] See https://www.powerlink.com.au/planning-report/transmission-annual-planning-report-2024.

| Resource metrics | | | | | | |
|---|---|---|---|---|---|---|
| **Resource** | **Solar** | | | **Wind** | | |
| **Resource Quality** | A | | | D | | |
| **Renewable Potential (MW)** | 8,000 | | | 3,900 | | |
| **Demand Correlation** | **2029-30** | **2039-40** | **2049-50** | **2029-30** | **2039-40** | **2049-50** |
| | F | F | F | A | A | A |
| **Climate hazard** | | | | | | |
| **Temperature score** | D | | | **Bushfire score** | C | |

## Marginal loss factors

| Marginal Loss Factor | | |
|---|---|---|
| **Technology** | **Voltage (kV)** | **2025-26 MLF** |
| Solar | 132 | 0.9410 |
| **Marginal Loss Factor Robustness** | | |
| **MLF Robustness score** | **2029-30** | **2034-35** | **2039-40** |
| | F | F | F |

## Congestion and curtailment

| Congestion information – calendar year 2024 | | | |
|---|---|---|---|
| **Constraint ID** | **Binding hours** | **Marginal value ($)** | **Most affected generation** |
| - | - | - | - |

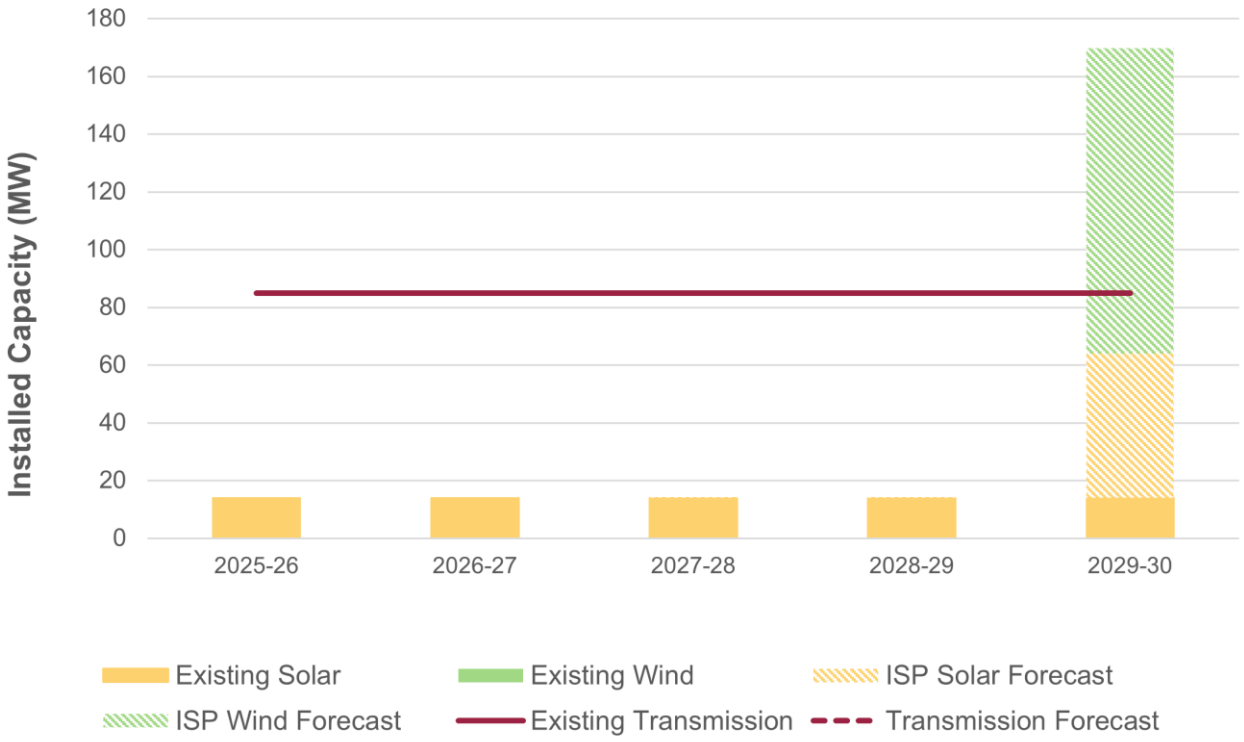
| VRE semi-scheduled curtailment – calendar year 2024 | | | | | |
|---|---|---|---|---|---|
| **DUID** | **Generator name** | **Maximum Capacity (MW)** | **Average curtailment (%)** | **Average curtailment (MW)** | **Curtailment (MWh)** |
| - | - | - | - | - | - |
| **Historical hosting capacity indicator for 20% network spill threshold** | | | | | |
| **DUID** | **Generator name** | **HHCI Wind (MW)** | **HHCI Wind + BESS (MW)** | **HHCI Solar (MW)** | **HHCI Solar + BESS (MW)** |
| - | - | - | - | - | - |

| VRE curtailment – ISP forecast | | | | | | |
|---|---|---|---|---|---|---|
| **Scenario** | **2025-2026** | | **2026-2027** | | **2027-2028** | |
| | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** |
| ***Step Change*** | 0 | 1 | 0 | 13 | 0 | 12 |

## ISP forecast

| ISP forecast | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VRE outlook | Solar PV (MW) | | | | | | Wind (MW) | | | | | |
| | Existing/ committed/ anticipated | Projected | | | | | Existing/ committed/ anticipated | Projected | | | | |
| | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 |
| *Step Change* | 14 | - | - | - | - | 50 | - | - | - | - | - | 106 |

**Transmission access expansion for *Step Change***

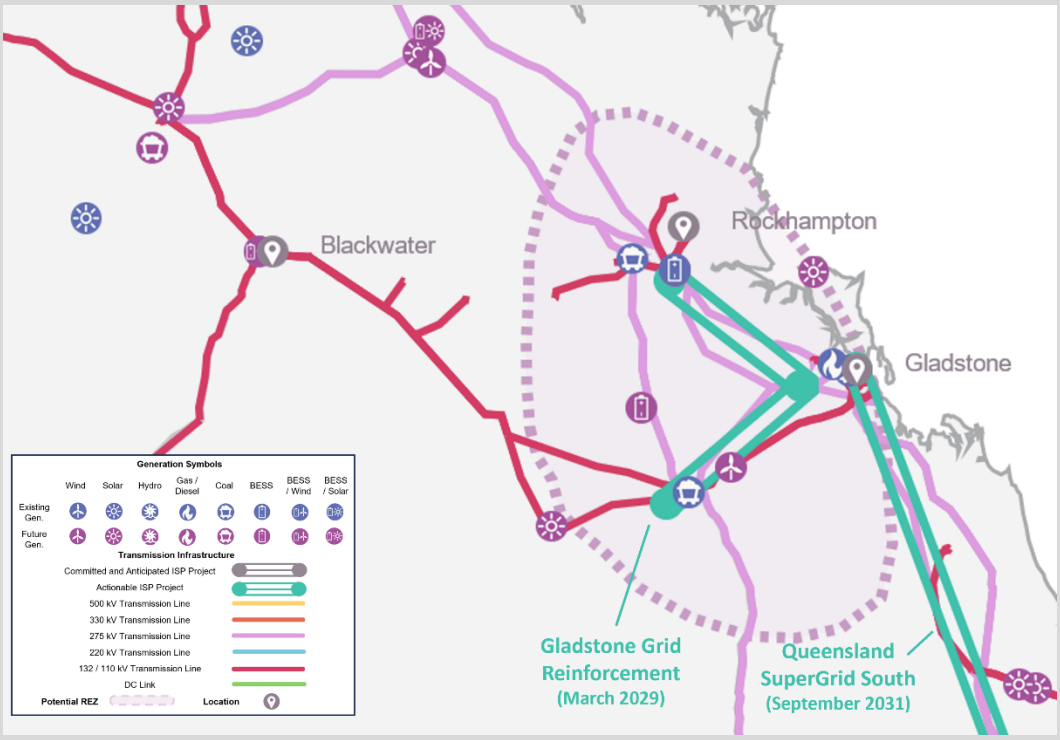



| Committed, Anticipated, and Actionable Transmission Projects | Timing | Status | Additional REZ hosting capacity provided (MW) |
|---|---|---|---|
| - | - | - | - |

# A4.10 Q6 – Fitzroy

## REZ information

**Fitzroy REZ map**




| Overview | Network Transfer Capability |
|---|---|
| The Fitzroy REZ is in Central Queensland and covers a strong part of the network where Gladstone and Callide generators are connected. This REZ has grade B and C solar and wind resource quality. | The network capability for Fitzroy REZ to export electricity to southern Queensland is shared with other generation in northern and central Queensland.<br>Due to the existing high voltage infrastructure, there are no augmentation options specifically for this REZ. The associated augmentations are the Central Queensland to Gladstone Grid flow path augmentations and Central Queensland to Southern Queensland upgrade augmentation options, as detailed in the *Transmission Expansion Options Report*[25]. |

| Jurisdictional body | Reference | Function |
|---|---|---|
| Queensland Government | Queensland Energy and Jobs Plan (QEJP)[26] | Overarching plan to reach targets for Queensland's clean energy system of 50% renewable energy by 2030, 70% by 2032 and 80% by 2035. Describes Powerlink's roles to:<br>• be the Designated REZ Delivery Body (RDB) for transmission in QREZ regions (subject to legislation)<br>• progress early design and planning for the SuperGrid backbone transmission. |
| Queensland Government | Queensland SuperGrid infrastructure Blueprint[27] | Outlines the optimal infrastructure pathway for the Queensland Energy and Jobs Plan, and includes the major electricity infrastructure investments required to transform the system in line with the Queensland clean energy targets described in the QEJP. The investments outlined in this document will build Queensland's SuperGrid. |

[25] See https://aemo.com.au/consultations/current-and-closed-consultations/2023-transmission-expansion-options-report-consultation.

[26] Queensland energy policies may be subject to change from state government review processes.

[27] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0030/32988/queensland-supergrid-infrastructure-blueprint.pdf.

| | | |
|---|---|---|
| Queensland Government | 2023 Queensland REZ Roadmap[28] | Outlines the pathway for connecting around 22 GW of new wind and solar generation. |
| Powerlink | Transmission Annual Planning Report[29] | Existing Transmission Planning Function. |

| **Resource metrics** | | | | | | |
|---|---|---|---|---|---|---|
| **Resource** | **Solar** | | | **Wind** | | |
| **Resource Quality** | B | | | C | | |
| **Renewable Potential (MW)** | 7,533 | | | 3,500 | | |
| **Demand Correlation** | **2029-30** | **2039-40** | **2049-50** | **2029-30** | **2039-40** | **2049-50** |
| | F | F | F | A | A | A |
| **Climate hazard** | | | | | | |
| **Temperature score** | C | | | **Bushfire score** | B | |

## Marginal loss factors

| **Marginal Loss Factor** | | |
|---|---|---|
| **Technology** | **Voltage (kV)** | **2025-26 MLF** |
| Solar | 132 | 0.9328 |

| **Marginal Loss Factor Robustness** | | | |
|---|---|---|---|
| **MLF Robustness score** | **2029-30** | **2034-35** | **2039-40** |
| | A | A | A |

[28] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0036/49599/REZ-roadmap.pdf.

[29] See https://www.powerlink.com.au/planning-report/transmission-annual-planning-report-2024.

## Congestion and curtailment

| Congestion information – calendar year 2024 | | | |
|---|---|---|---|
| **Constraint ID** | **Binding hours** | **Marginal value ($)** | **Most affected generation** |
| Q>>NIL_BCCP_RGLC | 26.8 | 92,130.5 | Generation contributing to flow from Raglan to Larcom Creek 275 kV on trip of the Boulder combe – Calliope River 275 kV line |

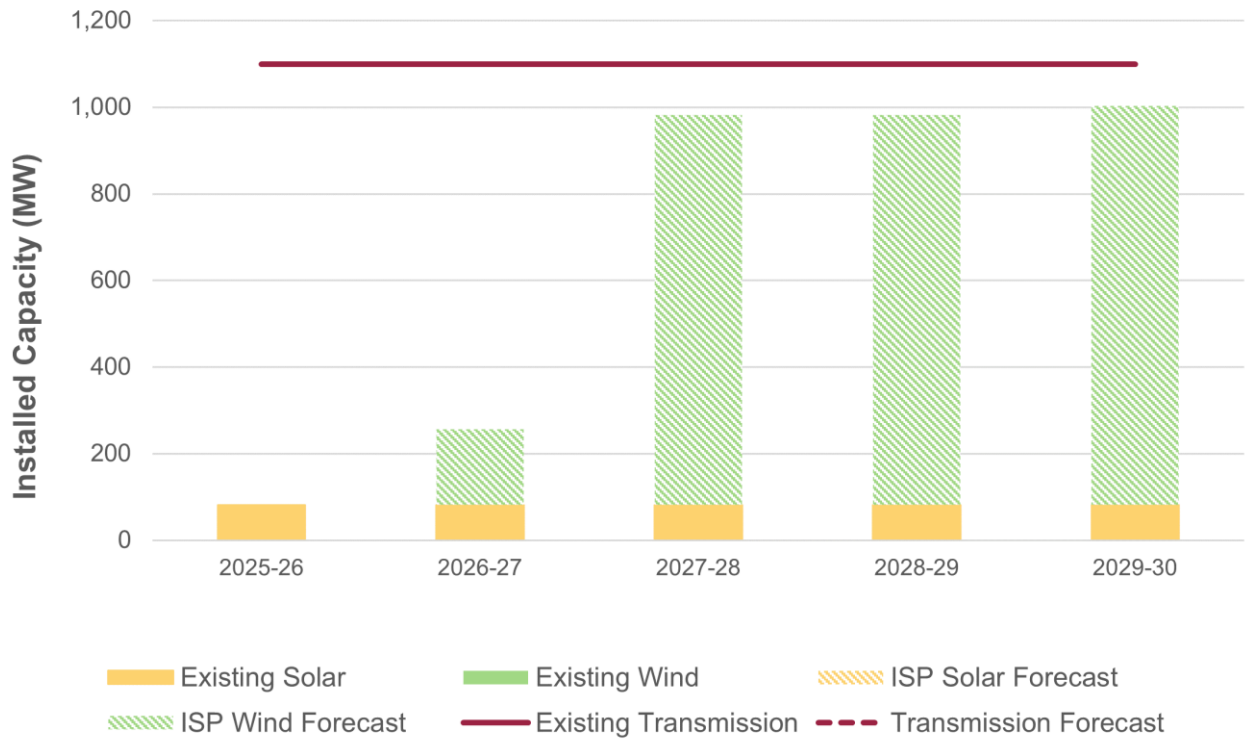
| VRE semi-scheduled curtailment – calendar year 2024 | | | | | |
|---|---|---|---|---|---|
| **DUID** | **Generator name** | **Maximum Capacity (MW)** | **Average curtailment (%)** | **Average curtailment (MW)** | **Curtailment (MWh)** |
| MOUSF1 | Moura Solar Farm | 82 | 0.3 | 0.1 | 572 |
| **Historical hosting capacity indicator for 20% network spill threshold** | | | | | |
| **DUID** | **Generator name** | **HHCI Wind (MW)** | **HHCI Wind + BESS (MW)** | **HHCI Solar (MW)** | **HHCI Solar + BESS (MW)** |
| - | - | - | - | - | - |

| VRE curtailment – ISP forecast | | | | | | |
|---|---|---|---|---|---|---|
| **Scenario** | **2025-2026** | | **2026-2027** | | **2027-2028** | |
| | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** |
| ***Step Change*** | 0 | 1 | 0 | 4 | 0 | 2 |

## ISP forecast

| ISP forecast | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VRE outlook | Solar PV (MW) | | | | | | Wind (MW) | | | | | |
| | Existing/ committed/ anticipated | Projected | | | | | Existing/ committed/ anticipated | Projected | | | | |
| | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 | | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 |
| ***Step Change*** | 82 | - | - | - | - | - | - | - | 174 | 900 | 900 | 921 |

**Transmission access expansion for *Step Change***



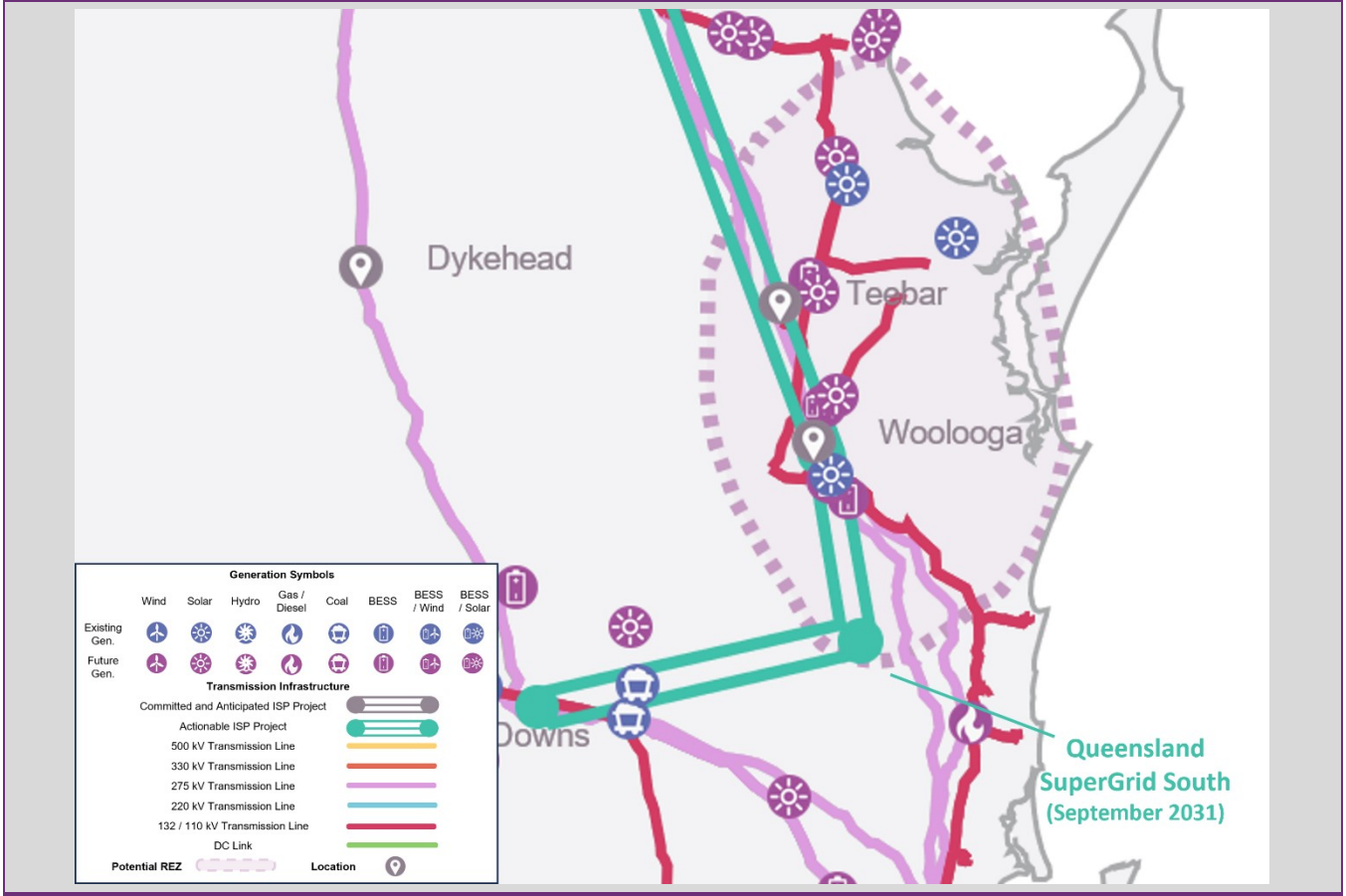

Note: The transmission limit is modelled using the CQ-SQ flow path limit.

| Committed, Anticipated, and Actionable Transmission Projects | Timing | Status | Additional REZ hosting capacity provided (MW) |
|---|---|---|---|
| - | - | - | - |

# A4.11 Q7 – Wide Bay

## REZ information

**Wide Bay REZ map**




| Overview | Network Transfer Capability |
|---|---|
| The Wide Bay area has grade C solar resource quality and already has a number of large solar generators operational within the REZ.<br>The Queensland Government has announced that, subject to final investment decisions, it will build a 2,000 MW/24-hour Borumba pumped hydro energy storage (PHES) project in southern Queensland, as part of the Queensland SuperGrid.<br>AEMO considers Borumba to be an anticipated project. The project's dispatch is included in the SQ1 group constraint in the ISP modelling process. | The existing network facilitates power transfer from Central Queensland to the load centre in Brisbane. This is a 275 kV transmission backbone and currently supports up to approximately 1,400 MW of power flow from CQ into Brisbane. This means the maximum VRE output in the REZ is highly dependent on CQ-SQ flow. |

| Jurisdictional body | Reference | Function |
|---|---|---|
| Queensland Government | Queensland Energy and Jobs Plan (QEJP)[30] | Overarching plan to reach targets for Queensland's clean energy system of 50% renewable energy by 2030, 70% by 2032 and 80% by 2035. Describes Powerlink's roles to:<br>• be the Designated REZ Delivery Body (RDB) for transmission in QREZ regions (subject to legislation)<br>• progress early design and planning for the SuperGrid backbone transmission. |

[30] Queensland energy policies may be subject to change from state government review processes.

| | | |
|---|---|---|
| Queensland Government | Queensland SuperGrid infrastructure Blueprint[31] | Outlines the Optimal infrastructure pathway for the QEJP, and includes the major electricity infrastructure investments required to transform the system in line with the Queensland clean energy targets described in the QEJP. The investments outlined in this document will build Queensland's SuperGrid. |
| Queensland Government | 2023 Queensland REZ Roadmap[32] | Outlines the pathway for connecting around 22 GW of new wind and solar generation |
| Powerlink | Transmission Annual Planning Report[33] | Existing Transmission Planning Function |

| **Resource metrics** | | | | | | |
|---|---|---|---|---|---|---|
| **Resource** | **Solar** | | | **Wind** | | |
| **Resource Quality** | C | | | E | | |
| **Renewable Potential (MW)** | 2,200 | | | 1,100 | | |
| **Demand Correlation** | **2029-30** | **2039-40** | **2049-50** | **2029-30** | **2039-40** | **2049-50** |
| | F | F | F | A | A | A |
| **Climate hazard** | | | | | | |
| **Temperature score** | B | | | **Bushfire score** | E | |

## Marginal loss factors

| **Marginal Loss Factor** | | | |
|---|---|---|---|
| **Technology** | **Voltage (kV)** | **2025-26 MLF** | |
| Solar | 132 | 0.9772 – 0.9787 | |
| **Marginal Loss Factor Robustness** | | | |
| **MLF Robustness score** | **2029-30** | **2034-35** | **2039-40** |
| | A | A | A |

[31] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0030/32988/queensland-supergrid-infrastructure-blueprint.pdf.

[32] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0036/49599/REZ-roadmap.pdf.

[33] See https://www.powerlink.com.au/planning-report/transmission-annual-planning-report-2024.

## Congestion and curtailment

| Congestion information – calendar year 2024 | | | |
|---|---|---|---|
| **Constraint ID** | **Binding hours** | **Marginal value ($)** | **Most affected generation** |
| - | - | - | - |

| VRE semi-scheduled curtailment – calendar year 2024 | | | | | |
|---|---|---|---|---|---|
| **DUID** | **Generator name** | **Maximum Capacity (MW)** | **Average curtailment (%)** | **Average curtailment (MW)** | **Curtailment (MWh)** |
| CHILDSF1 | Childers Solar Farm | 56 | 0.2 | 0.0 | 244 |
| SRSF1 | Susan River Solar Farm | 75 | 0.2 | 0.0 | 212 |
| WOOLGSF1 | Woolooga Solar Farm | 176 | 0.2 | 0.1 | 809 |
| **Historical hosting capacity indicator for 20% network spill threshold[34]** | | | | | |
| **DUID** | **Generator name** | **HHCI Wind (MW)** | **HHCI Wind + BESS (MW)** | **HHCI Solar (MW)** | **HHCI Solar + BESS (MW)** |
| CHILDSF1 | Childers Solar Farm | 300 | 300 | 300 | 300 |
| SRSF1 | Susan River Solar Farm | 187 | 236 | 105 | 281 |
| WOOLGSF1 | Woolooga Solar Farm | 300 | 300 | 300 | 300 |

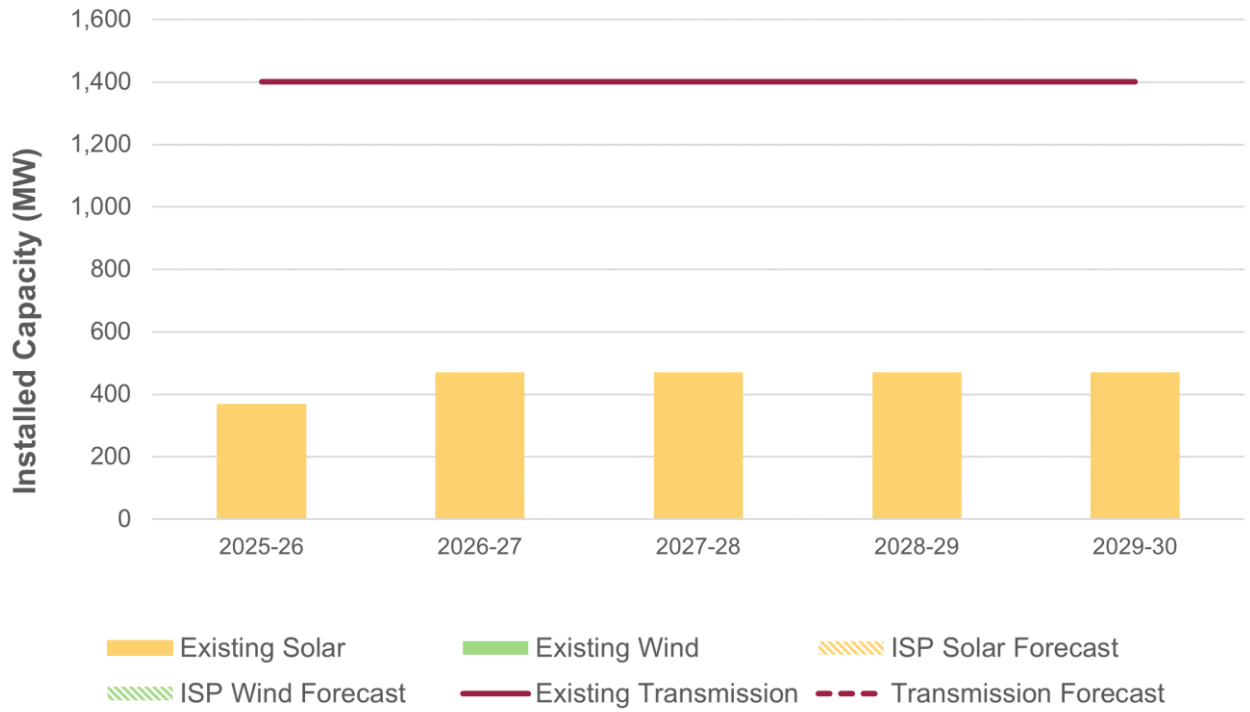
| VRE curtailment – ISP forecast | | | | | | |
|---|---|---|---|---|---|---|
| **Scenario** | **2025-2026** | | **2026-2027** | | **2027-2028** | |
| | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** |
| ***Step Change*** | 0 | 3 | 0 | 5 | 0 | 6 |

[34] The maximum hosting capacity was set to 300 MW for these studies. See Appendix A2.5 for the detailed methodology and see 2025 ELI Report chart data for information on the reference generation profiles used in this analysis.

## ISP forecast

| ISP forecast | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VRE outlook | Solar PV (MW) | | | | | | Wind (MW) | | | | | |
| | Existing/ committed/ anticipated | Projected | | | | | Existing/ committed/ anticipated | Projected | | | | |
| | | 2025 | 2026 | 2027 | 2028 | 2029 | | 2025 | 2026 | 2027 | 2028 | 2029 |
| ***Step Change*** | 468 | - | - | - | - | - | - | - | - | - | - | - |

**Transmission access expansion for *Step Change***



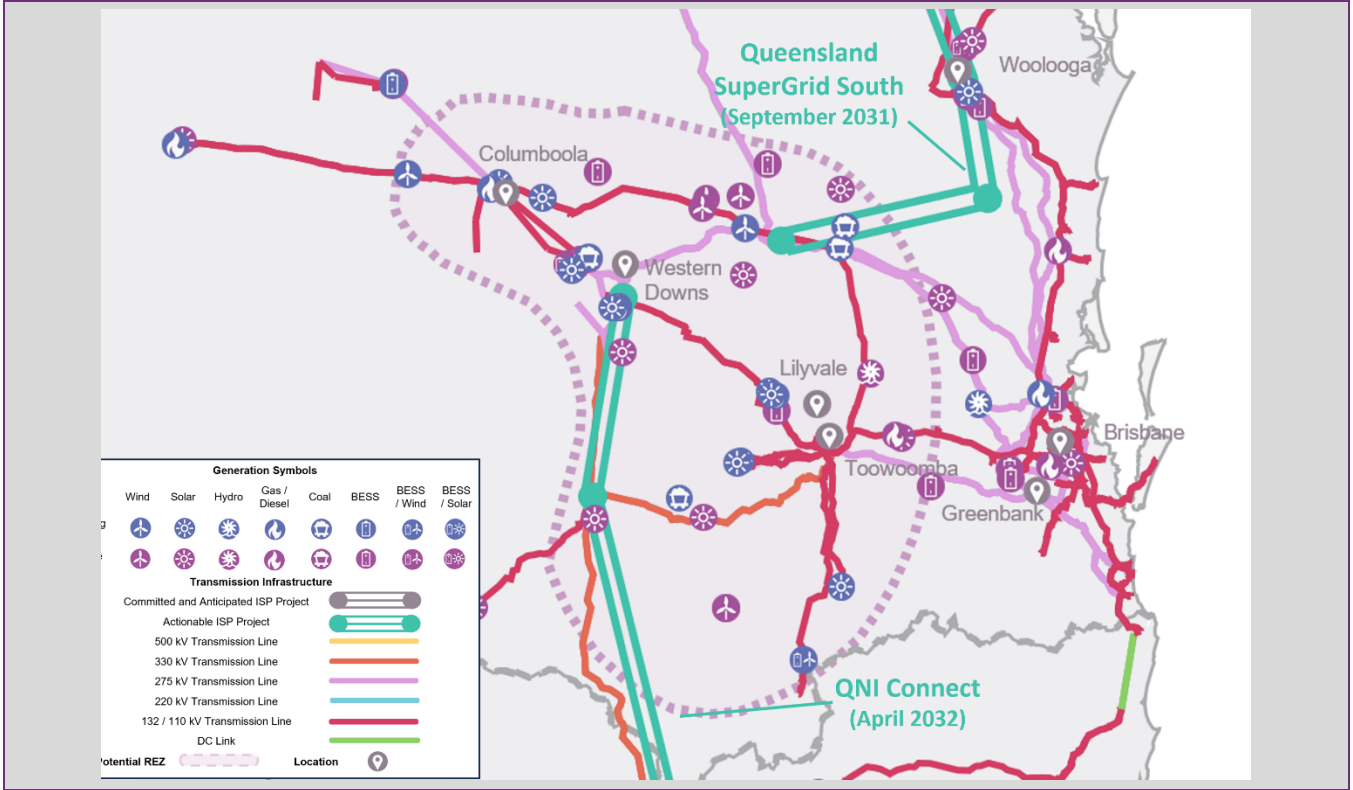

Note: The transmission access expansion forecasts show the results for the SQ1 group constraint augmentation, which includes Q7 as well as the effect of CQ-SQ flow. The transmission limit is modelled using the SQ1 group constraint limit.

| Committed, Anticipated, and Actionable Transmission Projects | Timing | Status | Additional REZ hosting capacity provided (MW) |
|---|---|---|---|
| - | - | - | - |

# A4.12 Q8 – Darling Downs

## REZ information

**Darling Downs REZ map**




| Overview | Network Transfer Capability |
|---|---|
| The Darling Downs REZ extends from the border of New South Wales around Dumaresq up to Columboola within the Surat region of Queensland, and has B and C grade solar and wind resource quality. A number of large solar and wind projects are already connected within the zone. | The Darling Downs REZ has high network capacity and is near QNI and Brisbane. The ultimate retirement of generation within this REZ will allow for increased VRE connections.<br>The existing network facilitates power transfer from south west Queensland to the load centre in Brisbane. This transmission can support up to approximately 5,300 MW of generation into Brisbane. This capability is shared with existing coal and gas generation in the REZ, the flow of power from New South Wales, and the flow of power from central Queensland. This sharing is captured by the SWQLD1 transmission limit constraint that facilitates power flow to load centres in south east Queensland. Changes to network capability for this REZ are therefore reflected in the SWQLD1 limit. |

| Jurisdictional body | Reference | Function |
|---|---|---|
| Queensland Government | Queensland Energy and Jobs Plan (QEJP)[35] | Overarching plan to reach targets for Queensland's clean energy system of 50% renewable energy by 2030, 70% by 2032 and 80% by 2035. Describes Powerlink's roles to:<br>• be the Designated REZ Delivery Body (RDB) for transmission in QREZ regions (subject to legislation).<br>• progress early design and planning for the SuperGrid backbone transmission. |
| Queensland Government | Queensland SuperGrid infrastructure Blueprint[36] | Outlines the optimal infrastructure pathway for the QEJP, and includes the major electricity infrastructure investments required to |

[35] Queensland energy policies may be subject to change from state government review processes.

[36] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0030/32988/queensland-supergrid-infrastructure-blueprint.pdf.

| | | |
|---|---|---|
| | | transform the system in line with the Queensland clean energy targets described in the QEJP. The investments outlined in this document will build Queensland's SuperGrid. |
| Queensland Government | 2023 Queensland REZ Roadmap[37] | Outlines the pathway for connecting around 22 GW of new wind and solar generation. |
| Powerlink | Transmission Annual Planning Report[38] | Existing Transmission Planning Function. |

| **Resource metrics** | | | | | | |
|---|---|---|---|---|---|---|
| **Resource** | **Solar** | | | **Wind** | | |
| **Resource Quality** | B | | | C | | |
| **Renewable Potential (MW)** | 6,992 | | | 5,600[39] | | |
| **Demand Correlation** | **2029-30** | **2039-40** | **2049-50** | **2029-30** | **2039-40** | **2049-50** |
| | F | F | F | A | A | A |
| **Climate hazard** | | | | | | |
| **Temperature score** | C | | | **Bushfire score** | E | |

## Marginal loss factors

| **Marginal Loss Factor** | | |
|---|---|---|
| **Technology** | **Voltage (kV)** | **2025-26 MLF** |
| Solar | 110 | 0.9852 – 0.9888 |
| | 132 | 0.9543 – 0.9977 |
| | 275 | 0.9767 – 0.9975 |
| Wind | 132 | 0.9853 |
| | 275 | 0.9691 |

| **Marginal Loss Factor Robustness** | | | |
|---|---|---|---|
| **MLF Robustness score** | **2029-30** | **2034-35** | **2039-40** |
| | A | A | A |

## Congestion and curtailment

| **Congestion information – calendar year 2024** | | | |
|---|---|---|---|
| **Constraint ID** | **Binding hours** | **Marginal value ($)** | **Most affected generation** |
| N::Q_NIL_KC | 43.9 | 35,100.6 | Kogan Creek Power Station, and generation contributing to northerward flow on Dumaresq – Bulli Creek 330 kV lines and Terranorra interconnector |
| Q^^N_NIL_SRAR | 9.0 | 76,672.9 | Generation contributing to southward flow on QNI |
| Q>NIL_DRLCLB_NIL | 48.8 | 680,452.0 | Generation contributing to flow from Drillham to Columboola 132 kV |
| Q>NIL_YLMR | 226.6 | 1,890,486.8 | Generation contributing to flow from Yarranlea to Middle Ridge 110 kV |

[37] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0036/49599/REZ-roadmap.pdf.

[38] See https://www.powerlink.com.au/planning-report/transmission-annual-planning-report-2024.

[39] Darling Downs REZ wind outlook exceeds the expected renewable potential based on the geographical size and resource quality. The modelling allows for additional wind above this wind resource limit, but the additional capacity incurs a land use penalty factor of $0.29 million/MW. Even with this penalty applied, the ISP model still projects additional wind capacity in *Step Change* by 2049-50.

| Congestion information – calendar year 2024 | | | | | |
|---|---|---|---|---|---|
| **VRE semi-scheduled curtailment – calendar year 2024** | | | | | |
| **DUID** | **Generator name** | **Maximum Capacity (MW)** | **Average curtailment (%)** | **Average curtailment (MW)** | **Curtailment (MWh)** |
| BLUEGSF1 | Blue Grass Solar Farm | 148 | 0.0 | 0.0 | 31 |
| COLUMSF1 | Columboola Solar Farm | 162 | 1.0 | 0.3 | 3,053 |
| COOPGWF1 | Coopers Gap Wind Farm | 440 | 0.0 | 0.0 | 264 |
| DDSF1 | Darling Downs Solar Farm | 108 | 0.3 | 0.1 | 631 |
| DULAWF1 | Dulacca Wind Farm | 173 | 0.2 | 0.1 | 876 |
| EDENVSF1 | Edenvale Solar Park | 146 | 0.0 | 0.0 | 144 |
| GANGARR1 | Gangarri Solar Farm | 120 | 0.8 | 0.2 | 1,591 |
| MARYRSF1 | Maryrorough Solar Farm | 27 | 0.5 | 0.0 | 320 |
| OAKEY1SF | Oakey 1 Solar Farm | 25 | 0.1 | 0.0 | 46 |
| OAKEY2SF | Oakey 2 Solar Farm | 55 | 0.1 | 0.0 | 67 |
| WANDSF1 | Wandoan Solar Farm 1 | 125 | 0.2 | 0.1 | 532 |
| WARWSF1 | Warwick Solar Farm 1 | 32 | 0.1 | 0.0 | 98 |
| WARWSF2 | Warwick Solar Farm 2 | 32 | 0.2 | 0.0 | 104 |
| WDGPH1 | Western Downs GPH | 400 | 0.4 | 0.5 | 4,137 |
| YARANSF1 | Yarranlea Solar Farm | 103 | 0.3 | 0.1 | 654 |
| **Historical hosting capacity indicator for 20% network spill threshold[40]** | | | | | |
| **DUID** | **Generator name** | **HHCI Wind (MW)** | **HHCI Wind + BESS (MW)** | **HHCI Solar (MW)** | **HHCI Solar + BESS (MW)** |
| BLUEGSF1 | Blue Grass Solar Farm | 300 | 300 | 300 | 300 |
| COLUMSF1 | Columboola Solar Farm | 300 | 300 | 300 | 300 |
| COOPGWF1 | Coopers Gap Wind Farm | 300 | 300 | 300 | 300 |
| DDSF1 | Darling Downs Solar Farm | 300 | 300 | 300 | 300 |
| DULAWF1 | Dulacca Wind Farm | 82 | 158 | 300 | 300 |
| EDENVSF1 | Edenvale Solar Park | 300 | 300 | 300 | 300 |
| GANGARR1 | Gangarri Solar Farm | 300 | 300 | 300 | 300 |
| MARYRSF1 | Maryrorough Solar Farm | 173 | 229 | 11 | 54 |
| OAKEY1SF | Oakey 1 Solar Farm | 300 | 300 | 300 | 300 |
| OAKEY2SF | Oakey 2 Solar Farm | 300 | 300 | 300 | 300 |
| WANDSF1 | Wandoan Solar Farm 1 | 300 | 300 | 300 | 300 |
| WDGPH1 | Western Downs GPH | 300 | 300 | 300 | 300 |
| YARANSF1 | Yarranlea Solar Farm | 173 | 229 | 14 | 75 |
| **VRE curtailment – ISP forecast** | | | | | |

| **Scenario** | **2025-2026** | | **2026-2027** | | **2027-2028** | |
|---|---|---|---|---|---|---|
| | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** |

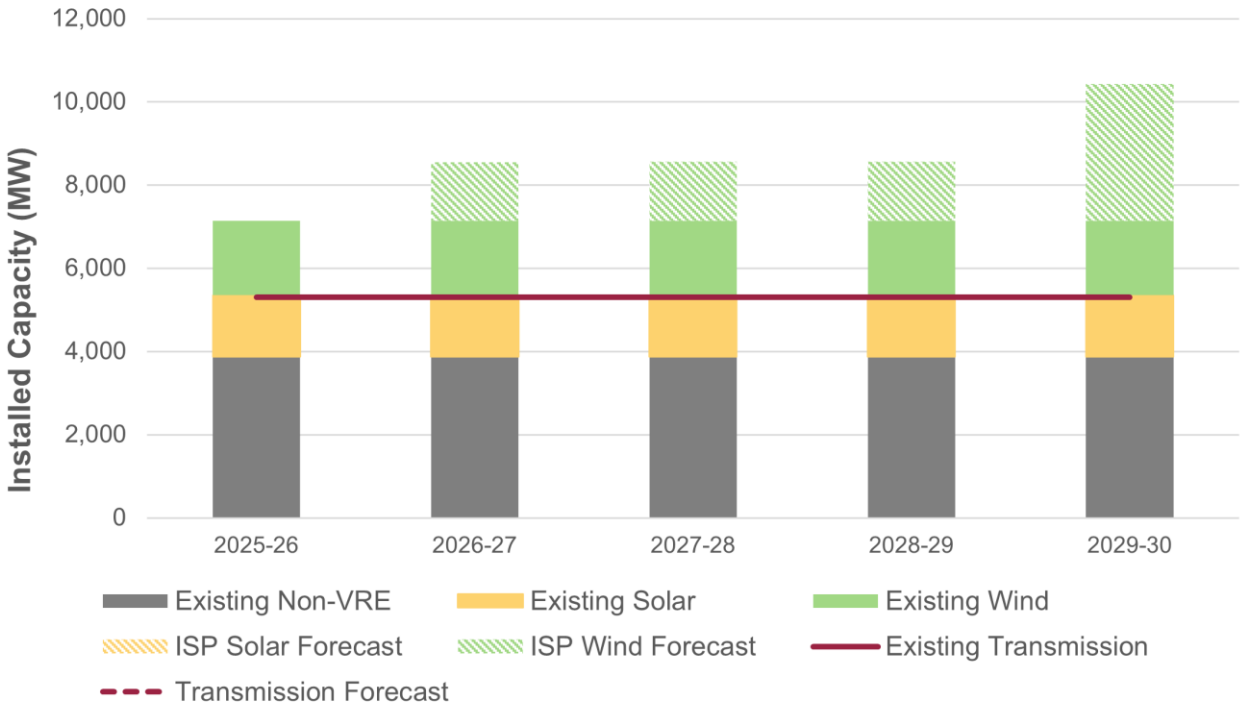
[40] The maximum hosting capacity was set to 300 MW for these studies. See Appendix A2.5 for the detailed methodology and see 2025 ELI Report chart data for information on the reference generation profiles used in this analysis.

| Congestion information – calendar year 2024 | | | | | | |
|---|---|---|---|---|---|---|
| ***Step Change*** | 0 | 1 | 0 | 2 | 0 | 2 |

## ISP forecast

| ISP forecast | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VRE outlook** | **Solar PV (MW)** | | | | | | **Wind (MW)** | | | | | |
| | **Existing/ committed/ anticipated** | **Projected** | | | | | **Existing/ committed/ anticipated** | **Projected** | | | | |
| | | **2025-2026** | **2026-2027** | **2027-2028** | **2028-2029** | **2029-2030** | | **2025-2026** | **2026-2027** | **2027-2028** | **2028-2029** | **2029-2030** |
| ***Step Change*** | 1,485 | - | - | - | - | - | 1,788 | - | 1,400 | 1,418 | 1,418 | 3,289 |

**Transmission access expansion for *Step Change***



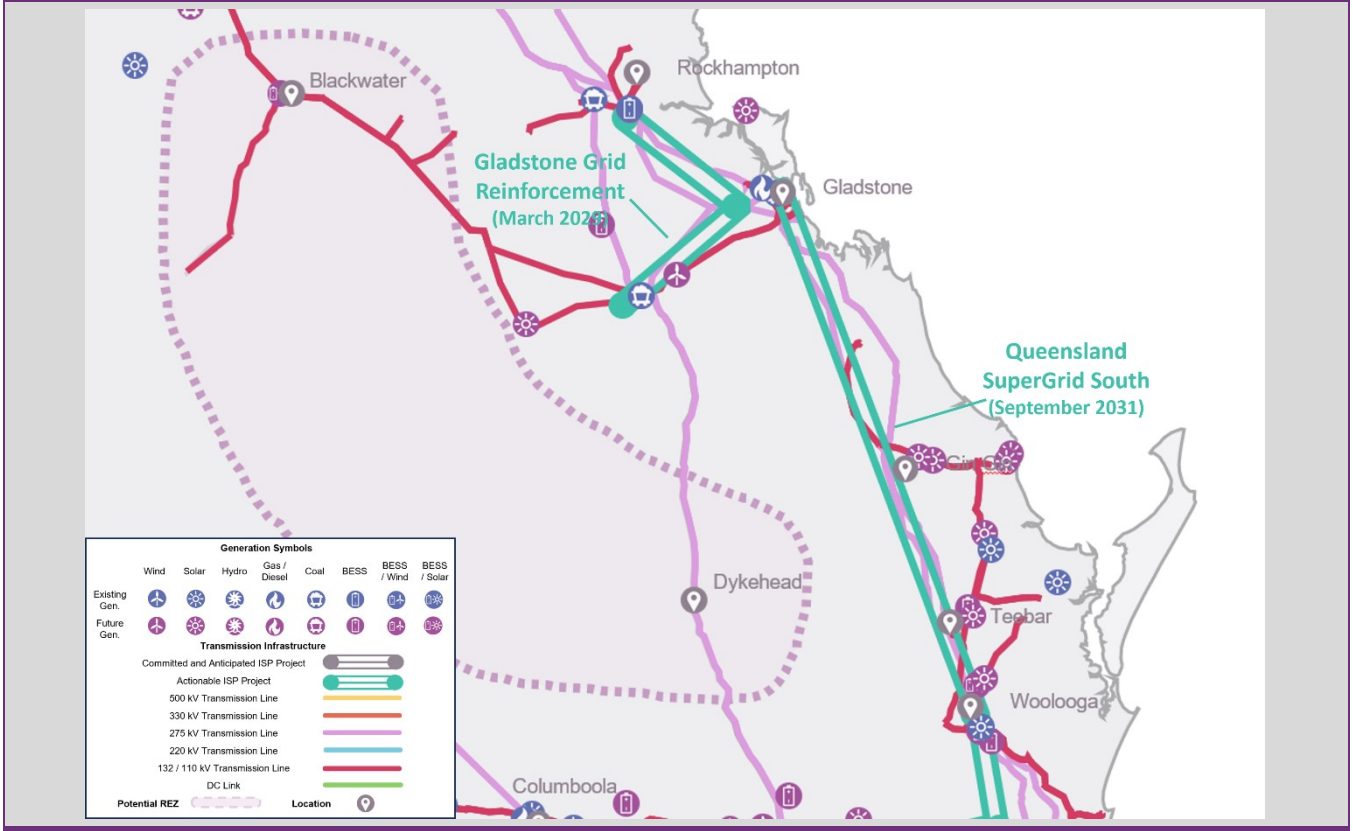

Note: The transmission access expansion forecasts show the results for the SWQLD1 group constraint augmentation, which includes Q8 as well as the effect of CQ-SQ and QNI flow. The transmission limit is modelled using the SWQLD1 group constraint limit.

| Committed, Anticipated, and Actionable Transmission Projects | Timing | Status | Additional REZ hosting capacity provided (MW) |
|---|---|---|---|
| - | - | - | |

# A4.13 Q9 – Banana

## REZ information

**Banana REZ map**




| Overview | Network Transfer Capability |
|---|---|
| The Banana REZ is located roughly 200 km south-west of Gladstone and lies north of the CQ-SQ flow path. It has B grade solar resource quality. There are currently no generators and limited high voltage network in this area.<br>AEMO understands from the Queensland Government and from Powerlink that transmission augmentation projects for the Banana REZ are likely to be delivered as a dedicated asset of some kind. This has been treated similar to a generation connection asset in the ISP model, rather than a network augmentation option. | There is currently very little high voltage network in the area. There is some 132 kV network on the edge of the REZ, supporting the townships of Moura and Biloela. There is very little spare capacity within the network.<br>The first two options are proposals that transport the power to the Gladstone region. Substation location both within the Banana REZ and the connection point within the Gladstone section will be based on where generation and load develop. |

| Jurisdictional body | Reference | Function |
|---|---|---|
| Queensland Government | Queensland Energy and Jobs Plan (QEJP)[41] | Overarching plan to reach targets for Queensland's clean energy system of 50% renewable energy by 2030, 70% by 2032 and 80% by 2035. Describes Powerlink's roles to:<br>• be the Designated REZ Delivery Body (RDB) for transmission in QREZ regions (subject to legislation).<br>• progress early design and planning for the SuperGrid backbone transmission. |
| Queensland Government | Queensland SuperGrid infrastructure Blueprint[42] | Outlines the Optimal infrastructure pathway for the QEJP, and includes the major electricity infrastructure investments required to transform the system in line with the Queensland clean energy |

[41] Queensland energy policies may be subject to change from state government review processes.

[42] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0030/32988/queensland-supergrid-infrastructure-blueprint.pdf.

| | | |
|---|---|---|
| | | targets described in the QEJP. The investments outlined in this document will build Queensland's SuperGrid. |
| Queensland Government | 2023 Queensland REZ Roadmap [43] | Outlines the pathway for connecting around 22 GW of new wind and solar generation. |
| Powerlink | Transmission Annual Planning Report[44] | Existing Transmission Planning Function. |

| **Resource metrics** | | | | | | |
|---|---|---|---|---|---|---|
| **Resource** | **Solar** | | | **Wind** | | |
| **Resource Quality** | B | | | E | | |
| **Renewable Potential (MW)** | 6,100 | | | 3,400 | | |
| **Demand Correlation** | **2029-30** | **2039-40** | **2049-50** | **2029-30** | **2039-40** | **2049-50** |
| | F | F | F | A | A | A |
| **Climate hazard** | | | | | | |
| **Temperature score** | C | | | **Bushfire score** | B | |

## Marginal loss factors

| **Marginal Loss Factor** | | |
|---|---|---|
| **Technology** | **Voltage (kV)** | **2025-26 MLF** |
| - | - | - |
| **Marginal Loss Factor Robustness** | | |
| **MLF Robustness score** | **2029-30** | **2034-35** | **2039-40** |
| | E | E | E |

[43] See https://www.epw.qld.gov.au/__data/assets/pdf_file/0036/49599/REZ-roadmap.pdf.

[44] See https://www.powerlink.com.au/planning-report/transmission-annual-planning-report-2024.

## Congestion and curtailment

| Congestion information – calendar year 2024 | | | |
|---|---|---|---|
| **Constraint ID** | **Binding hours** | **Marginal value ($)** | **Most affected generation** |
| Q>NIL_EMBW_EMLV_DS | 45.3 | 197,776.5 | Generation contributing to flow from Emerald to Lilyvale 66 kV on trip of the Emerald – Comet – Blackwater 66 kV line |
| Q>NIL_EMCM_6056 | 304.3 | 296,443.9 | Generation contributing to flow from Emerald to Comet 66 kV |

| VRE semi-scheduled curtailment – calendar year 2024 | | | | | |
|---|---|---|---|---|---|
| **DUID** | **Generator name** | **Maximum Capacity (MW)** | **Average curtailment (%)** | **Average curtailment (MW)** | **Curtailment (MWh)** |
| - | - | - | - | - | - |
| **Historical hosting capacity indicator for 20% network spill threshold** | | | | | |
| **DUID** | **Generator name** | **HHCI Wind (MW)** | **HHCI Wind + BESS (MW)** | **HHCI Solar (MW)** | **HHCI Solar + BESS (MW)** |
| - | - | - | - | - | - |

| VRE curtailment – ISP forecast | | | | | | |
|---|---|---|---|---|---|---|
| **Scenario** | **2025-2026** | | **2026-2027** | | **2027-2028** | |
| | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** | **Curtailment (%)** | **Economic offloading (%)** |
| ***Step Change*** | - | - | - | - | - | - |

## ISP forecast

| ISP forecast | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VRE outlook** | **Solar PV (MW)** | | | | | | **Wind (MW)** | | | | | |
| | **Existing/ committed/ anticipated** | **Projected** | | | | | **Existing/ committed/ anticipated** | **Projected** | | | | |
| | | **2025-2026** | **2026-2027** | **2027-2028** | **2028-2029** | **2029-2030** | | **2025-2026** | **2026-2027** | **2027-2028** | **2028-2029** | **2029-2030** |
| ***Step Change*** | - | - | - | - | - | - | - | - | - | - | - | - |

| Transmission access expansion for *Step Change* | | | |
|---|---|---|---|
| There are no existing, committed, anticipated VRE projects for this REZ and the modelling outcomes for *Progressive Change* and *Step Change* scenarios did not project any additional VRE for this REZ. Therefore, no VRE curtailment or transmission expansion occurs in this REZ in those scenarios. | | | |
| **Committed, Anticipated, and Actionable Transmission Projects** | **Timing** | **Status** | **Additional REZ hosting capacity provided (MW)** |
| - | - | - | - |

# A4.14 Non-REZ

## Congestion and curtailment

| Congestion information – calendar year 2024 | | | |
|---|---|---|---|
| **Constraint ID** | **Binding hours** | **Marginal value ($)** | **Most affected generation** |
| Q:NIL_CS | 7.5 | 80,134.3 | Generation contributing to flow between Southern and Central Queensland |
| Q^^NIL_CS | 10.7 | 182,064.7 | Generation contributing to flow between Southern and Central Queensland |

| VRE semi-scheduled curtailment – calendar year 2024 | | | | | |
|---|---|---|---|---|---|
| **DUID** | **Generator name** | **Maximum Capacity (MW)** | **Average curtailment (%)** | **Average curtailment (MW)** | **Curtailment (MWh)** |
| EMERASF1 | Emerald Solar Park | 72 | 2.1 | 0.4 | 3,642 |
| KINGASF1 | Kingaroy Solar Farm | 40 | 0.2 | 0.0 | 37 |
| MCINTYR1 | MacIntyre Wind Farm | 890 | 0.0 | 0.0 | 1 |
| **Historical hosting capacity indicator for 20% network spill threshold[45]** | | | | | |
| **DUID** | **Generator name** | **HHCI Wind (MW)** | **HHCI Wind + BESS (MW)** | **HHCI Solar (MW)** | **HHCI Solar + BESS (MW)** |
| BRAEMAR1 | Braemar | 300 | 300 | 300 | 300 |
| CALL_B_1 | Callide B | 300 | 300 | 300 | 300 |
| DDPS1 | Darling Downs | 300 | 300 | 300 | 300 |
| EMERASF1 | Emerald Solar Park | 114 | 150 | 9 | 42 |
| GSTONE1 | Gladstone | 300 | 300 | 300 | 300 |
| KAREEYA1 | Kareeya | 300 | 300 | 300 | 300 |
| KPP_1 | Kogan Creek | 300 | 300 | 300 | 300 |
| MPP_1 | Millmerran | 300 | 300 | 300 | 300 |
| STAN-1 | Stanwell | 300 | 300 | 300 | 300 |
| SWAN_E | Swanbank E | 300 | 300 | 300 | 300 |
| W/HOE#1 | Wivenhoe | 300 | 300 | 300 | 300 |
| YABULU | Townsville GT | 300 | 300 | 300 | 300 |

[45] The maximum hosting capacity was set to 300 MW for these studies. See Appendix A2.5 for the detailed methodology and see 2025 ELI Report chart data for information on the reference generation profiles used in this analysis.