

EnergyCo

# New England Renewable Energy Zone

Project Overview



May 2023

# Acknowledgment of country

We acknowledge that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with.

We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities and economies.

We reflect on the continuing impact of government policies and practices, and recognise our responsibility to work together with and for Aboriginal and Torres Strait Islander peoples, families and communities, towards improved economic, social and cultural outcomes.

Artwork:  
Regeneration by Josie Rose



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# Introduction

As a result of technological changes in energy generation and a need to reduce our reliance on fossil fuels, NSW is entering a new phase of electricity production. Traditional power stations are nearing their end of lives and the energy sector is turning their attention and investments toward cleaner, and more reliable renewable energy sources.

Under the *Electricity Infrastructure Investment Act 2020* (Act), the NSW Government is leading the planning and coordination of five Renewable Energy Zones (REZs) across NSW, to deliver renewable energy generation and storage connected by new transmission infrastructure.

REZs are the modern-day equivalent of traditional power stations. They combine renewable energy generation, storage capabilities and transmission infrastructure,

at scale to ensure a clean, affordable, and reliable energy system for homes, schools, hospitals, businesses and industry across NSW.

The Energy Corporation of NSW (EnergyCo), has been appointed under the Act as the Infrastructure Planner responsible for delivering the REZs, including the New England REZ.

The journey towards more sustainable forms of energy generation will also bring with it significant jobs and investment for the region.

Providing reliable energy at the lowest possible cost and in places that work for our regional and rural communities is an absolute priority of the NSW Government.

This project overview explains:



**Why we need to act now**



**What is a REZ? Who is involved? How does a REZ work?**



**The transmission planning process and preliminary study corridor**



**Community engagement and benefits sharing**



**Working with landowners and farmers**



**The many benefits and challenges in transitioning to a more sustainable electricity system within the New England REZ.**



NSW Department of Planning and Environment / Neil Fenelon

# Who is EnergyCo?



## EnergyCo is the NSW Government body that is responsible for delivering the REZs.

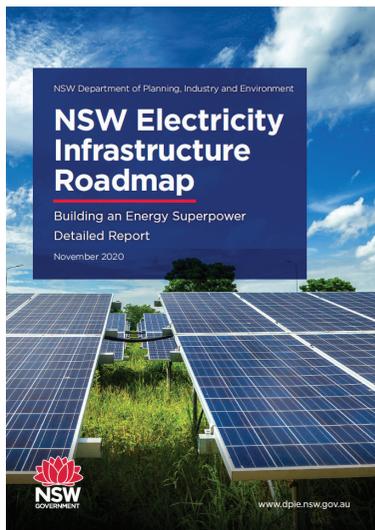
As the Infrastructure Planner EnergyCo is responsible for planning and coordinating the delivery of new renewable energy and transmission investment in REZs across the state.

This includes delivering transmission towers, lines, and energy hubs to connect renewable energy generator and storage projects across the REZ, such as solar and wind, batteries and pumped hydro to NSW's existing electricity network.

EnergyCo's key responsibilities are to:

- Investigate, co-ordinate and carry out strategic planning of the network infrastructure required to connect energy generation and storage projects across the REZ
- Design and implement access schemes to connect generation and storage projects and manage the network efficiently
- Undertake community and stakeholder engagement at the REZ-wide level
- Develop and implement programs that provide benefits for communities and landowners
- Negotiate easements, where required for the REZ network infrastructure
- Manage the environmental impact statement and approval process covering proposed REZ network infrastructure
- Appoint a Network Operator to design, build, finance, operate and maintain the approved REZ network infrastructure

# The NSW energy roadmap



## Our plan to transform our electricity sector across NSW.

The Electricity Infrastructure Roadmap (the Roadmap) is the NSW Government's plan to transform the electricity sector into one that is clean, reliable and affordable.

The Roadmap coordinates investment in transmission, generation, storage and firming infrastructure as ageing coal-fired generation plants retire. The Roadmap includes actions that will work together to deliver 'whole-of system' benefits including the establishment of REZs across NSW.

Some of the Roadmap highlights include:



\$32 billion in regional energy infrastructure investment by private companies expected across NSW by 2030



Up to \$265 million in community enhancement funds to host communities by 2042



12 gigawatts (GW) in new generation and 2GW of long duration storage by 2030



Up to \$1.5 billion in lease payments to landholders hosting new infrastructure, as well as \$200,000 per kilometre of transmission hosted, paid out in annual instalments over 20 years



90 million tonne reduction in carbon emissions to 2030

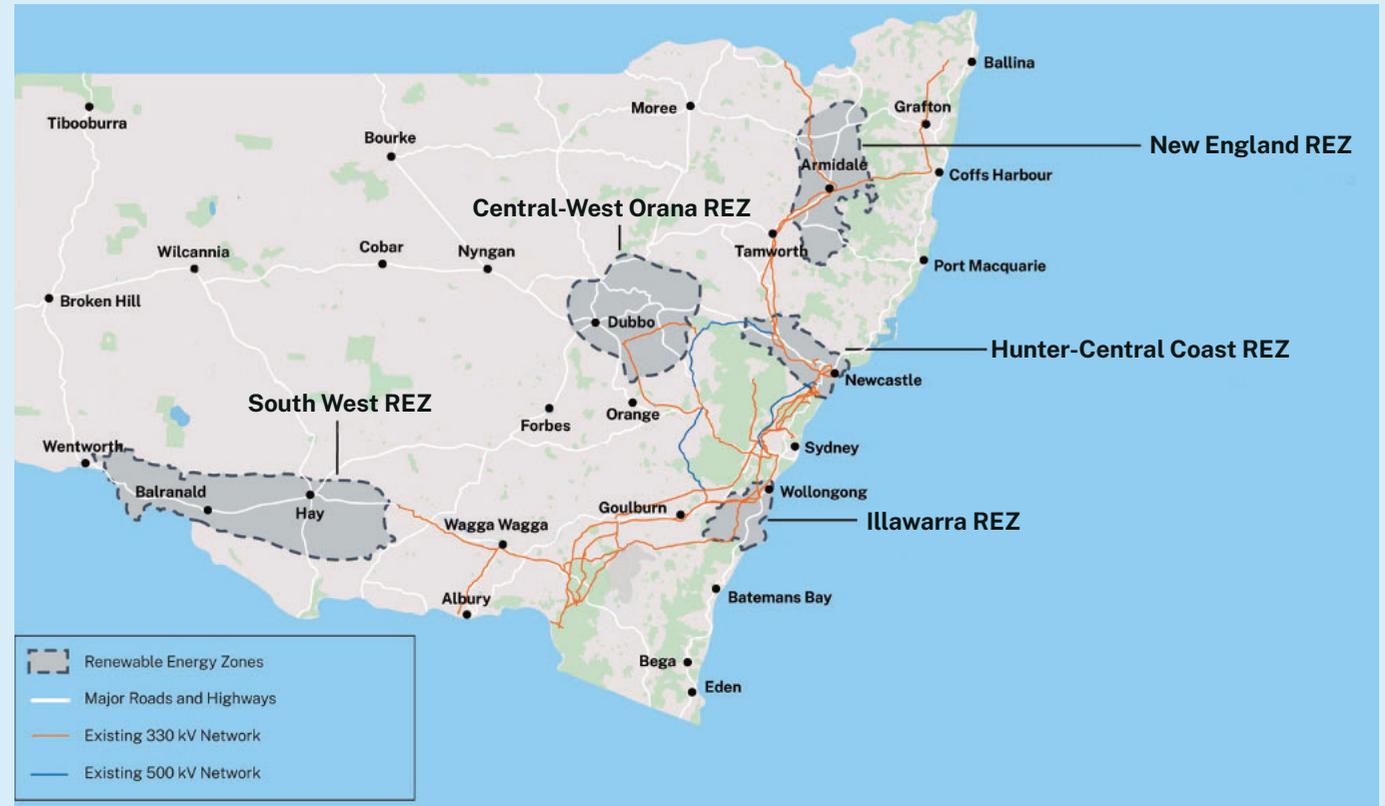


6,300 construction jobs and 2,800 ongoing jobs expected in 2030, mostly in regional NSW



Greater energy security and lower costs to improve competitiveness of regional energy intensive industries

# Why do we need a REZ?



**Renewable Energy Zones (REZ) are the modern-day equivalent of traditional power stations.**

Renewable Energy Zones have been identified as a preferred model to strengthen Australia's power system as the country transitions to a low-carbon future.

In NSW, five REZs have so far been identified that will maintain a reliable and affordable supply of electricity as coal-fired power stations retire over the next decade.

The zones are:

- New England REZ
- Central-West Orana REZ
- Hunter-Central Coast REZ
- Illawarra REZ
- South-West REZ

The REZs will help deliver lower wholesale electricity costs and place downward pressure on customer bills through increased competition, while also supporting new local jobs and business opportunities during construction and operation.

The REZs will also reduce carbon emissions by delivering a greater mix of renewable energy to the National Electricity Market (NEM), supporting NSW and Australia's net-zero ambitions.

# Who is involved in a REZ?

Establishing a REZ is a complex process involving the coordination of a range of stakeholders and delivery partners to plan, consult, design, build and operate the necessary transmission infrastructure and connect renewable energy generators and/or energy storage systems to households and businesses across NSW.

## EnergyCo

EnergyCo has been appointed as the network Infrastructure Planner for the five NSW REZs. In this role, EnergyCo is the primary coordination agency for the New England REZ and is responsible for planning, consulting, and designing the transmission towers, lines, and energy hubs. EnergyCo is also responsible for seeking approval for this infrastructure through the Department of Planning and Environment (and any other required government agencies).

## Community and Stakeholders

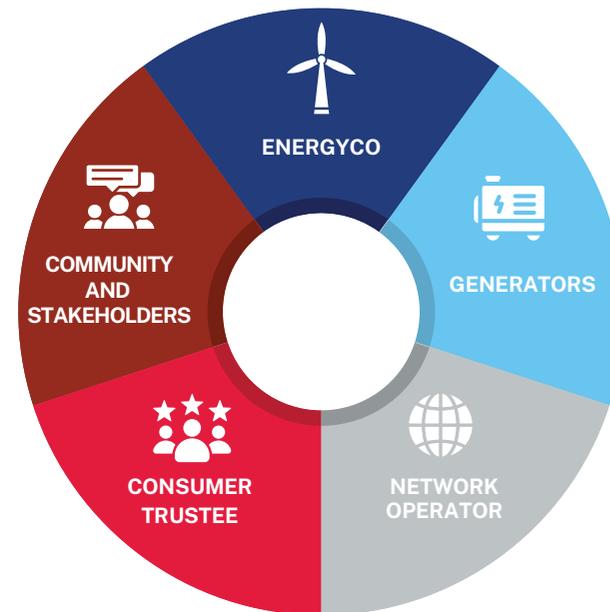
The community is made up of individuals and stakeholder groups who live and/or work in or are affected by the REZ.

Community and stakeholder feedback helps inform coordinated strategic planning to ensure that the REZ complements existing agricultural and primary-land uses, reflects local priorities, and retains existing economic activity and social values within these regions.

## Consumer Trustee

The Consumer Trustee looks after the long-term financial interests of NSW electricity customers to improve the affordability, reliability, security, and sustainability of electricity supply. It does this through long-term planning and well-structured procurement processes for generation and storage infrastructure.

As can be seen above, to achieve the NSW Government's Roadmap for transforming the electricity sector into one that is clean, reliable, and affordable many different parties will need to work together to produce the best outcome for the region and the state.



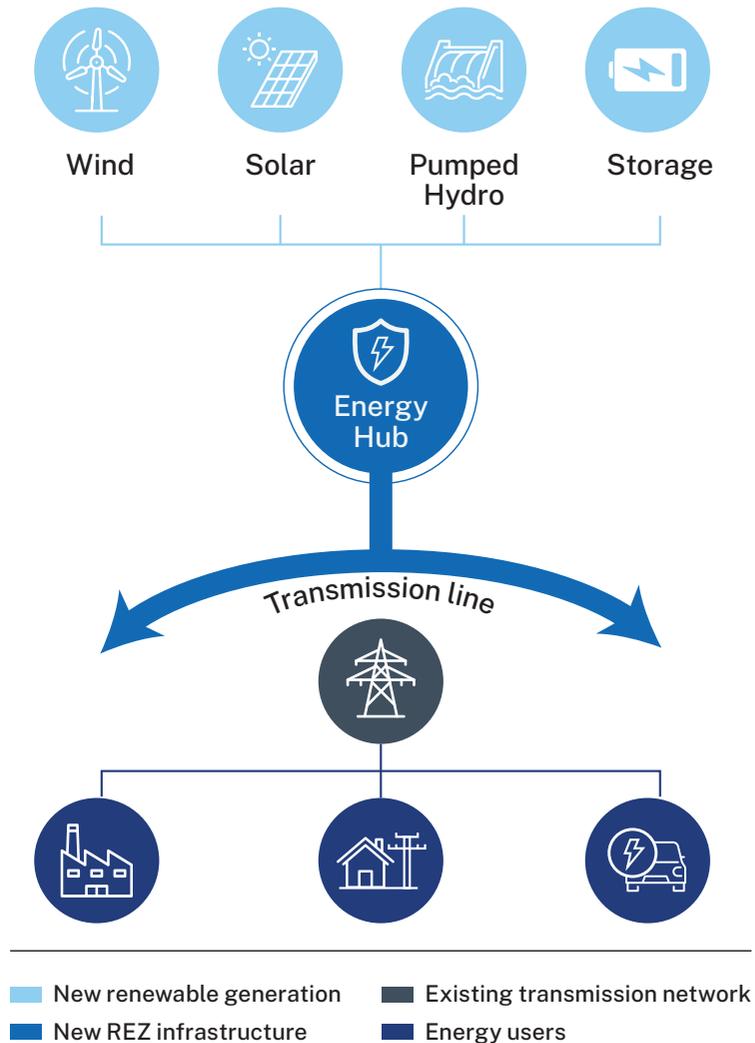
## Generators

Private investors build and operate new renewable generation (e.g., wind, solar, pumped hydro and battery storage) projects that connect to network REZ infrastructure. Generation and storage projects are responsible for securing required planning approvals for their projects through the relevant planning authority.

## Network Operator

EnergyCo will not build, operate, and maintain the REZ network infrastructure. This will be undertaken by the successful Network Operator appointed by EnergyCo and authorised by the Consumer Trustee. Network Operators must operate the network in line with the National Electricity Rules.

# How does a REZ work?



Low-cost, renewable energy is generated and transmitted to consumers, with excess energy stored in modern, large-scale storage systems and released when it is needed



New transmission infrastructure connects generation and storage systems to the existing transmission network



High-voltage transmission lines then feed electricity through to where and when it is needed across the state



Homes, businesses, and industry benefit from low-cost, reliable clean energy

## Benefits of a REZ



### Economic growth for regional communities

Supporting local jobs and investment and attracting new industries to regional areas



### Cheaper and more secure electricity

Improving the affordability and security of electricity for NSW consumers by increasing bulk supply and driving down wholesale electricity prices



### Coordinated strategic planning

Complementing existing agriculture and primary land uses, reflecting local priorities and retaining existing economic and social values



### Community benefit sharing

Working with local stakeholders to ensure benefits go towards community and employment purposes that benefit local communities in the REZ



### Emissions reduction and clean industries

A clean energy sector will help halve NSW's emissions by 2030 and support economic growth across NSW

# Why New England?



The New England region has a range of attributes that make it an ideal location for a REZ within NSW. The region has:

- Some of the best natural energy resources in the country and some of the State's finest potential sites for pumped hydro facilities
- Access to the existing transmission lines that connect to the NSW east coast, Upper Hunter and Queensland
- Strong generator interest for sustainable energy projects connecting to the transmission network
- The ability to increase NSW's energy resilience and provide opportunities to share energy between New South Wales and Queensland

The New England REZ will ensure that the region has a key role in a renewable energy future, powering existing industries and supporting economic growth including emerging technologies, such as green hydrogen.

The New England REZ also aligns with other important regional planning instruments including the recently approved New England North West Regional Plan 2041, which identifies the area as an emerging leader in renewable energy generation.

This Regional Plan acknowledges that the energy transition will also provide new opportunities for the people and businesses within the New England region.

# What is needed in the New England REZ

Currently, the planning for the REZ Network Infrastructure is in the preliminary assessment phase. At a high level, the scope of New England REZ infrastructure includes:



New transmission lines connecting from Bayswater (in the south) to the REZ



New Energy Hubs



New transmission lines within the REZ

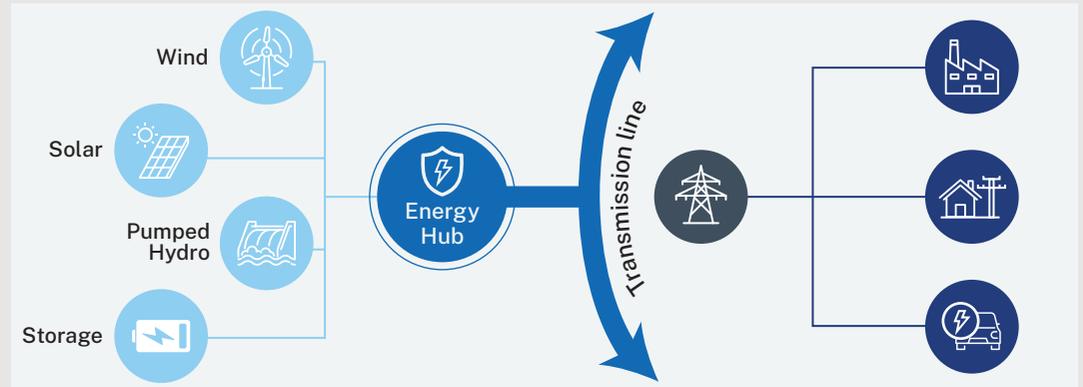


Connection to new generation projects

## Energy Hubs

Energy Hubs (or substations) collect electricity from renewable energy generators in the surrounding area. This power is then transformed to a voltage suitable for transmission across the State's high voltage network.

Energy Hubs for the New England REZ, which will typically occupy up to 100 hectares will be located near planned wind and solar projects.

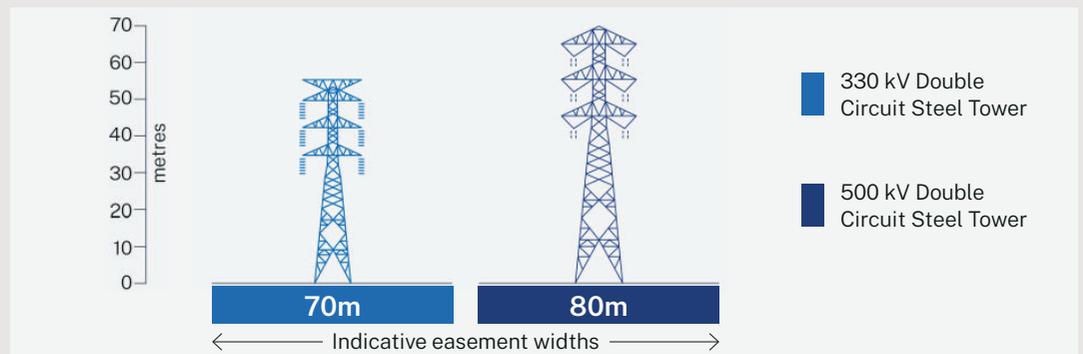


## Transmission Lines

High voltage transmission lines will transfer renewable energy from the New England REZ to electricity consumers with the 'backbone' of the new network expected to be rated at 500 kV.

The towers will typically be between 60 and 70 metres high and are generally

spaced 400 to 600 metres apart. The transmission lines have a minimum clearance of 7.5 metres off the ground to allow farming and other activities to take place safely. These transmission lines will be located within easements 70-80 m wide and may be co-located within a single easement or be physically separated. Easements will be wider where transmission lines are co-located.



# Why we need to act



## The electricity landscape is changing.

For decades energy generation in NSW has been powered by a fleet of large coal-fired power stations. This network of power stations took over 30 years to plan and build and has provided reliable and abundant energy that has been distributed across NSW through a network of poles and wires, energising our homes, businesses, and industry.

While this electricity system has served us well, most of our existing power stations are due to retire in the near future. Four of the State's five existing coal-fired power stations are expected to close in the next 10 years, including the Liddell power station which closed in April 2023. These power stations currently provide around three quarters of NSW's electricity supply and two thirds of the firm capacity we need during summer heat waves.

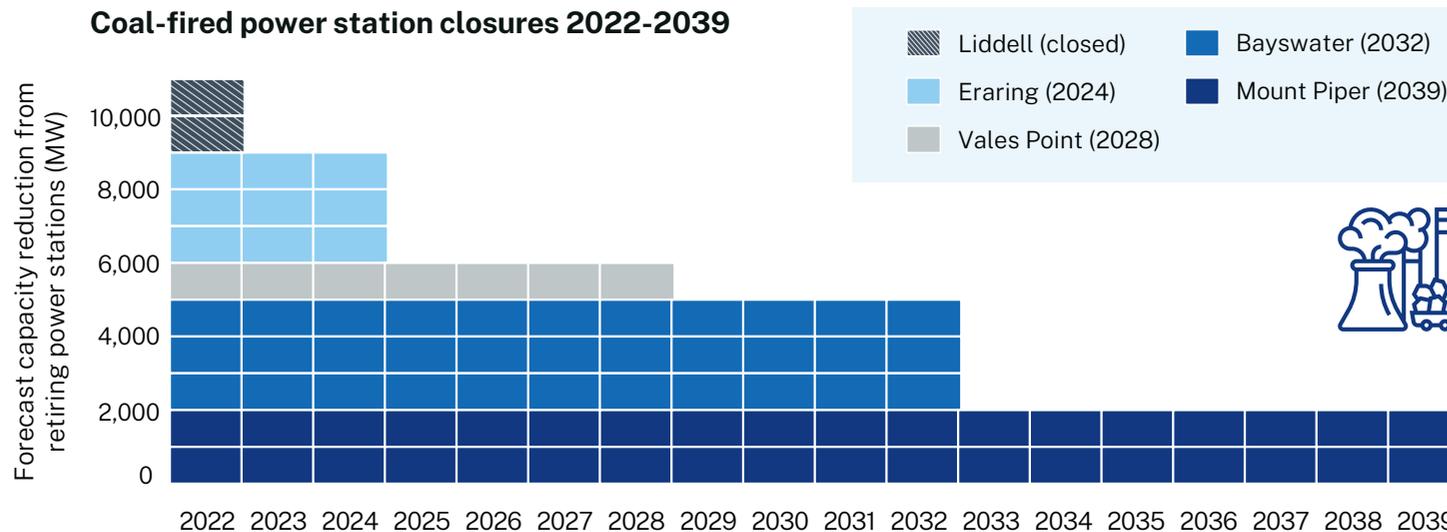
As existing power stations progressively close, we need to find new sources of energy to help our State prosper and keep the lights on for energy consumers.

Our transmission network must be ready to connect and distribute new sources of renewable energy to where it is needed.

The replacement infrastructure we need has a long construction lead time. For example, high voltage transmission lines can take between 5 and 13 years to build. Because of this, it's essential we act now to ensure new renewable energy generation, transmission and storage projects are built as existing power stations progressively close.

Without a viable high voltage transmission network, it will be impossible to distribute energy to all homes and business across the state.

**Coal-fired power station closures 2022-2039**



# Energy transition champions

Over the past five years the share of wind and solar in the NSW electricity generation mix has more than tripled.

## NSW households and businesses

Around 840,000 NSW households and small businesses are playing their part in the shift towards a more sustainable, lower carbon energy source by installing small-scale roof top solar systems, which is equivalent to more than one in four houses in NSW.

These small-scale solar systems have a capacity of over 5,000 MW and represent a combined investment of \$8 billion by NSW customers.

In 2021, renewable energy made up around 27 per cent of NSW electricity generation including:

4%



from hydro power stations

7.6%



from wind power stations

1.5%



from biomass power stations

13.8%



from large scale solar and rooftop solar PV

## NSW renewable generation projects



36 large-scale renewable energy projects have been commissioned in NSW since the start of 2018, amounting to almost 4,000 MW of electricity



A further 201 large-scale renewable energy projects totalling around 40,000 MW are either approved or progressing through the NSW planning system

As can be seen below, renewable energy generation and storage projects that are either in the planning stage or have been approved are located across NSW, both within and outside of declared Renewable Energy Zones.



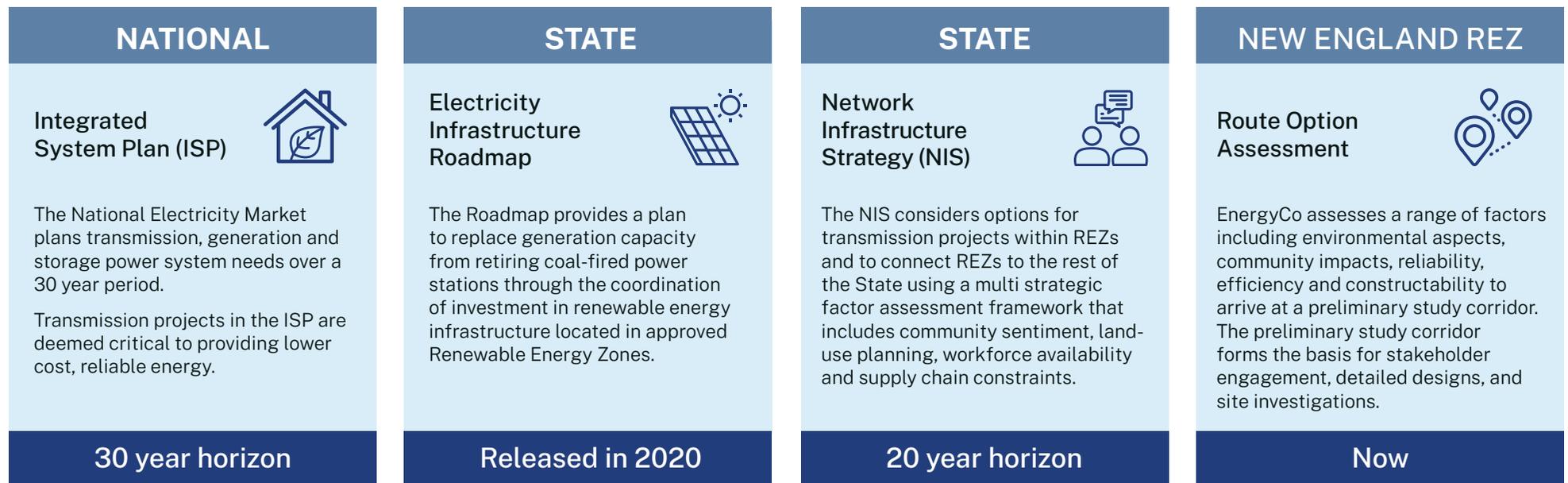
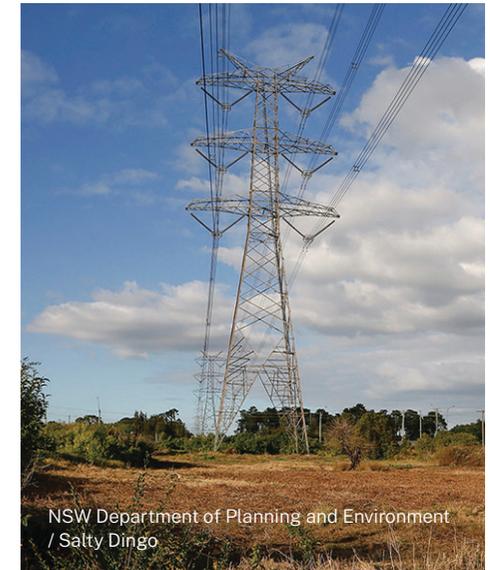
# Transmission infrastructure planning

Large infrastructure projects by their very nature and size affect communities and stakeholders in different ways. Projects such as highways, train line corridors, airports, pipelines, and electricity assets provide significant benefits to society but can also create temporary and longer-term impacts for some stakeholders.

Given the substantial complexities involved in transmission infrastructure planning, there are specific national, state, and regional planning processes enacted that guide, revise and modify projects towards a final design. Typically, such projects move from a preliminary study corridor to a revised corridor, and then to a reference design

corridor which forms the basis of an Environmental Impact Statement (EIS) that is lodged with the relevant approving authority.

These planning gateways are summarised below:

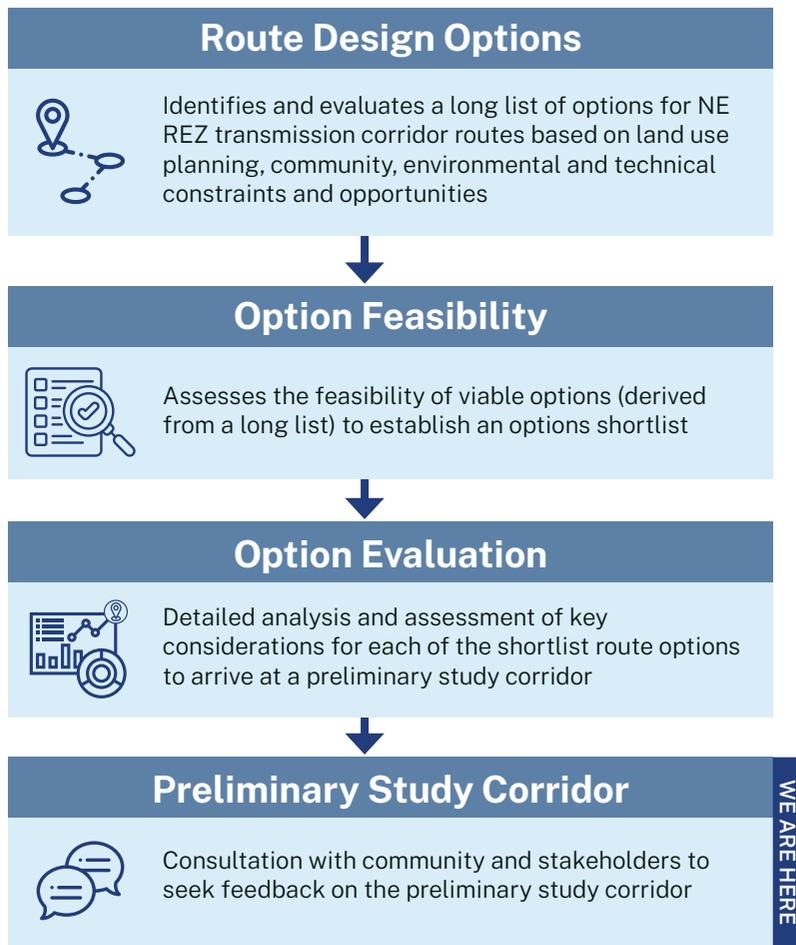


With the New England REZ project being considered against these various planning requirements listed above, a preliminary study corridor has been developed that meets a range of efficiency and deliverability aspects such as technical, economic, and power-system requirements.

The next stage of planning is to develop a revised study corridor that is based on community input and sentiment as well as environmental investigations and studies.

# Preliminary study corridor assessment

To identify the preliminary study corridor for the New England REZ, a number of planning processes were undertaken to better inform the project design as follows:



EnergyCo has adopted five key planning pillars (**People, Environment, Economics, Strategy and Technical**) and a number of related planning principles to underpin the design and development of the REZ:

## Planning pillars

### People

Positive benefits and negative impacts on people's wellbeing, amenity, and quality of life

### Environment

Impacts to natural and cultural environments

### Economic

The cost of the option and its impacts on NSW energy consumers

Minimise impacts on high value agricultural land (including BSAL)

### Strategic

The consistency of the option with the approved Electricity Infrastructure Road Map

### Technical

The technical efficiency and reliability of the option in meeting electricity demand

Certain criteria were applied to each of the key considerations above to arrive at a preliminary study corridor. For perhaps two of the most important criteria, being people and communities and environment and landuse, the following constraints were applied:

### People and communities



- Minimise visual amenity impacts through design and application of mitigation measures
- Maximise the use of public land where practicable
- Minimise direct interactions with town centres, residential areas, and sensitive community locations
- Follow alignments that optimise infrastructure layout, having regard to landowner preferences and land practices, where possible.

### Environment and landuse



- Minimise impacts on unique or sensitive biodiversity and cultural values and offset unavoidable biodiversity impacts
- Minimise direct interactions with high value agricultural land where possible and seek to locate infrastructure in consideration of agricultural practices
- Mitigate hazards and risks and promote network resilience
- Co-locate infrastructure where possible

As a result of the above detailed assessment processes undertaken by EnergyCo, the following page provides details of the preliminary study corridor proposed for the New England REZ transmission project.

# Preliminary study corridor

As defined under the Network Infrastructure Strategy, the New England REZ is proposed to be staged as follows:



**DELIVER NOW**  
by 2033  
6GW



**PLAN FOR THE FUTURE**  
by 2043  
Around 2GW

Based on planning processes applied to the project so far (as outlined on the two previous pages), EnergyCo has identified a preliminary study corridor for the New England REZ transmission project as shown in the adjacent map. The Deliver Now stage aims to provide 6GW of network capacity by 2033. The Plan for the Future stage proposes around 2GW of additional network capacity by 2043, but depends on future developments in the electricity market including additional energy demand.

Environmental and social considerations also need to be closely investigated to reduce impacts on biodiversity, cultural heritage values and prime agricultural lands.

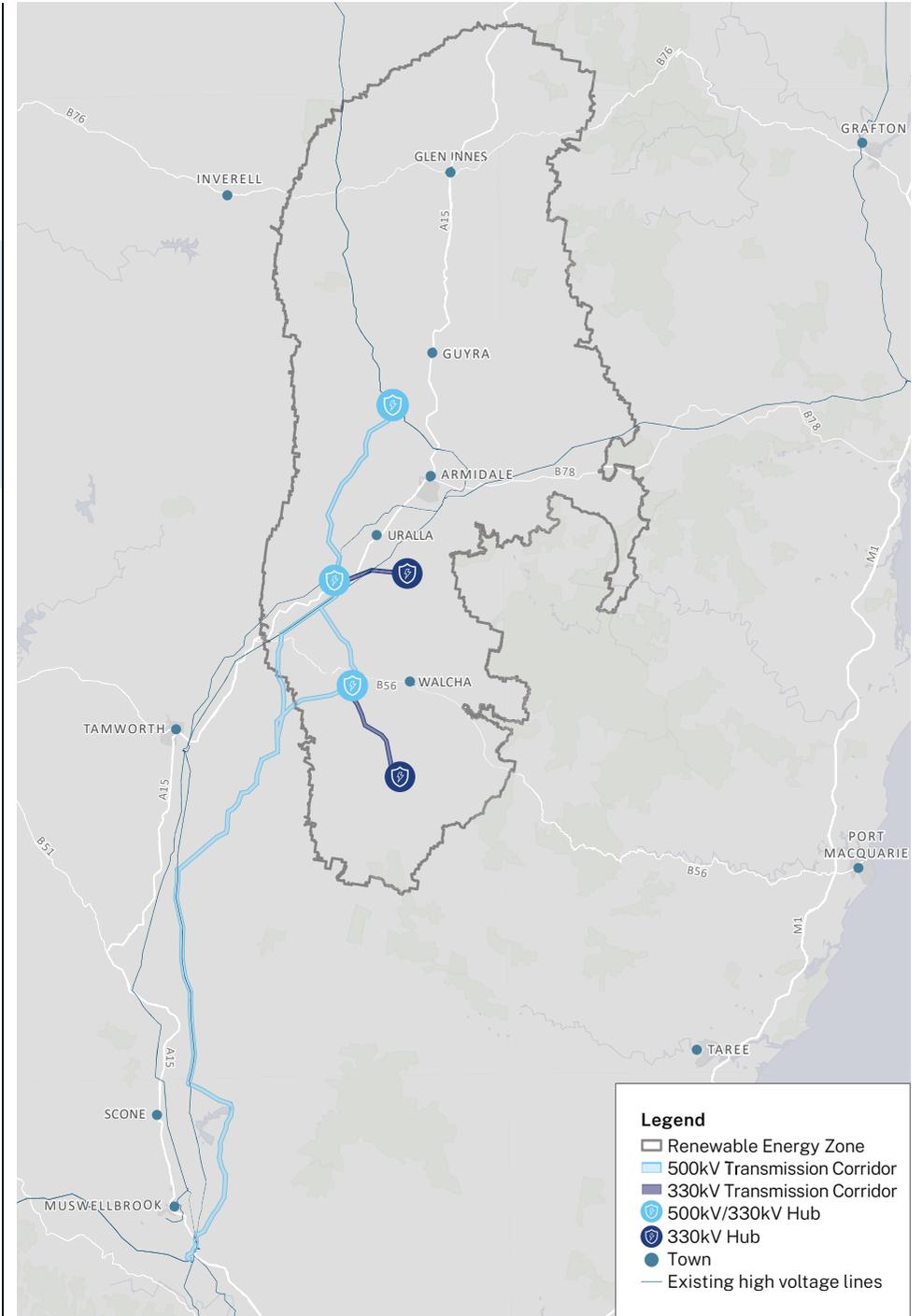
Where possible, the preliminary study corridor has been co-located next to existing transmission line easements.

**A more detailed online interactive map is available by scanning the QR code below, which provides local government areas and property boundary information.**



To advance the design of the project, community and stakeholder engagement is required to better inform the decision-making process in a way that reduces impacts and increases benefits.

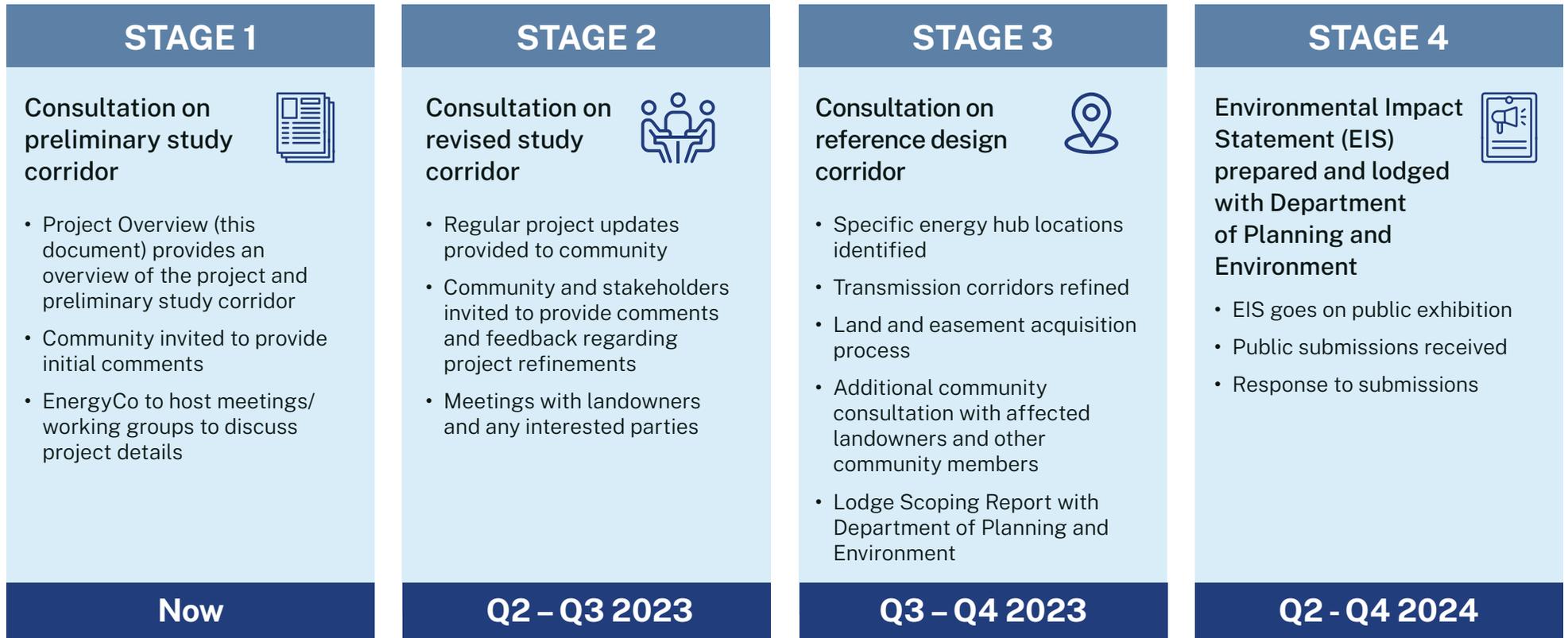
The next section of this Project Overview discusses how and when you can get involved to provide valuable input and feedback into the key planning stages of the project.



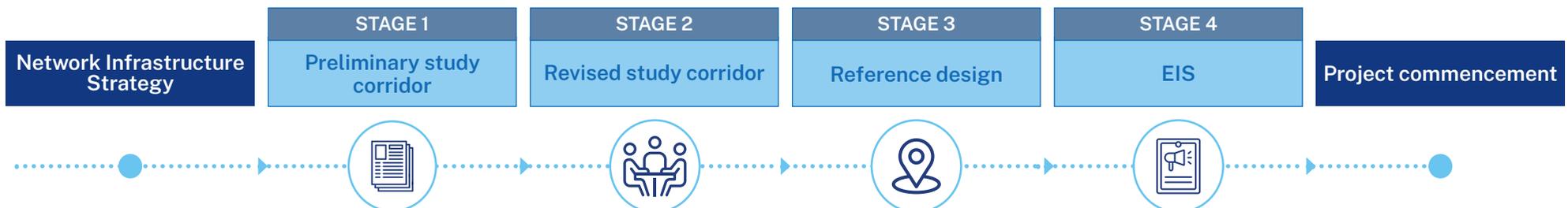
# Community engagement

Community and stakeholder engagement at key periods during the planning process will help to identify potential impacts on individuals and/or communities as a result of the project. Information, sentiment, and specific issues and concerns raised by the community will be included in the planning assessment process, and considered in the design of the project and/or the development of appropriate mitigation measures.

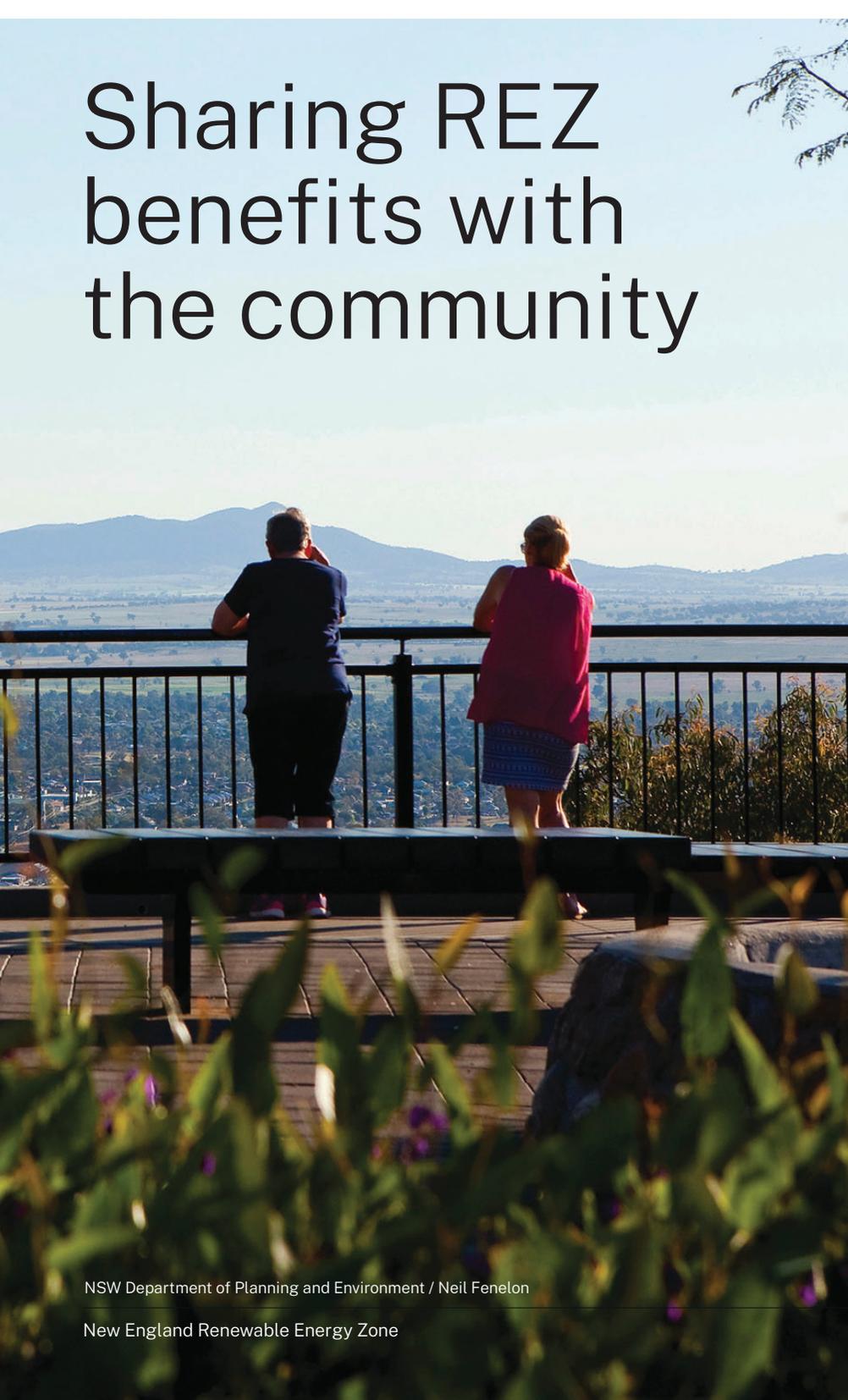
The key stages of community consultation for the New England REZ transmission project are as follows:



Key community consultation opportunities are shown below:



# Sharing REZ benefits with the community



It is critical that new REZ transmission infrastructure is delivered in a way that minimises the impacts on, and maximises the benefits for, the communities and landowners who will host it. The following initiatives are part of a holistic approach to building community support for the delivery of new generation, storage and transmission infrastructure across the State and delivering enduring benefits to regional communities.



## Community

EnergyCo will develop a Community Benefits Scheme which is expected to invest millions of dollars into the New England REZ economy over the next 20 years.

The scheme will provide funding for communities through access fees, which are paid by energy generation and storage developers who connect to new REZ network infrastructure.

Under the scheme, a minimum of \$1700/MW/year is expected to be directed to community projects, and another \$600/MW/year towards employment related activities, such as job creation and training.

Community projects could include:

- public or community services or infrastructure
- health services or infrastructure
- accommodation or housing supply

- environmental programs
- parks and recreation infrastructure
- education programs or research
- arts or cultural programs
- tourism programs or infrastructure
- services, programs or infrastructure for First Nations people
- other services or infrastructure that benefit the relevant local community.

EnergyCo is also currently investigating opportunities to improve telecommunication services by co-locating telecommunication equipment (such as optic fibre) on transmission infrastructure in regional areas.

The New England REZ will also generate thousands of jobs in the region during both the construction and operational phases of the project. Additional economic benefits will also flow through to local businesses who provide goods and services to the project.

# Sharing REZ benefits with the community



## Landowners

The NSW Government is implementing a Strategic Benefit Payments Scheme for private landowners hosting new high voltage transmission projects critical to the energy transformation and future of the electricity grid. Private landowners will be paid \$200,000 per kilometre of transmission infrastructure hosted (in real 2022 dollars), paid out in annual instalments over 20 years. Payments made under the Strategic Benefit Payments Scheme will be in addition to any compensation paid under the Just Terms Act to applicable private landowners for transmission easements on their land.



## First Nations People

EnergyCo is committed to meaningful and genuine consultation and engagement with First Nations people and communities in implementing the REZ. EnergyCo is in the process of developing a First Nations Guideline for the New England REZ in consultation with local Aboriginal communities. Specifically, there are requirements under the *Electricity Infrastructure Investment Act 2020* for infrastructure developers to prepare First Nation Infrastructure Participation Plans that set income and employment requirements in consultation with Aboriginal communities.



## Local Government

Councils within the New England REZ and along the proposed transmission line from Bayswater (in the south) to the REZ, will each play an important role in providing advice and feedback during the planning and coordination phase of the project. To assist councils, EnergyCo is currently developing a range of programs to support local government authorities understand and manage issues around cumulative impacts and resourcing constraints.

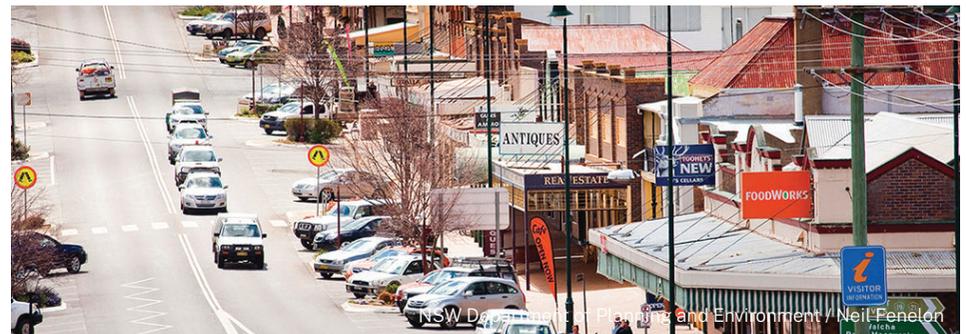


## Local and regional economies

Significant economic benefits will flow to host communities and businesses through the purchase of local goods and services across the REZ. From accommodation, food and beverages, fuel and various plant and equipment, expenditure within the REZ will support local businesses and jobs growth. This will improve the local economy's resilience during the construction and operation project phases.



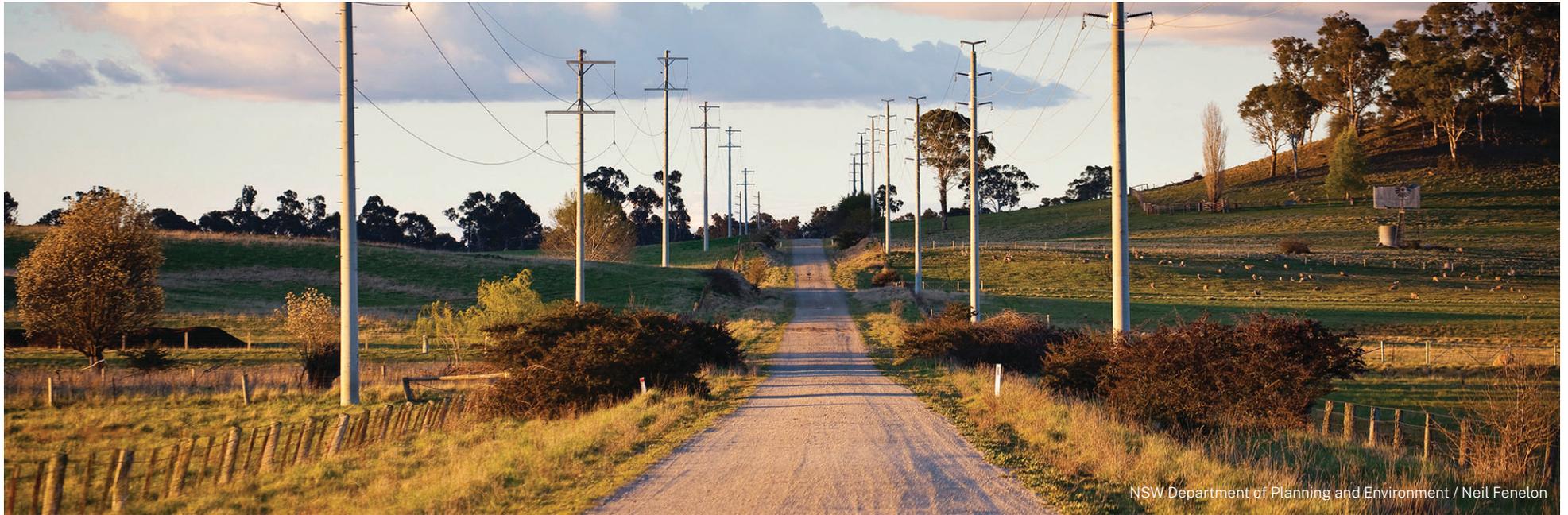
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# Working with landowners

EnergyCo will work closely with landowners to provide benefits and reduce impacts associated with the New England REZ infrastructure.



NSW Department of Planning and Environment / Neil Fenelon

## Planning

During the planning phase, we will work with landowners to understand farming and business operations and other possible property impacts or concerns.

This informs the design scope of the infrastructure. This could include avoiding structures and high value agricultural land, minimising fragmentation of blocks, limiting construction access and respecting landscape.

If we need to access private land for survey and site investigations, we will always discuss with the landowner and seek their approval before entering the property.

## Construction

During the construction phase, EnergyCo will require its workforce to liaise closely with landowners in accordance with pre-agreed terms for access.

Workers will be expected to adhere to rules protecting livestock, securing gates and biosecurity.

## Operation

Once commissioned, transmission lines do not generally have a significant impact on farming operations.

While there will be some restrictions within the easement, farmers will still be able to grow crops and graze livestock by complying with easement usage guideline requirements.

# Working with farmers



## Living and working near transmission line easements

The New England REZ transmission lines will be built on corridors of land known as transmission easements. Easements are essential to making sure EnergyCo can deliver secure, safe and reliable electrical infrastructure in the REZ and across the state.

While easements are critical for maintaining safety requirements, there are many activities, including farming and other agricultural operations that are permissible.

## What activities are permitted in an easement?

In the most part, activities such as agriculture and grazing, planting crops, landscaping and paving, installing drainage, water and sewer pipes, movement of vehicles and machinery and parking light vehicles are permissible in transmission easements.

EnergyCo and the approved network operator will work with farmers to ensure that farming and other agricultural activity disruptions caused by easements are kept to a minimum.

Of course, when dealing with high voltage infrastructure there are some activities that cannot take place within an easement such as building houses, erecting scaffolding, stockpiling excavated materials, storing flammable liquids or gases, moving, or storing vehicles and machinery that exceed the permitted height, or storage or detonation of explosives.

EnergyCo understands that agricultural activities are essential to our nation as well as the livelihood of communities in the New England region. We are working closely with landowners as we design the REZ transmission infrastructure to understand current and future land uses and help minimise impacts to agricultural activities.

# Other considerations



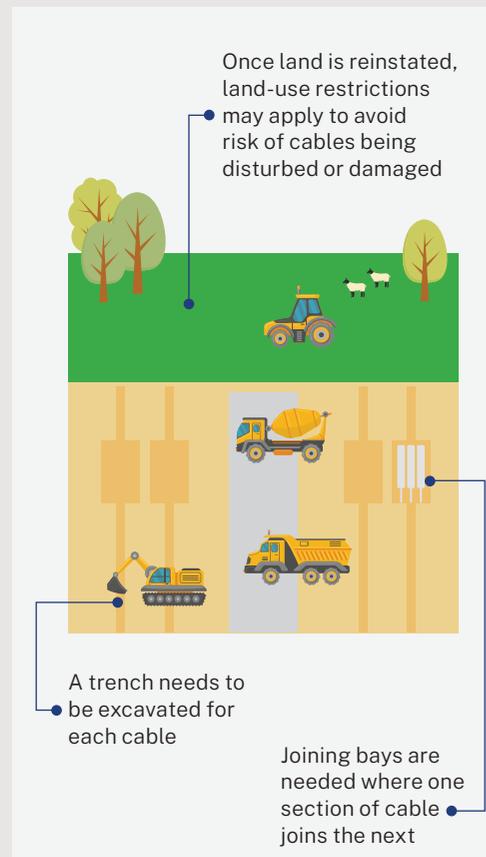
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## Undergrounding transmission lines

While technically feasible, placing transmission lines underground has a number of considerations that must be assessed in terms of the viability of such an approach.

Underground transmission is used in rare cases where it is not feasible to secure a corridor for overhead lines, such as in already developed urban areas or undersea. Underground cables can seem attractive, offering less visual impact than overhead lines. However, underground cables at transmission voltages have significantly higher capital and operating cost, materially longer repair times, lower transfer capacity and often require a similar easement footprint as overhead lines.

Where underground cables are used, they are estimated to be many times more expensive than traditional overhead lines, with the cost differential varying significantly with project alignment and scope. The variations are due to the cost of the cable, the higher levels of insulation, the need for additional plant and equipment where lines transition from overhead to underground, including large structures that need to be carefully sited. The digging and additional structures add time to planning and construction, with greater disturbance to the environment during construction, and total costs that are similarly many times greater than overhead lines. If there is a failure on a cable, it is more difficult to find and repair the location and cause, requiring longer outages, and the cables cannot be uprated to increase their capacity.



## Connection to new generation and storage projects

EnergyCo will also be responsible for joint planning for connection of new generator and long duration energy storage projects to the REZ infrastructure.

EnergyCo is currently engaging with developers through an expression of interest process to better understand the status and types of projects currently considered within the region. This process will allow EnergyCo to plan the REZ in a co-ordinated manner, ensuring the network infrastructure is fit for purpose.

While the planning approval processes and construction of the generation projects will be the responsibility of the developers, EnergyCo will have a critical role in co-ordination to ensure the impacts and opportunities for the community are considered as a whole.

# Find out more

We welcome all input to help design and implement the New England REZ.

Planning, designing, and building the New England REZ will be complex, taking some years to complete. EnergyCo will be engaging closely with the local community, industry, local government, and other stakeholders at each phase of the design and delivery of the REZ.

As it progresses, our New England REZ team is here to help you throughout this process.

EnergyCo wants to hear what you think about our plans. For more information or to subscribe to our EnergyCo mailing list for regular updates, please scan the QR code below, or contact the project team at:



 [nerez@energyco.nsw.gov.au](mailto:nerez@energyco.nsw.gov.au)

 1800 061 114

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

The information contained in this publication is based on knowledge and understanding at the time of writing May 2023. However, because of advances in knowledge, users should ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate departmental officer or the user's independent adviser.

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