

# Central-West Orana Renewable Energy Zone

Rationale and basis for EnergyCo's network recommendations

May 2024

# Acknowledgement of Country

Energy Corporation of New South Wales acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and we show our respect for Elders past and present through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Published by Energy Corporation of New South Wales, NSW Department of Climate Change, Energy, the Environment and Water

[energyco.nsw.gov.au](https://energyco.nsw.gov.au)

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First published: May 2024

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TMP-MC-R-DC-V1.2

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**James Hay**

Chief Executive, EnergyCo

# Foreword

Central-West Orana Renewable Energy Zone (REZ) is a major step in transforming the New South Wales electricity system.

Modernising our NSW electricity system is not only essential for clean, reliable and affordable energy, it also creates diverse, high-quality and sustainable job opportunities across our regional communities. Just as the regions are the engine room for a large chunk of our economy, REZs are our modern power stations, bringing together lowest cost generation with storage and network infrastructure to practically deliver the energy transition as part of the NSW Electricity Infrastructure Roadmap (Roadmap).

More than helping deliver the transition, the Central-West Orana REZ will generate significant long-term financial and economic benefits for both NSW electricity consumers and the local communities that host this infrastructure.

The scope of our Infrastructure Planner Recommendation for the Central-West Orana REZ is aligned with the trajectory outlined in our NSW Network Infrastructure Strategy, a 20-year strategy developed and informed by feedback received through public consultation. Our recommended REZ reflects the 'deliver now' framework and lays the foundations to be able to meet the 'secure now' and 'plan for the future' scenarios if required over the coming decades. Our recommended project is also consistent with the cost estimates included in the strategy.

The REZ is expected to create net financial benefits for all NSW electricity consumers that are more than \$3 billion greater than the costs in real terms, compared to a scenario where it is not built.

NSW Department of Climate Change, Energy, the Environment and Water's detailed independent modelling forecasts that without the Roadmap, NSW residential customers would face bills that are \$156 higher on average per year between 2022-23 and 2039-40, while small businesses would face bills that are \$530 higher on average per year. The Central-West Orana REZ is a key part of unlocking these benefits.

On top of this, the Central-West Orana REZ is expected to drive up to \$20 billion in private investment in solar, wind and energy storage projects, supporting around 5,000 jobs during peak construction.

We have kept local communities at the heart of our work. We relocated the corridor from the Merriwa Casillis Plateau to avoid impacts on

agricultural land, and we coordinated the design of hub to project network to reduce spaghetti junctions of poles and wires. Local communities will benefit directly through EnergyCo's Central-West Orana REZ Community and Employment Benefit Program, designed in consultation with the community. The first instalment of this is the \$128 million program announced in October 2023. Applications for this instalment will open mid-2024. Hundreds of millions of dollars will continue to flow through this program to local projects and communities over the coming decades and create employment opportunities, effectively leveraging the fees paid by the wind, solar and energy storage projects connecting to the REZ. Landowners hosting new high voltage transmission lines will also share in the benefits of the REZ in an Australian First – the NSW Government's Strategic Benefit Payment Scheme – which will provide a payment of \$200,000 per kilometre of easement (indexed to inflation) paid out in annual instalments over 20 years.

The Central-West Orana REZ is not only critical to meeting legislated energy security and renewable energy targets, it will also support a step change in reducing emissions, to help meet the *Climate Change (Net Zero Futures) Act 2023*. It is expected to reduce emissions by over 11 million tonnes by 2045. This is equivalent to the current emissions from all NSW passenger vehicles for a year.

Since completing the analysis contained in this report we have continued to progress our work to develop the Central-West Orana REZ. In December last year, we entered into a Commitment Deed with ACERREZ, a consortium sponsored by ACCIONA, Cobra and Endeavour Energy, to design, build, finance, operate and maintain the Central-West Orana REZ transmission network for the next 35 years, subject to regulatory approvals. This is the first time the NSW Government has competitively procured a new transmission network operator, with delay and cost overrun risks to be substantially borne by the network operator, rather than passing them straight to electricity consumers.

The importance of this REZ to NSW and national decarbonisation ambitions is reflected in detailed and collaborative work on finance with the Clean Energy Finance Corporation (CEFC). The CEFC has prioritised investment in the Central-West Orana REZ via the \$19 billion CEFC Rewiring the Nation Fund and, together with EnergyCo, is progressing associated financing arrangements. For the first arrangement, the CEFC and EnergyCo are set to execute a \$490 million financing agreement which is estimated to deliver as much as a nominal \$240 million in

benefits to NSW electricity consumers in the form of lower project costs over the 20-year tenure of the loan.

In April, we opened the Central-West Orana REZ access rights application process to solar, wind and energy storage projects seeking to connect to the REZ. While this process is still underway, I'm delighted to share that we've received applications totalling 7.7 gigawatts of generation and storage capacity.

We have also continued to progress consultation on planning approvals for the REZ network infrastructure. The environmental impact statement for the REZ was placed on public exhibition last year, allowing stakeholders to have their say on the project. EnergyCo has reviewed the submissions and published a Response to Submissions report. This feedback from the community informed a number of key changes to the project, which are described and assessed in an Amendment report. State and Commonwealth planning approvals are expected in mid-2024. In parallel, we have reached in principle agreements with 97% of private landowners, laying the foundations to progress the development of the REZ.

EnergyCo in exercising our coordination role as the Infrastructure Planner has worked with the NSW Department of Climate Change, Energy, the Environment and Water (Energy, Climate Change and Sustainability); AEMO Services; the Australian Energy Market Operator (AEMO); Transgrid and other relevant network service providers; renewable generation and storage developers, investors and financiers; and local councils in the Central-West Orana region in developing its recommendation.

Moving forward, in addition to the parties who have been integral to date, emphasis will move increasingly to local governments, communities and rest of NSW government in areas as diverse as health and transport and education to deliver the REZs and really capture and maximise the benefits and opportunities.

Central-West Orana REZ is a significant first for NSW and forms part of the vital suite of investments, small and large, that will underpin the transition.

I'd like to acknowledge the innovation, dedication, vision and practical problem solving of all involved and note the massive progress and major effort still required.

# About EnergyCo

The Energy Corporation of NSW (EnergyCo) is a statutory authority established under the NSW *Energy and Utilities Administration Act 1987*.

EnergyCo has been appointed Infrastructure Planner under section 63 of the NSW *Electricity Infrastructure Investment Act 2020* (EII Act), under which it may act to investigate, plan, coordinate and promote energy infrastructure development in NSW for NSW's five Renewable Energy Zones (REZs) and for two Priority Transmission Infrastructure Projects (PTIPs), the Waratah Super Battery Project and the Hunter Transmission Project. This role helps deliver on the objectives of affordable, reliable and sustainable electricity for NSW consumers and economic and social benefits for local and First Nations communities, while also encouraging investment in new electricity infrastructure.

EnergyCo's primary statutory function is "to investigate, plan, coordinate and carry out the planning and design" of generation infrastructure as well as the construction and operation of storage and network infrastructure.

As Infrastructure Planner, EnergyCo acts in three ways to practically coordinate network with generation and storage infrastructure:



plans and procures major network infrastructure projects to unlock additional network capacity across the State



designs and manages network access schemes to ensure new generation and storage projects can get connected and stay connected



coordinates local community engagement to support joined-up delivery of major infrastructure and benefits.

In these roles, EnergyCo works in close collaboration with the Australian Energy Market Operator (AEMO), AEMO Services as the Consumer Trustee, Transgrid as the system operator and jurisdictional planning body, and the distribution network service providers.

This work can only be successful if there is effective engagement with and between relevant stakeholders. EnergyCo therefore leads community and industry engagement to support the delivery of REZs and PTIPs, and to deliver tangible benefits for local communities and First Nations Peoples, and to promote local development opportunities.



# Summary of recommendations

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The Central-West Orana Renewable Energy Zone (REZ) network infrastructure projects are the first to be recommended by the Energy Corporation of NSW (EnergyCo) as the Infrastructure Planner under the *Electricity Infrastructure Investment Act 2020* (EII Act).

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EnergyCo, in its role as the Infrastructure Planner for the Central-West Orana REZ, has made its recommendations for the REZ network infrastructure projects required for the REZ to the Consumer Trustee under section 30 of the EII Act. This document has been prepared to provide a summary of EnergyCo's recommendations to the Consumer Trustee for the REZ and the basis for these recommendations. Because of the ongoing procurement process for the REZ at the time of publication, this report seeks to strike a balance between transparency of the details of EnergyCo's recommendations and commercial-in-confidence considerations for the project. Certain commercial, financial and cost information cannot be communicated before the projects reach financial close.

EnergyCo recommended to the Consumer Trustee that it authorise the ACEREZ Partnership (ACEREZ) as the Network Operator to carry out the Central-West Orana REZ network infrastructure project (Central-West Orana RNIP).<sup>1</sup> This project consists of an expandable 4.5 gigawatt (GW) network<sup>2</sup> spanning from Wollar to Elong Elong via Merotherie in the Central-West and Orana region of NSW (Figure 1). It includes:

- A 500 kilovolt (kV) network (with some components operated at 330 kV), a new switching station at Barigan Creek and energy hubs at Merotherie and Elong Elong (referred to as the core infrastructure)
- A 330 kV hub to project network, which allows new renewable energy generation and storage projects to connect to the Core Infrastructure via the energy hubs through shared infrastructure at Merotherie and Elong Elong

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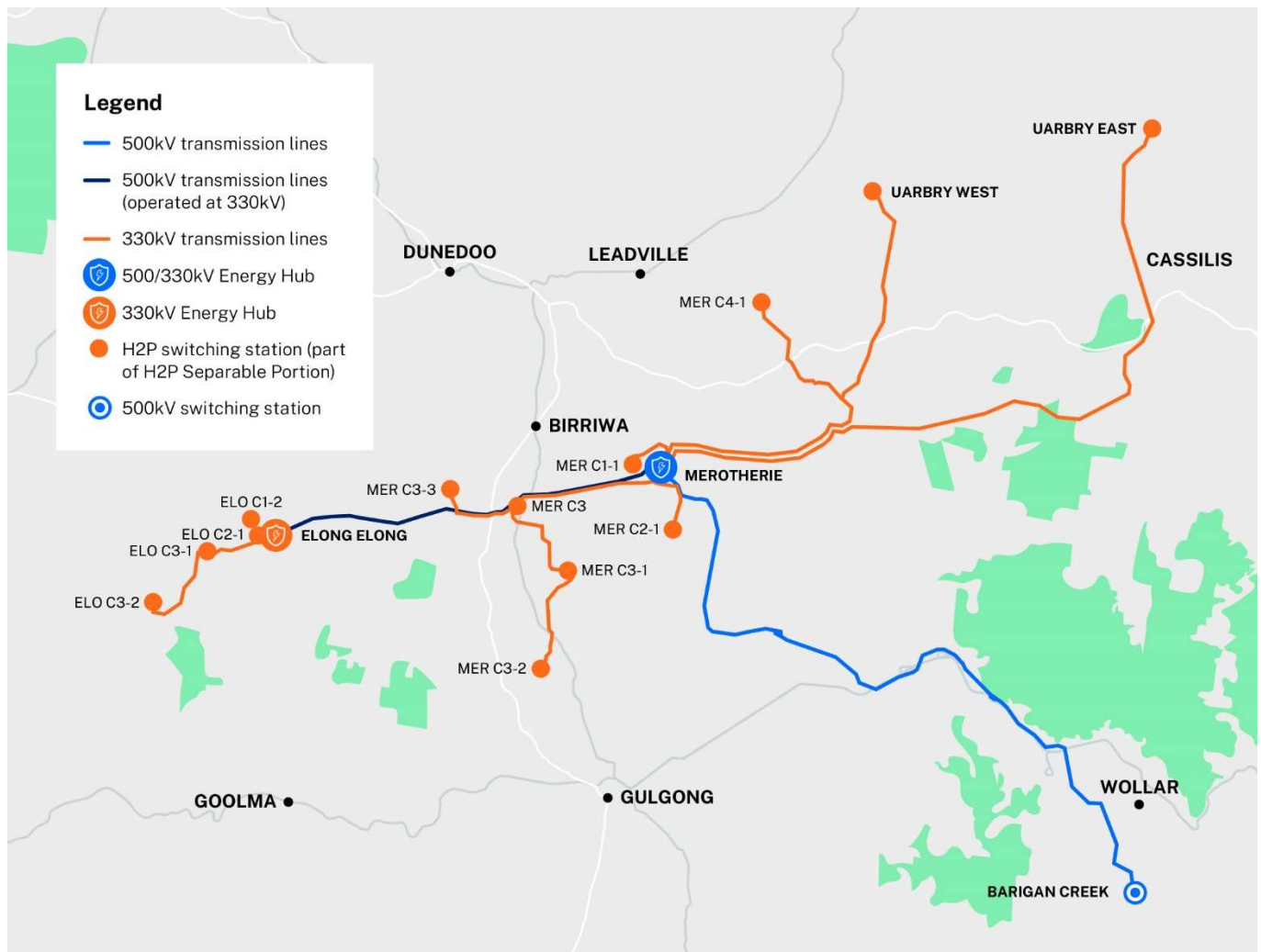
<sup>1</sup> EnergyCo made this recommendation consistent with its functions as the Infrastructure Planner under section 31(1)(b) of the EII Act and clause 19A(2) of the Electricity Infrastructure Investment Regulation 2021 (EII Regulation),

<sup>2</sup> Stage 1 of Hunter Transmission Project, a Priority Transmission Infrastructure Project (**PTIP**) under the EII Act, is required for Central-West Orana REZ to reach 4.5GW of network transfer capacity. As indicated in the Network Infrastructure Strategy, HTP Stage 1 is expected to be complete by 2027/2028, well in advance of the commissioning of the full Central-West Orana RNIP transfer capacity.

- System strength infrastructure, which includes a system strength solution for an installed 1,750 MVA to ensure that the network has adequate system strength to enable output from the renewable energy generation and storage projects from day one.

Construction of the Central-West Orana RNIP is expected to begin in early 2025 and be completed by 2028 with the project expected to be fully operational by 2030.

Figure 1: The Central-West Orana RNIP

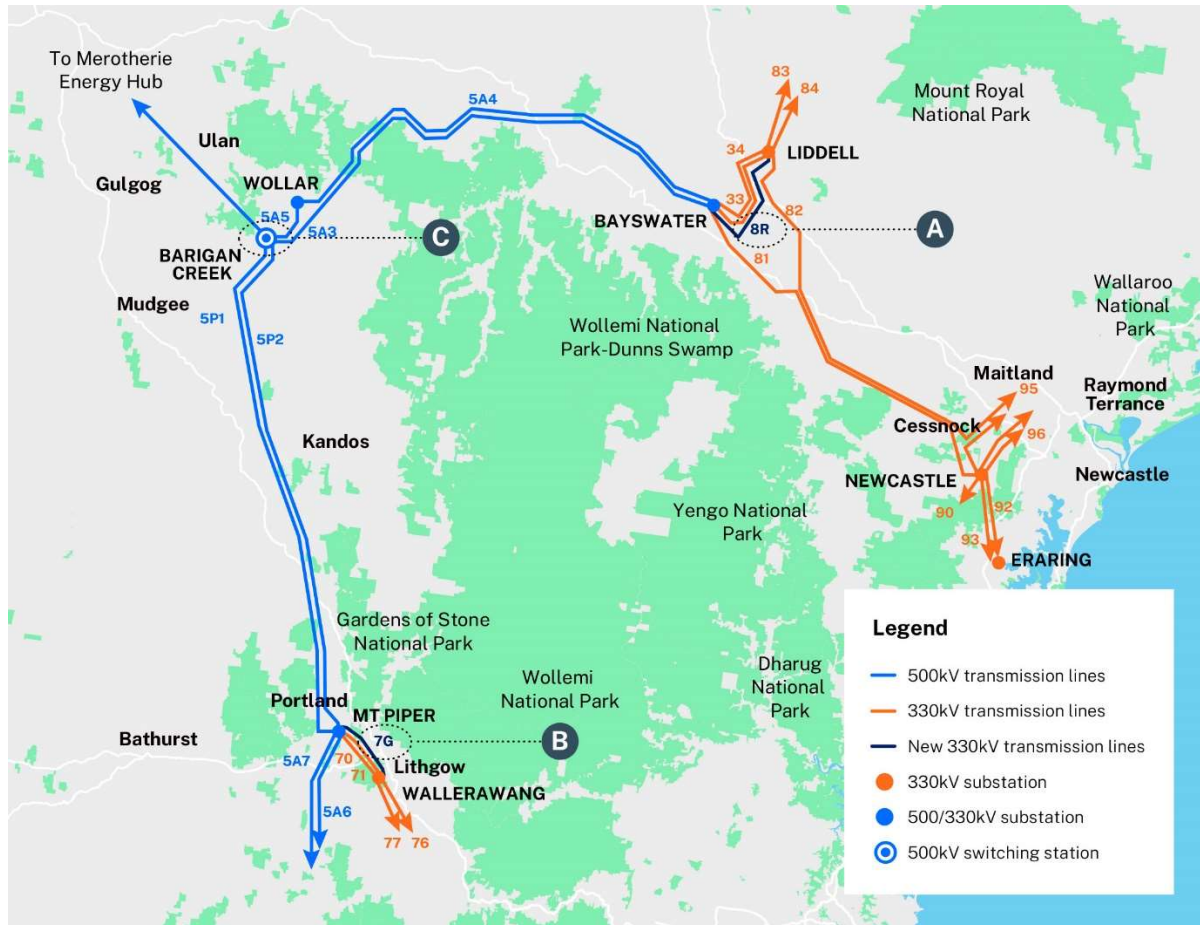


EnergyCo also recommended the Consumer Trustee authorise the NSW Electricity Networks Operations Pty Limited as trustee for the NSW Electricity Networks Operations Trust (trading as Transgrid) as the Network Operator to carry out the Enabling RNIP (Figure 2). This project consists of:

- A new 330 kV transmission line between the Bayswater substation and Liddell substation (marked 'A' in Figure 2);

- A new 330 kV transmission line between the Mt Piper substation and the Wallerawang substation (marked 'B' in Figure 2);
- Barigan Creek 500 kV Switchyard cut-in works (marked 'C' in Figure 2); and
- Facilitation of outages on Transgrid's existing 330 kV transmission line to enable overcrossings for the 500 kV Central-West Orana RNIP.

Figure 2: The Enabling RNIP



Collectively, the Central-West Orana RNIP and the Enabling RNIP make up the Central-West Orana REZ.

## Costs of the Central-West Orana REZ

The National Electricity Rules-equivalent consumer-funded capital cost of the Central-West Orana REZ is expected be around \$5.45 billion (nominal value, adjusted for inflation) for recommendation and authorisation purposes as of February 2024. This falls within the range of cost estimates published in the NSW Government's May 2023 Network Infrastructure Strategy.

This amount includes:

- The costs of the design and construction of the core network infrastructure for the Central-West Orana RNIP

- ACERREZ and upfront development costs
- Costs related to the development and delivery of the Central-West Orana REZ including property acquisition, biodiversity offsets, local community commitments and road upgrades
- Costs of works on Transgrid's existing network to deliver the Enabling RNIP (Figure 2).

The capital cost amount above does not include:

- Costs that are to be borne by new renewable generation and storage projects relating to the development and delivery of the hub to project network and the centralised system strength solution.
- Financing costs during construction.
- Contingency amounts for the above costs.

The final cost of the Central-West Orana REZ, determined by the Australian Energy Regulator (AER)<sup>3</sup>, will include these costs.

The final cost figure is subject to adjustment pending contract finalisation matters ahead of financial close, including outcomes of access allocation process for generator contributions, changes in foreign exchange and commodity prices, and the outcomes of the AER revenue determination.

The importance of this REZ to NSW and national decarbonisation ambitions is reflected in detailed and collaborative work on finance with the Clean Energy Finance Corporation (CEFC). The CEFC has prioritised investment in the Central-West Orana RNIP via the \$19 billion CEFC Rewiring the Nation Fund and, together with EnergyCo, is progressing associated financial agreements, to be confirmed in due course.

Through the Rewiring the Nation Fund, the CEFC is charged with addressing the financial barriers that may impede the critical transformation to low cost and low emissions renewable energy, while working to ensure the lowest consumer cost impact. EnergyCo is confident the flexible financing approach of the CEFC will enable the achievement of substantial project delivery savings as the Central-West Orana RNIP takes shape. For the first arrangement, the CEFC and EnergyCo are set to execute a \$490 million financing agreement which is estimated to deliver as much as a nominal \$240 million in benefits to NSW electricity consumers in the form of lower project costs over the 20-year tenure of the loan.

The CEFC is also working with the ACERREZ consortium on associated investment opportunities via the Rewiring the Nation Fund, with details to be confirmed as the transaction progresses toward financial close. In its first investment via the Rewiring the Nation Fund, the CEFC committed \$100

million towards the delivery of clean energy projects via the NSW Electricity Infrastructure Roadmap.

## Expected benefits of the Central-West Orana REZ

The REZ is expected to deliver over \$3 billion (net present value, real, \$2022) of net benefits to NSW electricity consumers to 2078<sup>4</sup> relative to a counterfactual where the REZ is not developed, but the minimum Infrastructure Investment Objectives of 12 GW of additional generation infrastructure by 2030 are still achieved.<sup>5</sup>

The REZ will improve energy reliability and security and has been designed to be able to continue to supply electricity in a scenario where there is a reasonably probability of an event that impacts the availability of the infrastructure. It is expected to bring on approximately 8 GW<sup>6</sup> of new renewable energy generation projects. It will also facilitate the connection of additional storage projects.<sup>7</sup> This will improve the sustainability of electricity supply and support the achievement of legislated renewable energy and emissions reduction targets.

The REZ will also generate significant economic benefits for the Central-West Orana region and for the State, bringing billions in private investment in electricity generation and storage projects to the region by 2030. In addition, through its Industry and Aboriginal Participation Plan, ACERREZ has committed to targets for local content, learning workers, Aboriginal participation and underrepresented workers.

## Background to the Central-West Orana REZ

A key feature of the Electricity Infrastructure Roadmap (the Roadmap), the EII Act and EII Regulation, is the establishment of REZs. The Roadmap defines REZs as: *“the modern-day equivalent of traditional power stations. They combine generation, transmission, storage and system strength services to ensure a secure, affordable and reliable energy system. They will play a crucial role in delivering affordable energy to help replace the State's existing power stations as they retire.”*<sup>8</sup>

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<sup>4</sup> The technical life of the network infrastructure is expected to be 50 to 60 years.

<sup>5</sup> The costs used to calculate the net benefit of the Central-West Orana REZ has been based on the net present value of the Regulated Service Payments made to ACERREZ over the concession period and the terminal value.

<sup>6</sup> The Central-West Orana REZ, being a 4.5 GW REZ, is expected to be able to host up to 8 GW of new renewable energy generation projects. However, the initial aggregate maximum capacity cap, which sets the upper limit on the new renewable energy generation projects that can be hosted by the REZ network infrastructure based on achieving a target transmission curtailment level, is set at 5.84 GW. This was based on a REZ with a 3 GW transfer capacity. Once the 4.5 GW REZ network infrastructure has been authorised a headroom assessment can be conducted under the access scheme to increase the aggregate maximum capacity of projects that can connect. This additional capacity is not currently available under the Access Rights Application Process.

<sup>7</sup> While energy storage projects count towards the aggregate maximum capacity cap under the CWO REZ Access Scheme, energy storage may act as a load where there is excess generation within the REZ, and as a generator where there is limited generation available within the REZ. This will be considered by the Infrastructure Planner in Headroom Assessments which could identify the opportunity.

<sup>8</sup> NSW Electricity Infrastructure Roadmap Overview, p26.



The Roadmap has been designed to coordinate investment in transmission and renewable energy generation and storage projects, including through REZs. The framework that supports the development of REZs under the EII Act and EII Regulation will ensure that investment in renewable energy generation, transmission and storage is orderly, timely, optimised and efficient. It also allows for careful and deliberate consideration of community priorities and concerns.

The amended Central-West Orana REZ Declaration, gazetted on 15 December 2023,<sup>9</sup> sets out that the Central-West Orana REZ:

- Comprises of the specified geographical area identified in Figure 3;<sup>10</sup>
- Comprises of the specified network infrastructure as set out in the Central-West Orana REZ Declaration; and
- Has an intended network capacity for network infrastructure of 6 GW.<sup>11</sup>

On 19 April 2024, further amendments to the Central-West Orana REZ Declaration were gazetted to update Schedule 2 to the Declaration.<sup>12</sup>

Figure 3: Central West Orana Renewable Energy zone, specified geographical area



<sup>9</sup> Government Gazette No 580 of Friday 15 December 2023

<sup>10</sup> Central-West Orana REZ Declaration, Schedule 1

<sup>11</sup> Central-West Orana REZ Declaration, clause 5

<sup>12</sup> Government Gazette No 137 of Friday 19 April 2024

The Minister for Energy appointed EnergyCo as the Infrastructure Planner under section 63(1) of the EII Act.<sup>13</sup> The Infrastructure Planner has a number of functions, including:

- to make and enter into contracts or other agreements in connection with the exercise of its functions under the EII Act,
- to investigate, plan, co-ordinate and carry out planning and design of generation infrastructure,
- to investigate, plan, co-ordinate and carry out planning, design, construction and operation of storage and network infrastructure.<sup>14</sup>

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<sup>13</sup> Central-West Orana REZ Declaration, clause 6

<sup>14</sup> EII Act, s63(4)(a), (b), (c).

# Expected benefit of the Central-West Orana Renewable Energy Zone

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The Central-West Orana REZ will provide NSW electricity consumers with reliable, affordable, and secure electricity supply while positioning the NSW economy for a rapidly decarbonising environment. Local communities will receive a share of the benefits of the REZ through funding for community benefits programs and the creation of job opportunities.

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The Central-West Orana REZ is critical to improving the reliability and security of electricity supply. It will also generate significant long-term financial benefits for NSW electricity consumers, while supporting achievement of the State's legislated emissions reduction targets. The REZ is expected to achieve these outcomes while creating economic opportunities for the Central-West Orana region and for the State, including through local content requirements and the creation of jobs and employment opportunities.

Importantly, local communities will benefit from the REZ, through the provision of funding for the delivery of community projects and the creation of job opportunities. Disruption to local communities will be minimised to the extent possible through both the design of the physical infrastructure and in the commercial arrangements that support delivery.

## Reliable and secure electricity supply

As coal-fired generators exit the NSW electricity market, the supply of electricity from other sources, including REZs, will become increasingly critical for ensuring the reliable and secure supply of electricity to NSW electricity consumers.

The Central-West Orana REZ has been designed to satisfy the N-1 planning standard and N-1 Secure operating standard. These standards mean that the network capacity of 4.5 GW will be available during normal system conditions, while also catering for a single credible contingency event. The N-1 Secure<sup>15</sup> operating standard was determined appropriate as it allows AEMO to meet existing

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<sup>15</sup> Clause 4.2.6 General principles for maintaining power system security.



obligations to re-secure the power system following a single credible contingency event at the levels of reserve NSW is currently operated to and without load shedding (Box 1).<sup>16</sup> Adopting this standard:

- Avoids creating costly increases to the reserve levels AEMO must hold;
- Minimises the risk of curtailing the output of low cost REZ generation during peak periods; and
- Reduces the risk of load shedding following a credible contingency.

**Box 1: Considerations for reliable and secure electricity supply: N-1 and N-1 Secure**

**N-1 and N-1 Secure**

‘N-1’ is a planning standard and is a system security measure such that if a network component should fail or be shut down in a network operating at the maximum forecast levels of transmission and supply, network security is still guaranteed. For example, a system consisting of four circuits should operate such that three circuits (N-1) could handle the load. Thus, if one of the four circuits failed, the system would not be overloaded.

‘N-1 Secure’ is an operating standard. Under the N-1 Secure standard, defined under clause 4.2.6(b) of the National Electricity Rules (NER), AEMO is required to return the power system to a secure operating state following a contingency event as soon as it is practical to do so, and in any event, within 30 minutes. This may require AEMO to re-dispatch generation in the affected region to reduce the flows on some transmission elements and can include load shedding.

There are practical considerations that limit AEMO’s ability to re-dispatch additional generation, which places constraints on the allowable flows over transmission lines. EnergyCo’s working assumption is that AEMO can re-dispatch a maximum of 1,400 MW of generation within 30 minutes. This aligns with both the level of reserve assumed in the NSW Energy Security Target (under the EII Act) and the level of reserve which AEMO notifies the market of lack of reserve through market notices.

Further to the application of the N-1 planning standard and N-1 Secure operating standard, EnergyCo will apply a Network Operator Performance Regime which requires ACEREZ to meet specified availability and reliability targets.<sup>17</sup> Failure to meet these targets results in an abatement to the annual revenue owing to ACEREZ. EnergyCo considers that it is reasonable to expect higher performance from the REZ network infrastructure than the existing transmission network given that it is a greenfield project which will become the State’s major future power station and needs to be sufficiently reliable.

The REZ includes centralised system strength infrastructure which will facilitate the connection of up to 5.84 GW of renewable energy generation to the REZ network infrastructure.<sup>18</sup> This solution will

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<sup>16</sup> The extent to which the Central-West Orana REZ is able to supply 4.5 GW of electricity at any point of time is dependent on the profile of the renewable energy generators connected to the Central-West Orana REZ.

<sup>17</sup> Further information about the Network Operator Performance Regime is set out in the *Central-West Orana REZ Access Rights Application Process Guideline*, which is available from EnergyCo’s website.

<sup>18</sup> The system strength solution has been sized to support the initial aggregate maximum capacity cap of 5.84 GW, which is set out in the Central-West Orana REZ Access Scheme. The system strength solution does not constrain additional renewable generation and storage projects connecting in the future. However, if additional renewable generation and storage projects do connect, there will need to be additional procurement of centralised system strength, or new projects will need to mitigate their system strength impact under the NER. For the Central-West Orana REZ initial allocation of access rights, standalone storage will be required to self-remediate any system strength impact and will not pay access fees.

enable system strength within the REZ and NSW electricity market more broadly to be maintained within AEMO limits. This contributes to the secure delivery of electricity supply.

**Financial benefits of the Central-West Orana REZ**

The financial benefits of the Central-West Orana REZ, and of REZs in general, result from the ability to connect more renewable energy generation, located in regions where there are better quality renewable resources, to the electricity system. CSIRO analysis shows that new onshore wind and solar generation is the lowest cost, low carbon electricity generation technology even after taking into account the additional costs of integrating these technologies into the electricity system.<sup>19</sup> It follows that increasing the supply of new renewable energy generation will put downward pressure on wholesale electricity prices in the National Electricity Market (NEM), resulting in lower costs for NSW electricity consumers.

The Central-West Orana REZ is expected to result in net financial benefit for NSW electricity consumers of over \$3 billion (\$real, 2022) to 2078, relative to a scenario in which the REZ is not built but where the Roadmap target of 12 GW by 2030 is still met.<sup>20</sup> This scenario likely provides a lower estimate of the benefits of the Central-West Orana REZ as it relies on low likelihood assumptions that if the Central-West Orana REZ does not proceed, other REZs can vary in both timing and size to be developed just in time to minimise prices for NSW electricity consumers.

EnergyCo considered a range of sensitivities to assess the value of the Central-West Orana REZ. The results of this sensitivity analysis are presented in Table 1.

Table 1: Financial benefit of the Central-West Orana REZ to NSW electricity consumers.

Scenario (compared to counterfactual)	NPV (real 2022) 2024-2078
Central	\$3.0 billion
Credible Upside	\$4.4 billion
Conservative Downside	\$1.2 billion

The net financial benefit considers both the savings resulting from the REZ and the costs. The categories of savings and costs are summarised in the below table.

<sup>19</sup> CSIRO, GenCost: Annual insights into the cost of future electricity generation in Australia, 2023-24.

<sup>20</sup> The costs taken into account in calculation of the net financial benefit are the total costs put forward by the recommended Network Operator for the recommended Central-West Orana RNIP and are inclusive of the costs of the enabling works.

Table 2: Categories of savings and costs for NSW electricity consumers considered in the net financial benefit of the Central-West Orana REZ

Saving/cost	Description	Category (for Central-West Orana REZ)	Source
Wholesale electricity prices	The reduction in wholesale electricity market prices over the life of the REZ, relative to a counterfactual where the REZ is not developed.	Saving	Wholesale electricity market modelling
Network build	The counterfactual assumes that other REZs can vary in size and timing to address a shortfall in transmission capacity resulting from the REZ not proceeding. The total cost of the network build under the counterfactual scenario is then compared to the total cost of the network build under a scenario where the REZ is developed to determine a saving or cost.	Saving	Wholesale electricity market modelling
REZ network infrastructure	The capital and operating costs associated with designing, constructing, financing, owning and operating the REZ network infrastructure. The REZ network infrastructure costs include the costs of the core infrastructure, the hub to project network, the system strength infrastructure and an allowance for the enabling connection works.	Cost	Provided by the Network Operator
Generator contributions (Access Fees)	Generators will substantially pay for the hub to project network and system strength infrastructure costs through access fees. These contributions are recognised as an offset to the REZ network infrastructure costs as these costs are not borne directly by NSW electricity consumers.	Offset	Estimated access fees based on information provided by the Network Operator

Saving/cost	Description	Category (for Central-West Orana REZ)	Source
Long-term energy service agreements (LTESA) <sup>21</sup>	<p>An LTESA is a financial derivative contract between an LTES Operator and the SFV that is intended to provide an LTES Operator with mitigation against unexpectedly low electricity prices and exposure to upside where electricity prices are higher. The LTESA achieves this by providing the LTES Operator with a series of options to enter into fixed length derivative arrangements.</p> <p>EnergyCo has considered LTESAs as a cost to consumers for the purpose of this exercise. However, consumer risk to incentivise projects is only at the low end of the wholesale price market. The consumer bears the cost (if market prices are below the fixed price and \$0) and the consumer receives the benefit if market prices are higher.</p>	Cost	Wholesale electricity market modelling
Total emissions	Adding additional low or zero emissions renewable generation resources displaces output from emissions intensive generation resources, lowering NSW total emissions.	Saving	Wholesale electricity market modelling and the NSW Government's carbon value. <sup>22</sup>

The **central scenario** is consistent with the Step Change Scenario in the Australian Energy Market Operator (AEMO) 2022 Integrated System Plan.<sup>23</sup> It does not include insurance value or future value.

The **credible upside scenario** includes insurance and future value (including the costs associated with the potential uprating) in addition to the costs and savings in the central scenario. This insurance value has been conservatively estimated as approximately \$960 million.<sup>24</sup> This is the additional value provided by the REZ when events occur in the NEM that are not expected or anticipated, and which disrupt the supply/demand balance in NSW. This could include where, for example, there is a significant and permanent increase in demand due to an unexpected increase in

<sup>21</sup> On 22 April 2024, AEMO Services announced that Tender 5 will not include generation LTESAs and instead will projects that would have been eligible for a generation LTESA could bid for a Generation Capacity Investment Scheme Agreement (CISA) under the Australian Government's Capacity Investment Scheme.

<sup>22</sup> The NSW Government's carbon value is published in its Cost Benefit Analysis TPG23-08: Carbon value in cost-benefit analysis technical note. This is available from [www.treasury.nsw.gov.au](http://www.treasury.nsw.gov.au).

<sup>23</sup> All figures are inclusive of the estimated cost of LTESA.

<sup>24</sup> This value has been estimated on the basis of a scenario where there is a faster than expected coal fired generation exit. A 17 percent weighting has been applied to the benefits of this scenario, reflecting the probability weighting of this scenario applied by AEMO in the Integrated System Plan.

electric vehicle uptake or where there is an unexpected change in the generation mix as a result of a catastrophic failure or unplanned exit. In these instances, the REZ provides insurance value by being available to meet electricity demand. In its absence, wholesale electricity prices would be expected to be higher.

The REZ also embeds optionality which facilitates a future value. Components of the network will be built at 500 kV but initially operated at 330 kV. This means the network can be uprated in the future, if and when there is sufficient generation seeking to connect, and where this is in the long-term financial interests of NSW electricity consumers. This would increase the network capacity from 4.5 GW to 6 GW and allow for the connection of additional renewable energy generation and storage projects. The future value of this is conservatively estimated at \$256 million.<sup>25</sup> This value does not include estimation of the benefit to the local community of avoiding prolonged construction disruption nor any additional works that may be needed within Transgrid's network to enable 6 GW to be exported from the REZ to the NSW electricity market.

The **conservative downside scenario** utilises a higher discount rate and a lower estimation of the benefits of the REZ post the end of the wholesale electricity market modelling horizon to account for uncertainty.<sup>26</sup>

This analysis shows that under all plausible scenarios, the REZ delivers significant net benefits to NSW electricity consumers.

## Sustainability

The *Climate Change (Net Zero Future) Act 2023* legislates a number of greenhouse gas emissions reduction targets for NSW, including:

- A reduction of at least 50 per cent greenhouse gas emissions by 2030 compared to 2005 levels;
- A reduction of at least 70 per cent greenhouse gas emissions by 2035 compared to 2005 levels; and
- Net zero greenhouse gas emissions in NSW by 2050.

The achievement of these greenhouse gas emissions reduction targets will be supported through the achievement of the Infrastructure Investment Objectives under the IIA Act. This includes the construction of renewable energy generation infrastructure that generates at least 12 GW of electricity.

The Commonwealth Government has also committed to targets for the reduction of greenhouse gas emissions, including a 43 per cent reduction on emissions by 2030 relative to 2005 levels, and net

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<sup>25</sup> The modelling assumes that the option is exercised in 2038. This assumption was based on the optimised network build as set out in the NSW Network Infrastructure Strategy (May 2023). This assumption is considered underestimate future value as the option to uprate the Central-West Orana REZ would likely be exercised only where there is a significant benefit in doing so.

<sup>26</sup> The wholesale electricity market modelling horizon was 2027 to 2045.

zero emissions by 2050. To support the achievement of this target, the Commonwealth Government has set a target for electricity generation to be 82 per cent renewable by 2030. A significant portion of the investment that will be needed to meet these targets will need to be made in NSW, as the state with the most generation capacity, the largest electricity load and the highest peak demand.

The Central-West Orana REZ is expected to make a meaningful contribution to the achievement of both the NSW and Commonwealth Government targets. In providing an initial 4.5 GW of capacity and flexibility to provide additional capacity into the future, the REZ will be a meaningful part of a package of solutions to assist in transforming the electricity sector to reduce emissions in line with committed targets.

In this context, the REZ is expected to result in an emissions saving of over 11 Mt of CO<sub>2</sub>-e over the life of the infrastructure. This is relative to a counterfactual where no Central-West Orana REZ is built but other REZs are able to expand to address any shortfall in transmission capacity. Valuing these emissions in accordance with the NSW Treasury's guidance for Carbon Value in cost-benefit analysis results in an additional benefit of approximately \$1 billion to NSW electricity consumers.<sup>27</sup> This benefit is included in all scenarios for the net financial benefit presented in Table 1.

### Regional and employment growth

The REZ is expected to provide significant economic growth opportunities. The project is set to drive up to \$20 billion in private investment in the Central-West Orana region, and is expected to support around 5,000 construction jobs in the region at its peak of construction. Renewable generation and storage projects seeking to connect to the REZ network infrastructure will result in additional jobs and investment in the region.

ACERREZ has prepared an Industry and Aboriginal Participation Plan consistent with the guidance and requirements of:

- The Renewable Energy Sector Board's Plan;
- First Nations Guidelines; and
- First Nations Guidelines: Increasing Central-West Orana income and employment opportunities from electricity infrastructure projects.

Through the Industry and Aboriginal Participation Plan, ACERREZ has committed to provide significant economic growth opportunities, including minimum targets that in many instances exceed the minimum targets set in the Renewable Energy Sector Board Plan and First Nations Guidelines, for:

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<sup>27</sup> NSW Treasury, [Technical note to NSW Government Guide to Cost-Benefit Analysis TPG23-08: Carbon value in cost-benefit analysis](#), 2 March 2023.

- Local manufacturing, services and construction opportunities and growth, across both the design and construction and operations and maintenance phases of the project
- Development of skilled workers with minimum targets for both learning workers<sup>28</sup> and apprentices
- Aboriginal employment opportunities
- Employment opportunities for underrepresented workers.

ACERREZ has recognised the First Nations lands of the Wiradjuri, Wailwan and Kamilaroi as the immediate region equal to Central-West Orana for industry and workforce engagement purposes. ACERREZ aims to prioritise Aboriginal-owned businesses located on these lands to drive long-term economic benefit to the Aboriginal people. It has developed targets relating to Aboriginal employment opportunities and Aboriginal-owned business opportunities in partnership with Murawin, the First Nations social impact consultancy.

Transgrid will also be contractually obligated to meet minimum First Nations Guidelines and Renewable Energy Sector Board Plan targets in the development of their Industry and Aboriginal Participation Plan for the REZ enabling works.

### Fostering local community support

Further to the economic benefits expected to accrue to the Central-West Orana region under commitments made by ACERREZ, EnergyCo has been conscious of ensuring that local communities benefit from the REZ, and that any disruptions are minimised to the extent possible. Securing the support of local communities for the REZ is critical to enabling the delivery of the REZ and realising its benefits for NSW electricity consumers.

Local communities are expected to benefit from the REZ through:

- The Community and Employment Benefit Program which will provide communities in the REZ with \$128 million, over four years from 2024. This is the first instalment of the hundreds of millions in funding that will flow to local projects and communities over the coming decades and create employment opportunities, collected from fees paid by the wind, solar and energy storage projects connecting to the REZ.
- New income streams for landowners from the lease payments for hosting new renewable energy and storage projects

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<sup>28</sup> Learning worker is a worker without qualifications or who needs to update their qualifications or skills to meet the needs of the infrastructure project. This includes trainees and apprentices. Once defined as a learning worker, the worker maintains this status for the duration of the project. Office of Energy and Climate Change, NSW Renewable Energy Sector Board's Plan, September 2022, p.74.

- The Strategic Benefit Payment Scheme which will provide landowners hosting new high voltage transmission projects with a payment of \$200,000 per kilometre of easement (indexed to inflation) paid out in annual instalments over 20 years.
- Employment and training programs to promote job opportunities and the use of local content, goods and services.

EnergyCo has worked with landowners to negotiate the route for transmission towers and power lines across their properties and have final agreement with 82% and in-principle agreements with a further 15% of landowners.

The REZ has been designed to minimise the impact on the local community to the extent possible, noting it is not always possible to entirely eliminate all impacts. EnergyCo has sought to achieve this through the development of the route for the REZ, in the design of the physical infrastructure and in the design of the commercial arrangements that support the development of the REZ.

The route of the REZ was developed to minimise impact on prime agricultural land valued by the local community.

In 2021, Transgrid carried out consultation on a preliminary study corridor which received strong community feedback. This helped inform the NSW Government's decision to relocate the corridor from the Merriwa Casillis Plateau where there was high value agricultural land, to a southern location that traversed mining areas.

EnergyCo consulted with the community on a broad study corridor in 2022 and responded to community and stakeholder feedback to refine this into the current alignment.<sup>29</sup> An assessment of impacts, including those about agricultural land use were addressed in the recently exhibited Environmental Impact Statement. The Environmental Impact Statement was exhibited between 28 September and 8 November 2023, with the Response to Submissions and Amendment report published in early March 2024.

EnergyCo considered community and landowner feedback during the project development phase, which contributed to many changes to configuration and alignment of infrastructure. This included realignment of the 330kV transmission line connection to the Liverpool Range Wind Farm, and more recent alignment changes that have been made in response to landowner feedback.<sup>30</sup>

In relation to the design of the physical infrastructure, EnergyCo has sought to minimise the impact to the local community through:

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<sup>29</sup> Central-West Orana Renewable Energy Zone Transmission project: Amendment Report, March 2024.  
<https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSI-48323210%2120240308T055200.412%20GMT>

<sup>30</sup> These transmission line changes are described and assessed in the Amendment Report available on the NSW Government Planning Portal.



- Creating an option to uprate components of the REZ network infrastructure initially operated at 330 kV to 500 kV. This provides an opportunity to increase the capacity of the REZ by 1.5 GW in the future to respond to changing NSW electricity needs. Exercising this option would require no new easements or large-scale construction activities avoiding any further disruption to local communities.
- The hub to project network, which enables new renewable generation and storage projects to share the connection to the core infrastructure rather than each project being responsible for its own connection. Well-coordinated, shared connection infrastructure minimises impacts on land and land usage, reduces the number of landowners impacted, and reduces the severity of the impact. In the vicinity of energy hubs, shared connection infrastructure will avoid the creation of ‘spaghetti’ connections that have become a key concern of local communities in other regions.

EnergyCo has also used the commercial arrangements that support the REZ to minimise the impact of construction on the local community.

#### Incentives for on-time delivery

Under the Project Deed, EnergyCo will incentivise ACERZ to deliver the REZ to the agreed project schedule, with commercial implications for failing to meet key project milestones. This mitigates the risk that the period of construction is prolonged.

The connection of new renewable generation and storage projects is the key driver of benefits for NSW electricity consumers. To connect these projects and realise their benefits as soon as possible, ACERZ will deliver the hub to project network alongside the core infrastructure.

Under the contractual agreement ACERZ will not receive:

- The debt component of its annual payment if it does not complete the construction in time with the agreed schedule up to the point of time that construction is completed; and
- The equity component of its annual payment if it is not able to commission the hub to project connections in accordance with the agreed schedule due to its own actions up to the point in time where hub to project connections are commissioned.

In the event ACERZ is delayed in these milestones, and the cause of the delay is attributable to ACERZ, there is no ability to make up lost payments.

# The Central-West Orana REZ network infrastructure project

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The Central-West Orana Renewable Energy Zone Network Infrastructure Project (RNIP) is an expandable 4.5 GW REZ which spans a corridor from Barigan Creek near Wollar to Elong Elong via Merotherie. It allows for the connection of approximately 8 GW of new renewable generation projects and additional storage projects. EnergyCo has recommended this project be carried out by ACERENZ.

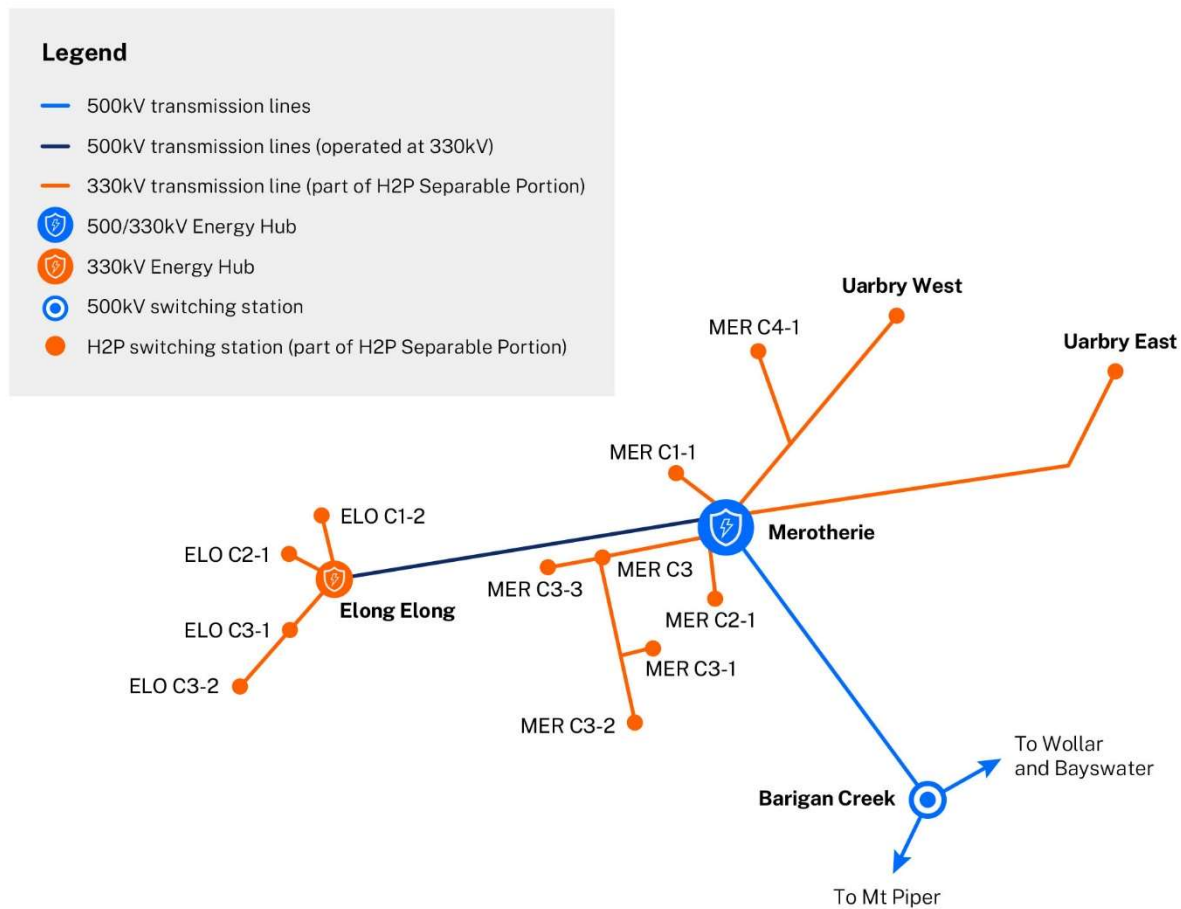
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The Central-West Orana RNIP, which is recommended to be carried out by ACERENZ, consists of:

- A 500 kV network (with some components operated at 330 kV), a new switching station at Barigan Creek and energy hubs at Merotherie and Elong Elong (known as the core infrastructure)
- A 330 kV hub to project network which provides new renewable energy generation and storage projects with the option to connect to the core infrastructure via the energy hubs through shared infrastructure at Merotherie and Elong Elong
- System strength infrastructure, which includes a system strength solution for an installed 1,750 MVA to ensure that the network has adequate system strength to enable output from the renewable energy generators from day one.

The Central-West Orana RNIP is shown in Figure 4 below.

Figure 4: The Central-West Orana RNIP



## The Core Infrastructure

The core infrastructure is the backbone of the Central-West Orana RNIP. It enables the connection of new renewable generation and storage projects to the NEM, facilitating the delivery of low cost, renewable electricity to NSW electricity consumers.

The core infrastructure of the Central-West Orana RNIP comprises the transmission network spanning a corridor between Wollar and Elong Elong, via Merotherie. The core infrastructure is recommended to be designed, constructed, financed, owned and operated by ACERZ for a period of 35 years, at which point it will be transferred to the NSW Government. The core infrastructure includes:

- A new switching station at Barigan Creek, located near Wollar, which physically connects the Central-West Orana REZ network infrastructure to the NSW transmission network
- Energy hubs at Merotherie and Elong Elong which facilitate the connection of new renewable generation and storage projects to the core infrastructure

- Two double circuit steel tower (DCST) 500 kV transmission lines connecting the Barigan Creek switching station and the Merotherie energy hub, which are approximately 60 kilometres in length
- Two DCST 500 kV transmission lines, operated at 330 kV, connecting the Merotherie and Elong Elong energy hubs, which are approximately 30 kilometres in length.

The core infrastructure provides 4.5 GW of transmission capacity, enabling the connection of approximately 8 GW of new renewable generation and storage projects. Building the core infrastructure at 500 kV but operating components at 330 kV provides a cost-efficient option to expand the Central-West Orana REZ should additional transmission capacity be needed in the future. With the market changing rapidly as existing generation reaches the end of its technical life and the uncertainty this creates, EnergyCo considers that creating an option to expand the REZ relatively quickly is in the long-term financial interests of NSW electricity consumers.

### Proposed route of the core infrastructure

At a high level, the route and location of the Core Infrastructure includes:

- A 60-kilometre transmission line corridor from Wollar to Merotherie comprising generally of two, 70 metre easements to support two 500 kV DCST lines;
- A 30-kilometre transmission line corridor from Merotherie to Elong Elong comprising generally of two, 70 metre easements to support two 500 kV DCST lines operating initially at 330 kV;
- Freehold property at Wollar to host the Barigan Creek Switching Station infrastructure;
- Freehold property at Merotherie to host the Merotherie Energy Hub infrastructure; and
- Freehold property at Elong Elong to host the Elong Elong Energy Hub infrastructure.

The location of the Barigan Creek Switching Station and the Merotherie and Elong Elong energy hubs is set out in Table 3.

Table 3: Location of the Barigan Creek Switching Station and the Merotherie and Elong Elong energy hubs

Site	Location
Barigan Creek Switching Station	<p>A new switching station along the existing 500 kV transmission network, located around six kilometres south of the township of Wollar, and 320 metres southwest of the existing Transgrid Wollar Substation off Barigan Road in the Mid-Western Regional local government area.</p> <p>The Barigan Creek Switching Station would provide a connection point between the project and the existing transmission network.</p>

Site	Location
Merotherie Energy Hub	<p>The Merotherie Energy Hub is located along Merotherie Road, Merotherie in the Mid-Western Regional local government area. The nearest town is Dunedoo, located around 17 kilometres to the northwest of the Merotherie Energy Hub.</p> <p>The Merotherie Energy Hub would provide a connection between the hub to project network infrastructure and the Core Infrastructure.</p>
Elong Elong Energy Hub	<p>The Elong Elong Energy Hub is located on Dapper Road, Cobbora in the Warrumbungle local government area. The nearest town is Dunedoo, around 22 kilometres to the northeast.</p> <p>The energy hub would provide a connection between the hub to project network infrastructure and the Core Infrastructure.</p>

Further detail relating to the proposed location and route of the core infrastructure is available from the [NSW Government Planning Portal](#).

## The Hub to Project network

EnergyCo will enable new renewable generation and storage projects, awarded an access right in the initial allocation, to physically connect to the core infrastructure through a coordinated 330 kV network of transmission infrastructure (known as the hub to project network). The hub to project network will span from the connection point of each new renewable generation and storage project awarded an access right to the core infrastructure via the designated energy hubs.<sup>31</sup>

Once built, the hub to project network will be shared REZ network infrastructure that could allow for additional augmentations or expansions to support connection of additional renewable generation and storage projects in the future.

The hub to project network design accommodates uncertainty regarding which new renewable generation and storage projects will ultimately be successful in obtaining an access right. Each element of the hub to project network will only proceed on the basis that successful projects allocated an access right execute the access right agreements and provide the required bonding prior to financial close of the Central-West Orana RNIP. As such, the exact scope and costs of hub to project network will only be known once the initial access rights allocation is completed.

The hub to project network was designed this way so that these assets will only be built if the renewable generation and storage projects are very likely to be in a position to connect. This is because the hub to project network is substantially paid for by new renewable generation and storage projects through access fees. As these costs are not borne by NSW electricity consumers, they are not included in the capital cost of the Central-West Orana REZ presented in this document.

<sup>31</sup> <https://www.energyco.nsw.gov.au/industry/central-west-orana-rez-access-rights-application-process>

## Route of the hub to project network

At a high level, the current planned route and location of the hub to project network infrastructure includes:

- A total of 166 kilometres of transmission line corridor between the Merotherie Energy Hub and Elong Elong Energy Hub to the prospective generation projects, comprising generally of 60 metre easements to host single or double circuit 330 kV lines; and
- Freehold property options for the hub to project 330 kV switching stations.

Further detail relating to the proposed location and route of the hub to project network is available from the NSW Government Planning Portal.

## System strength infrastructure

To ensure timely commissioning of new renewable generation, and hybrid generation and storage projects in the Central-West Orana REZ, EnergyCo recommended that the Central-West Orana RNIP include centralised system strength infrastructure to support the stable operation of up to 5.84 GW of initial renewable generation, and hybrid generation and storage projects. This solution allows for coordination of system strength throughout the Central-West Orana RNIP and ensures that adequate provisions are made for all new renewable generation, and hybrid generation and storage projects.

Renewable generation and hybrid generation and storage projects connecting to the Central-West Orana RNIP will be required to pay a component of access fees for centralised system strength provided by ACERES.

Pending formal gazettal and AEMO concurrence of new regulatory amendments under development, access right holders (other than standalone storage projects) will not be exposed to the NER system strength mitigation requirements as part of the connection process (either through self-remediation or by paying the NER system strength charge). This is because access right holders (other than standalone storage) will pay for the centralised system strength assets through their access fees. Transgrid as the Jurisdictional Planning Body and System Strength Service Provider for NSW will treat access right holders in the same way as generators who self-remediate their system strength impact under the NER. On this basis, Transgrid considers its system strength obligations in relation to those generators are limited to meeting NER minimum requirements at declared system strength nodes.

It is intended that any system strength that is not required to meet the demand from renewable generation, and hybrid and storage projects connecting to the Central-West Orana RNIP will be taken into account by Transgrid in making decisions on whether to make additional investments to meet their NER requirements. EnergyCo and Transgrid will engage in joint planning to ensure that

system strength investments are efficient and are not over-procured based on expected network need.

In the future, there may be a range of options to meet the system strength requirements of plant connected to the Central-West Orana RNIP beyond the initial system strength solution procured by ACERENZ for the initial allocation of access right holders under the Access Scheme.

Given that the centralised system strength solution is substantially paid for by new renewable generation and storage projects (with the exception of standalone storage projects), these costs have not been included in the capital cost of the Central-West Orana RNIP presented in this document.

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## Delivery

Major construction of the Central-West Orana RNIP is planned to commence in early 2025, with initial operations to commence by 2028, subject to NSW Government and Commonwealth planning approvals. The Central-West Orana RNIP will be progressively commissioned from 2028 to 2030.

The construction phase is scheduled to take approximately four years from commencement through to demobilisation and site rehabilitation.

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## Network Operator for the Central-West Orana REZ Network Infrastructure Project

ACERENZ is a partnership between Spanish sustainable infrastructure and renewables multinational conglomerate Acciona, NSW-based electricity distribution network service provider Endeavour Energy, and Cobra, the renewable energy development platform of Vinci Group, the French based global leader in construction. The ACERENZ partners have collectively delivered more than 30,000 kilometres of transmission lines and delivered, owned or operated more than 660 substations. Globally, the consortium has invested in over \$35 billion of infrastructure.

EnergyCo is satisfied the ACERENZ Partnership has the necessary financial and technical capability to deliver the recommended Central-West Orana RNIP. ACERENZ was selected as the preferred Network Operator for the Central-West Orana RNIP through a competitive tender process, consistent with the requirements and provisions of the EII Act and EII Regulation and the NSW Government Procurement Policy Framework. EnergyCo and ACERENZ executed a Commitment Deed for the Central-West Orana REZ in December 2023.

EnergyCo and ACERENZ will enter into a Project Deed for the Central-West Orana REZ following the AER's revenue determination for the Central-West Orana REZ.

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## Cost recovery for the Central-West Orana RNIP

Following an authorisation of the Central-West Orana RNIP by the Consumer Trustee, ACERZ will submit a revenue proposal to the AER. If the AER considers that the competitive tender process to select ACERZ was genuine and appropriate it is able to adopt the outcomes of the tender in its determination. This would be subject to the AER checking that the resulting development and construction capital costs from the tender are lower than the Maximum Capital Cost set by the Consumer Trustee.

The Maximum Capital Cost sets “a maximum amount that for the prudent, efficient, and reasonable capital costs for the development and construction of the REZ network infrastructure project that may be determined” by the AER.<sup>32</sup> If the Maximum Capital Cost is not exceeded, the AER will determine the payments to ACERZ for carrying out the Central West Orana RNIP (known as “Regulated Service Payments”) consistent with the tender outcomes negotiated by EnergyCo with ACERZ. The AER has no role in assessing project options, including timing and scope.

Once a revenue determination has been made, EnergyCo and ACERZ are expected to enter into a Project Deed which will govern the delivery and operation of the Central-West Orana RNIP. The Project Deed is the overarching contractual document which sets out how ACERZ must carry out the Central-West Orana RNIP and provides EnergyCo with oversight of its activities.

Under the Project Deed, ACERZ will be entitled to two sources of revenue:

- Regulated Service Payments payable by the Scheme Financial Vehicle over the concession period (35 years from financial close) as determined by the AER in its revenue determination
- An Expiry Payment from the NSW Government at the end of the concession (expected in 2059).

The Scheme Financial Vehicle is required to pay ACERZ’s Regulated Service Payments in accordance with the AER’s revenue determination and the EII Act. Regulated Service Payments can only be varied if the AER remakes or adjusts its revenue determination in accordance with the EII Act.

The Scheme Financial Vehicle will recover these costs from NSW electricity consumers via distribution network service provider charges and ultimately NSW electricity consumers, and through the access fees paid by access right holders.

Under the access fee structure for the Central-West Orana RNIP, the costs associated with hub to project network will be substantially recovered from access right holders. However, if there are residual costs, these will be recovered from NSW electricity consumers. EnergyCo has mitigated the

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<sup>32</sup> EII Act, s31(2). The Maximum Capital Cost is provided to the AER by the Consumer Trustee on a confidential basis.



risk of a residual cost by only finalising the scope of the hub to project network once new renewable energy generation and storage projects have:

- been allocated an access right and has executed an access right agreement; and
- provided the required bonding prior to financial close of the Central-West Orana RNIP.

On the basis of this mitigation, EnergyCo considers there to be a low risk that NSW electricity consumers will bear residual cost associated with the hub to project network.

The costs of the system strength infrastructure are expected to be fully recovered from renewable energy generation access right holders through access fees. The access fee also includes a component from access right holders to reduce consumer contributions to the costs of the Central-West Orana REZ core infrastructure.

The Expiry Payment recognises that the useful technical life of the Central-West Orana RNIP will extend beyond the concession period. The NSW Government will make an Expiry Payment to ACERES for the Central-West Orana RNIP to recognise the value of the project at the time the network infrastructure is transferred to the NSW Government.

# REZ network infrastructure project options

The EII Act requires EnergyCo to assess and make recommendations in relation to the different options for REZ network infrastructure projects to provide the intended network capacity for a REZ.

In forming its recommendation on the Central-West Orana RNIP, EnergyCo considered seven options (referred to as REZ network infrastructure options). These are summarised in Table 4.

Table 4: REZ network infrastructure options

Network Infrastructure Option	Barigan Creek to Merotherie	Merotherie to Elong Elong	Meshing/Southern extension	Network capacity
Option 1	Two 330 kV DCST	Two 330 kV DCST	None	3 GW
Option 2a	One 500 kV DCST	One 500 kV DCST and one 330 kV single circuit via Orana	330 kV single circuit via Stubbo	2.2 GW
Option 2b	One 500 kV DCST	One 330 kV DCST from Merotherie to Elong Elong	330 kV DCST to line 79 at Uungula	2.2 GW
Option 3a	Two 500 kV DCST	One 500 kV DCST (operated at 330kV) and 330 kV single circuit via Orana	None	4.5 GW
Option 3b	Two 500 kV DCST	One 500 kV DCST & 330 kV single circuit via Orana	None	6 GW
Option 3c	Two 500 kV DCST	Two 500 kV DCST	None	6 GW

Network Infrastructure Option	Barigan Creek to Merotherie	Merotherie to Elong Elong	Meshing/Southern extension	Network capacity
Option 3d <i>Recommended option</i>	Two 500 kV DCST	Two 500 kV DCST (all operated at 330 kV)	None	4.5 GW

EnergyCo assessed these options in accordance with the REZ network infrastructure options assessment framework (presented in Figure 5). The criteria considered within the REZ network infrastructure options assessment framework were developed to be consistent with the objects of the EII Act, and specifically to:

- Improve the affordability, reliability, security and sustainability of electricity supply;<sup>33</sup>
- Coordinate investment in new generation, storage, network and related infrastructure;<sup>34</sup> and
- Foster local community support for investment in new generation, storage, network and related infrastructure.<sup>35</sup>

EnergyCo considered these EII Act objects to be most relevant to the decision regarding which option to recommend for the Central-West Orana RNIP. EnergyCo has considered the remaining objects of the EII Act in other decisions relating to the recommended RNIP, including the acceptance of ACERES's Industry and Aboriginal Participation Plan.

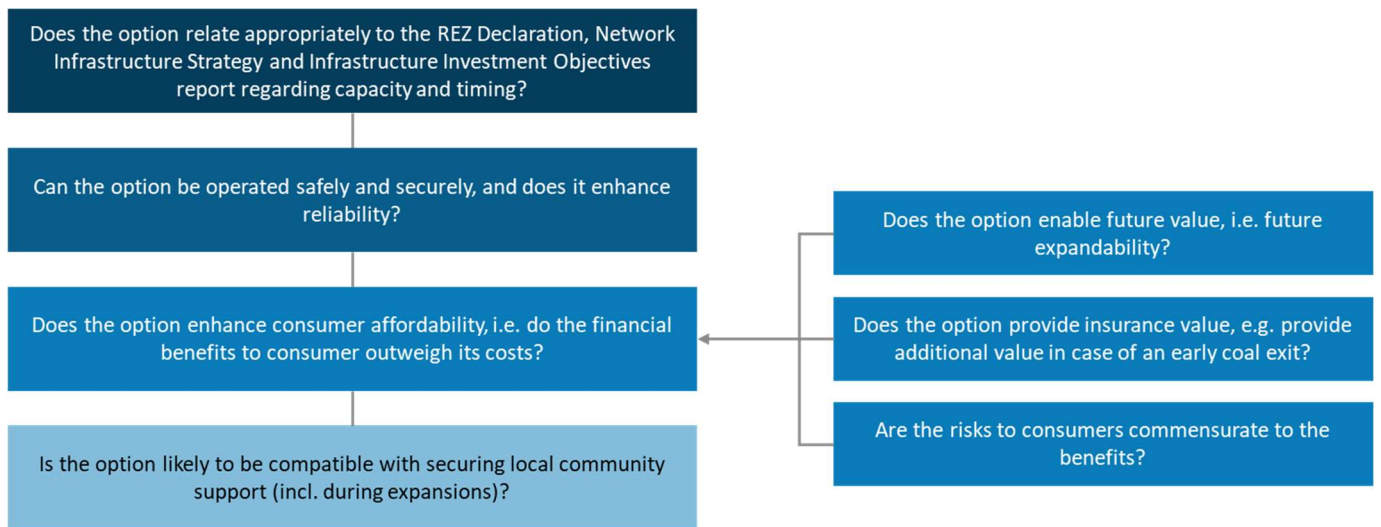
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<sup>33</sup> EII Act, s3(3)(a)

<sup>34</sup> EII Act, s3(3)(b)

<sup>35</sup> EII Act, s3(3)(d)

Figure 5: REZ Network Infrastructure options assessment framework



The criteria included in the REZ network infrastructure options assessment framework were not weighted, consistent with the EII Act objects which have equal importance under the EII Act. EnergyCo considered the performance of REZ network infrastructure options against each criterion on a relative, not absolute basis, with the exception of the second criterion which considered the extent to which options can be operated safely and enhance reliability and security of electricity supply. This criterion was scored on a pass or fail basis.

The assessment of the RNI options against the criterion is set out in Table 5.

Table 5: Assessment of RNI options against the assessment framework

	Consistency with the REZ declaration, Network Infrastructure Strategy, and Infrastructure Investment Objectives	Safety, reliability and security performance (Pass/Fail)	Affordability for NSW electricity customer	Community support
Option 1	Not consistent with criteria	Pass	Not consistent with criteria	Consistent with criteria
Option 2a	Not consistent with criteria	Fail	Not assessed	
Option 2b	Not consistent with criteria	Fail	Not assessed	
Option 3a	Most consistent against criteria	Pass	Consistent with criteria	Not consistent with criteria
Option 3b	Consistent with criteria	Pass	Most consistent against criteria	Not consistent with criteria
Option 3c	Consistent with criteria	Pass	Most consistent against criteria	Most consistent against criteria
Option 3d	Most consistent against criteria	Pass	Most consistent against criteria	Most consistent against criteria
Key:	Most consistent	Consistent	Not consistent	

Based on the application of the REZ network infrastructure options assessment framework, EnergyCo identified Option 3d as the recommended Central-West Orana RNIP:

- In relation to the REZ declaration, Network Infrastructure Strategy, and Infrastructure Investment Objectives, EnergyCo considered Option 3d, alongside Option 3a, to be the most consistent with the optimal requirements identified. Similar to Option 3a, Option 3d provides 4.5 GW of transfer capacity initially, with the option to increase this to 6 GW by converting a component of the infrastructure to operate at 500 kV (from 330 kV).
- On safety, reliability and security performance, Option 3d meets N-1 and N-1 Secure standards, enhancing the reliability and security of supply;

- On affordability for NSW electricity customers, Option 3d provided positive net financial benefit to NSW electricity customers, had a lower risk of providing insufficient capacity or of being underutilised and performed reasonably with respect to cost efficiency relative to other options; and
- On local community support, Option 3d was considered to perform well, consistent with option 3c.

# The Enabling REZ network infrastructure project

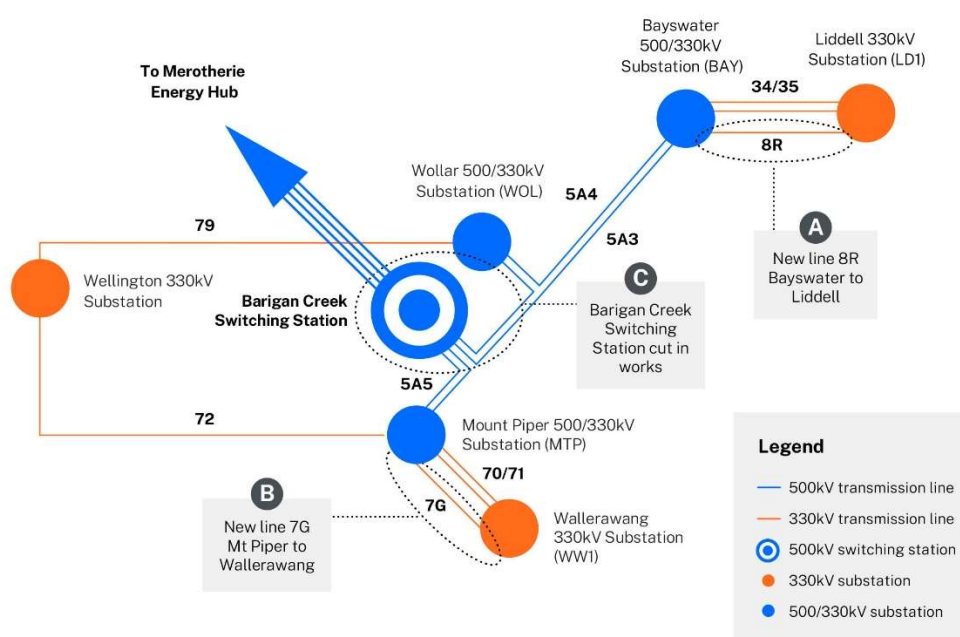
The Enabling RNIP will allow the Central-West Orana RNIP to connect to the NSW electricity transmission network. This project is essential to allow for the benefits of the Central-West Orana RNIP for NSW electricity consumers to be realised.

The Enabling RNIP, recommended to be carried out by Transgrid, consists of:

- A new 330 kV transmission line between the Bayswater substation and Liddell substation;
- A new 330 kV transmission line between the Mt Piper substation and Wallerawang substation;
- Barigan Creek 500 kV Switchyard cut in works; and
- Facilitation of outages on Transgrid's existing 330 kV transmission line to enable overcrossings for the 500 kV Central-West Orana RNIP.

The Enabling RNIP is shown in Figure 6.

Figure 6: Enabling RNIP



The Enabling RNIP is anticipated to be complete by mid-2027.

The Barigan Creek cut-in works will be developed and completed, in coordination with ACERERZ's Barigan Creek construction program with energisation scheduled for mid-2027.

Bayswater to Liddell and Mt. Piper to Wallerawang are expected to be progressed simultaneously, with completion scheduled for mid-2027.

Facilitation of outages on Transgrid's existing 330 kV transmission line to enable overcrossings for the 500 kV Central-West Orana RNIP are expected between late-2025 and late-2026.

### **Route of the Enabling RNIP**

The Enabling RNIP involves mostly existing easements around Bayswater power station, Mount Piper power station and the proposed Barigan Creek site.

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## **Network Operator for the Enabling RNIP**

Transgrid is registered as a TNSP in NSW under the NER and operates the NSW transmission network to which the Central-West Orana RNIP connects under a 99-year lease with the NSW Government.

EnergyCo determined to procure the Enabling RNIP through a non-contestable procurement process. The primary reason for this decision was that the works involved in the Enabling RNIP are not readily separable from the existing NSW electricity transmission network, operated by Transgrid under a 99-year lease. Therefore, it was not considered feasible for a party other than Transgrid to complete the works.

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## **Cost recovery for the Enabling RNIP**

As the Enabling RNIP is procured under a non-contestable procurement process, the ultimate costs of the Enabling RNIP are subject to the AER's Transmission Efficiency Test.<sup>36</sup>

Subject to authorisation, Transgrid will:

- Be required to submit a revenue proposal to the AER for Part 5 of the EII Act;<sup>37</sup>
- Receive a revenue determination from the AER for carrying out the Enabling RNIP;<sup>38</sup> and

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<sup>36</sup> AER - Transmission Efficiency Test and revenue determination final guideline non-contestable network infrastructure projects - April 2023 | Australian Energy Regulator (AER)

<sup>37</sup> EII Regulation, cl 48.

<sup>38</sup> EII Act, s 38(1).



- Receive payments from the Scheme Financial Vehicle in accordance with the payment schedule to the revenue determination.<sup>39</sup>

As per the Central-West Orana RNIP, the Scheme Financial Vehicle will recover the costs of the Enabling RNIP from NSW electricity consumers via distribution network service providers charges.

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<sup>39</sup> EII Act, s 39(1) and EII Regulation, cl 52.