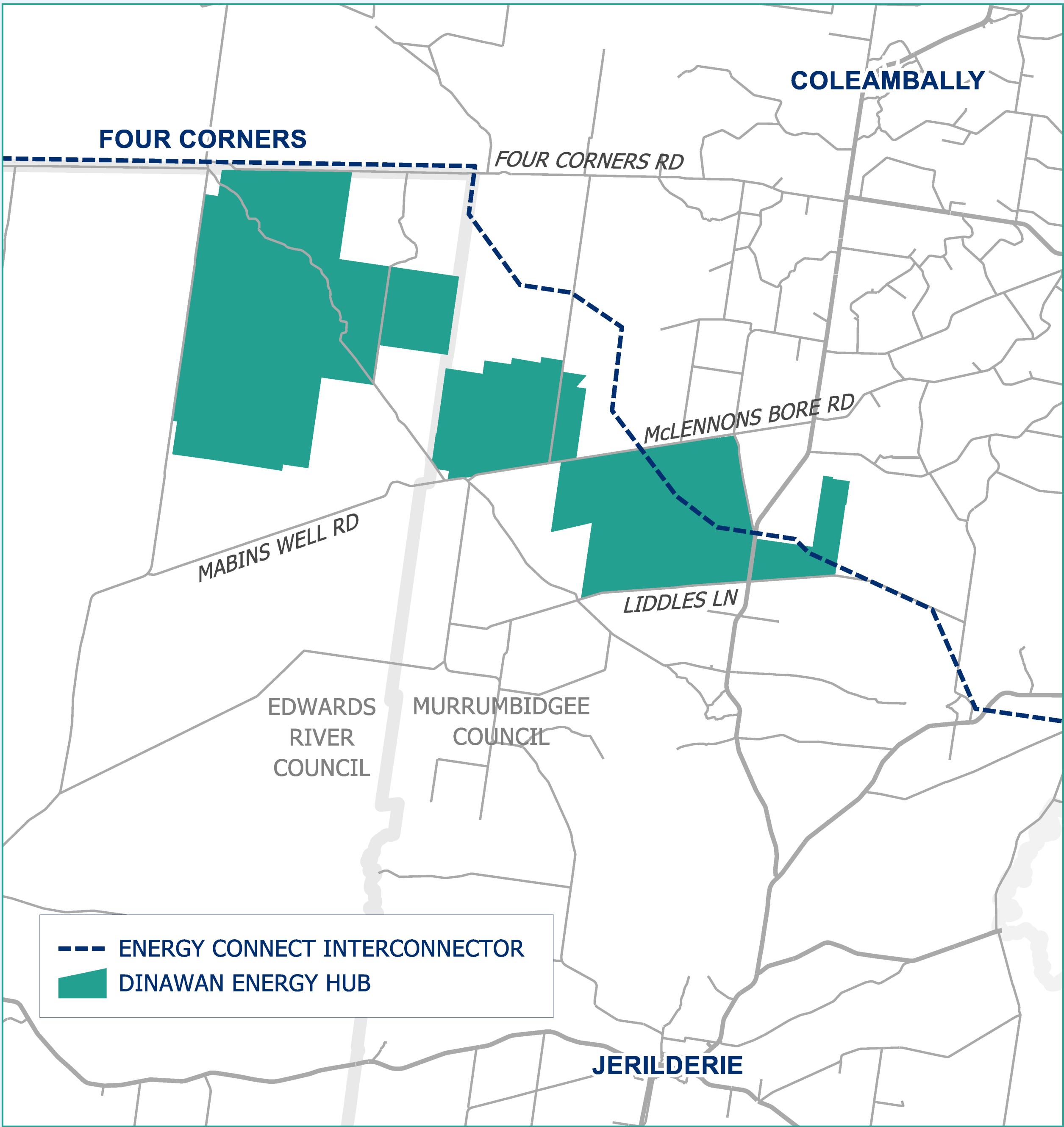


DINAWAN ENERGY HUB PROJECT OVERVIEW

Dinawan Energy Hub is a proposed hybrid wind, solar and battery storage project to be located about halfway between Coleambally and Jerilderie, with a potential to power more than one million Australian homes per year and offset the emission of more than five million tonnes of CO₂.



WHAT IS BEING PROPOSED?

Generation capacity	Up to 2.5 GW.
Connection	Via the new project EnergyConnect interconnector between Robertstown, SA and Wagga Wagga, NSW.
Solar farm	Photovoltaic (PV) modules mounted on single axis trackers that slowly rotate and follow the sun from east to west each day. Sheep would continue to graze on the solar farm land – this already occurs at Spark Renewables’ Bomen Solar Farm north of Wagga Wagga.
Wind farm	Consisting of wind turbine generators from 205-280 metres tall, connected via underground cables and all-weather roads.
Battery	A containerised battery energy storage system, enabling electricity to be exported when the sun isn’t shining and the wind isn’t blowing.

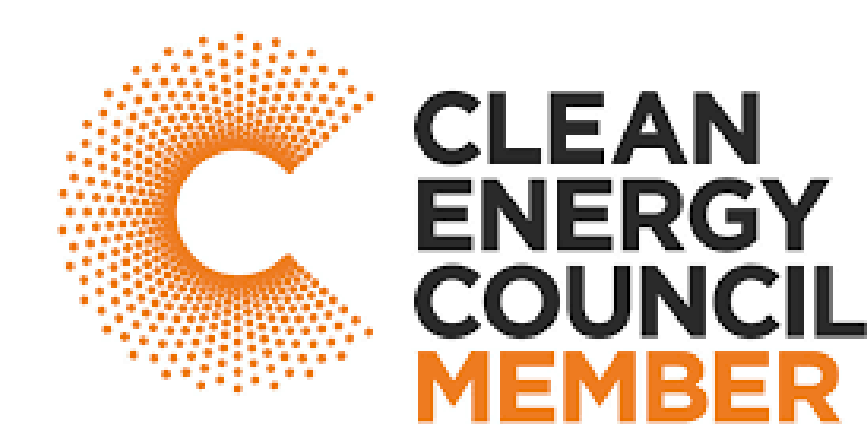
WHY HAS THIS SITE BEEN CHOSEN?

Energy resource	The strong solar resource during the daytime complements the high level of wind generation that peaks overnight – balancing energy supply.
Land suitability	Relatively low visual and environmental impacts. Land at the project site is flat, relatively remote and expansive, allowing for flexibility in project design.

WHO IS SPARK RENEWABLES?



Spark Renewables is a developer and owner of renewable energy generation. Our portfolio comprises the 100MW operational Bomen Solar Farm near Wagga Wagga as well as an extensive development portfolio of wind, solar and storage projects in the National Electricity Market. Spark Renewables is owned by the Spark Infrastructure Group. Spark Infrastructure is an owner of essential energy infrastructure, including generation, transmission and distribution infrastructure across Australia.



Spark Renewables is a member of the Clean Energy Council (CEC) and a signatory to the CEC’s Best Practice Charter for Renewable Energy Developments.

PROJECT ASSESSMENT

HOW WILL THE PROJECT BE ASSESSED?

The Dinawan Energy Hub project is considered a State Significant Development under NSW planning policy. The NSW Department of Planning, Industry and Environment (DPIE) will assess the proposal, and the consent authority will be either the Minister for Planning and Public Spaces or the Independent Planning Commission. The development applications will be available for public viewing and comment.

DEVELOPMENT APPLICATION

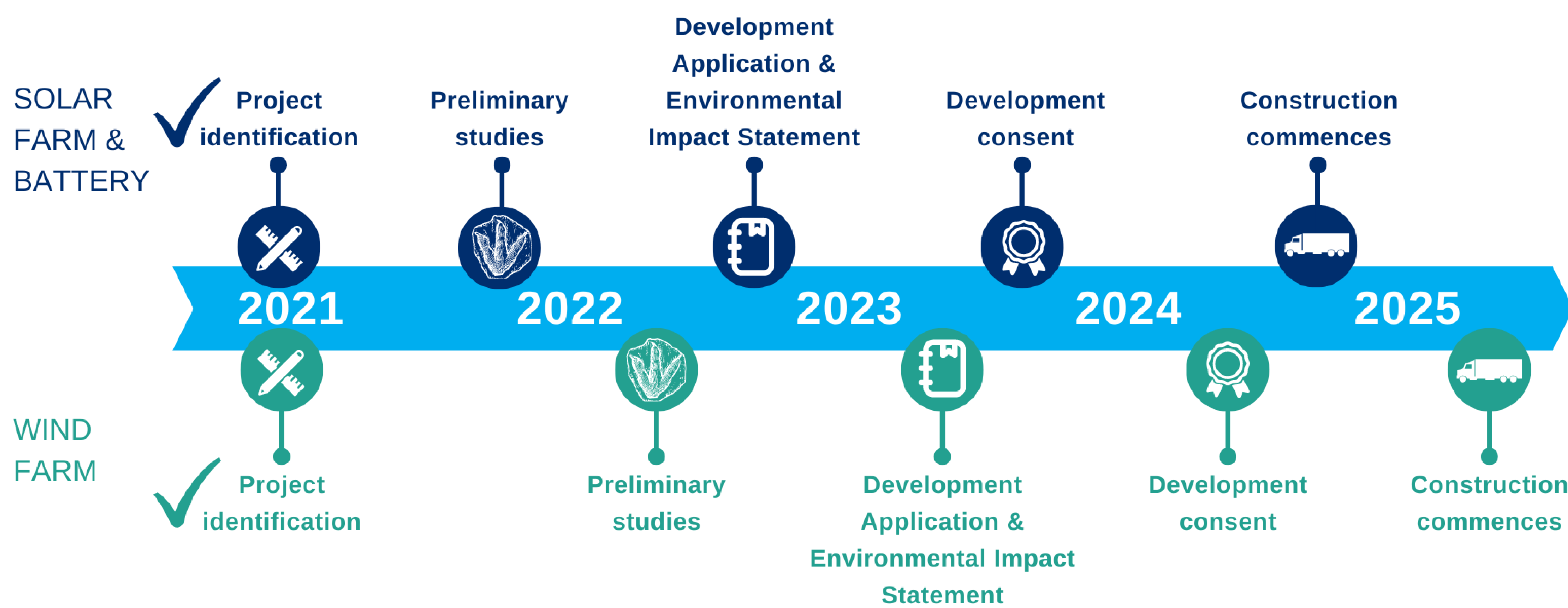
The solar farm and battery require a separate development application to the wind farm. The application processes are expected to move at different paces due to the different impacts and assessment requirements for each technology – as indicatively shown on the timeline below.

WHICH STUDIES WILL BE UNDERTAKEN?

- Native vegetation & biodiversity
- Landscape & visual
- Water & soils
- Health, noise & vibration
- Aviation
- Electromagnetic interference
- Socio-economic factors
- Bushfire & electrical fire
- Historic heritage
- Aboriginal cultural heritage
- Traffic & transport
- Glare, blade glint & shadow flicker

Planning authorities will address the community’s concerns regarding these issues as part of their review. Project approvals are granted with conditions of consent that must be followed by operators for the lifetime of the project, and thereafter. This includes requirements for environmental management plans to monitor, manage and report on all environmental impacts during the lifetime of the project, and decommissioning plans at the end of the project.

PROJECT TIMELINE



HOW WILL CONSTRUCTION IMPACTS BE MINIMISED?

The project will be constructed in multiple stages over a few years, not only due to the project size, but also to share the benefits of construction over a longer period. This will create a more sustained economic boost to the region over time, and increase community safety, reduce traffic impacts, and maintain work demand.

CONNECTION & RENEWABLE ENERGY ZONE

HOW WILL THE PROJECT CONNECT TO THE GRID?

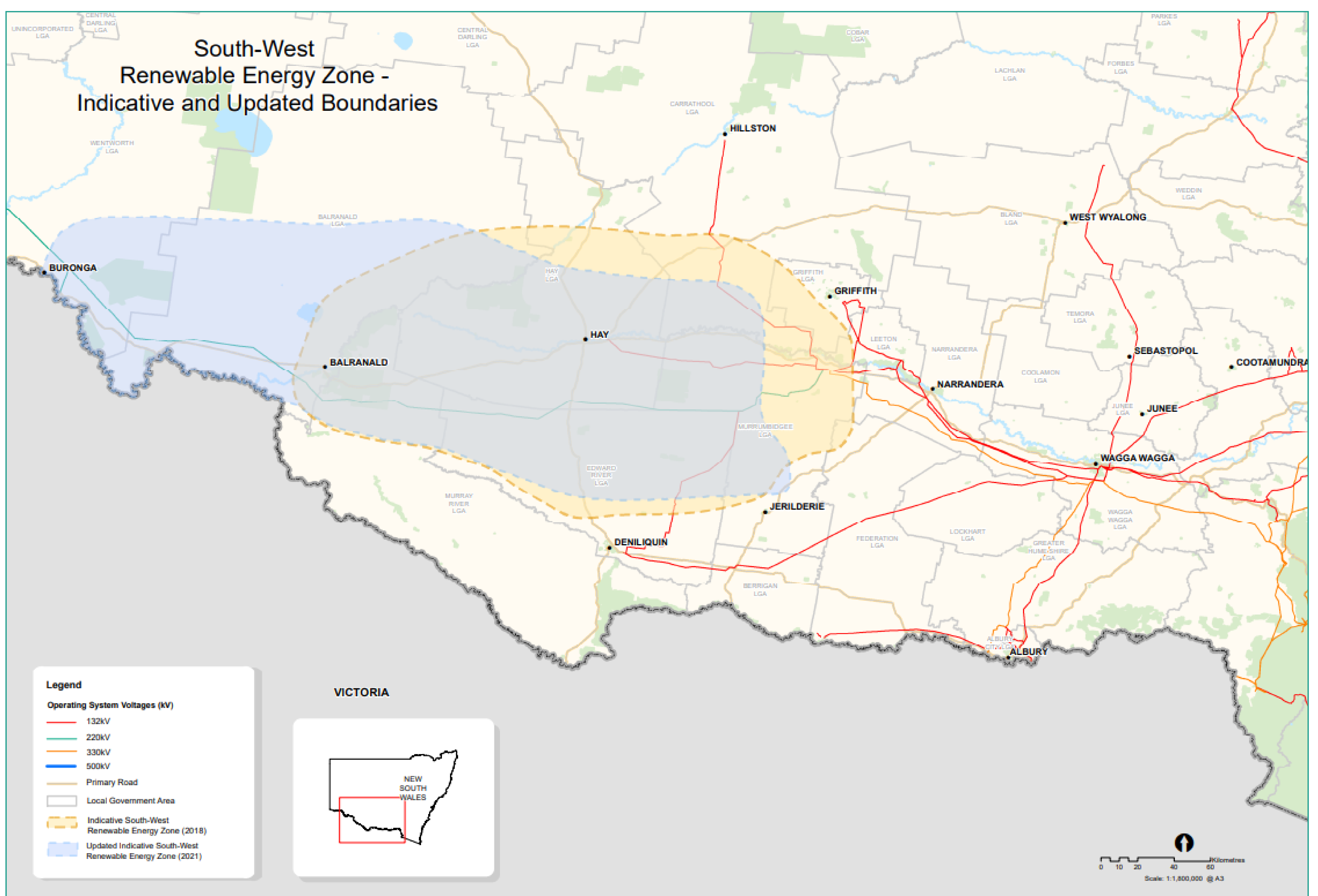
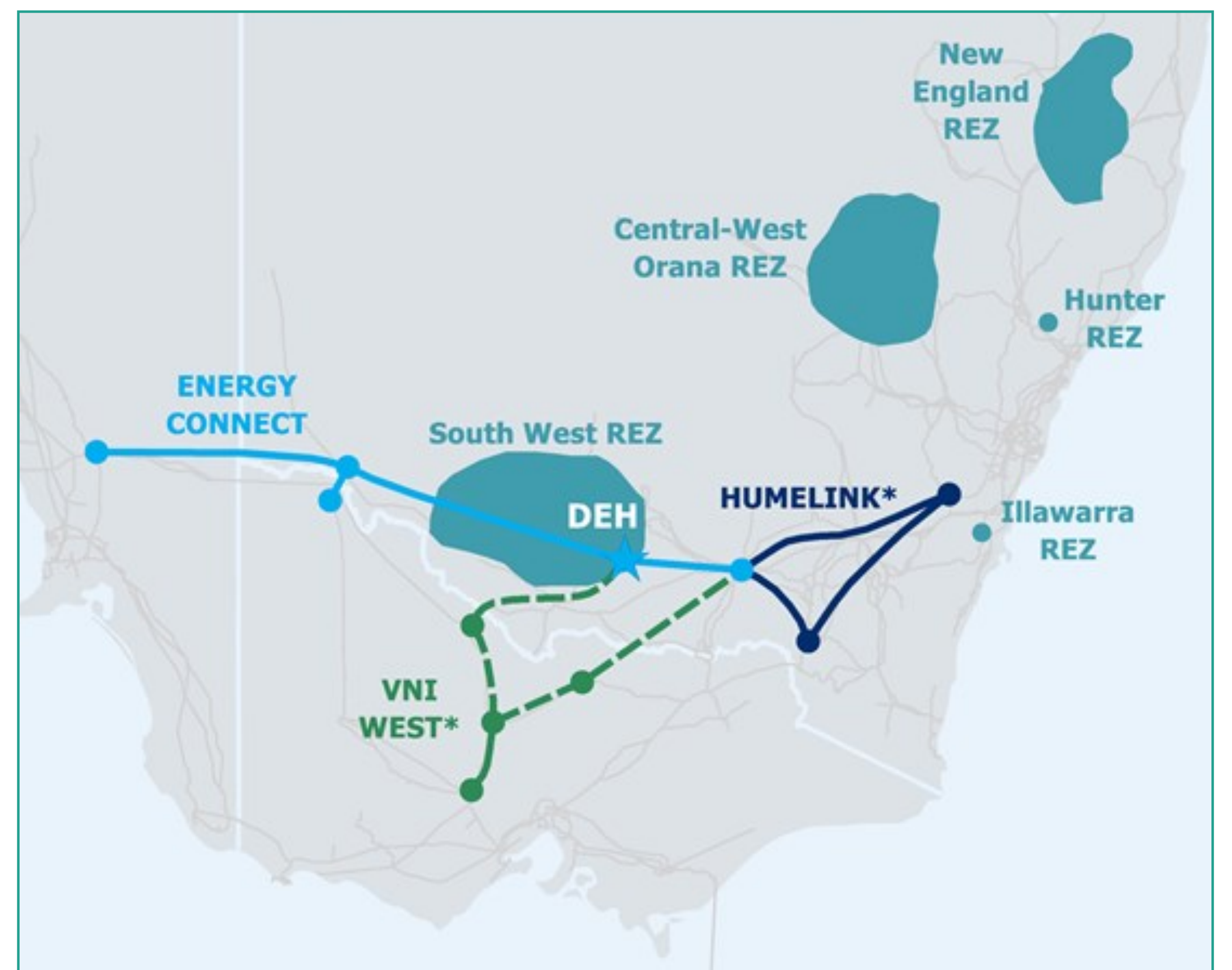
The total generation capacity of the project (up to 2.5 GW) is dependant on Project EnergyConnect – a proposed electricity interconnector planned between Robertstown, SA and Wagga Wagga, NSW. This would mean the Dinawan Energy Hub can connect into a new 330-500 kV line between Wagga Wagga and Dinawan. The project is also within the South-West Renewable Energy Zone.



WHAT IS A RENEWABLE ENERGY ZONE (REZ)?

Renewable Energy Zones are modern-day power stations combining renewable energy generation and storage (e.g. batteries) to deliver energy to the homes, businesses and industries around the state. The Energy Corporation of NSW is the NSW-Government-controlled statutory authority that will lead the delivery of NSW REZs.

By connecting multiple generators and storage in the same location, REZs deliver cheap, reliable and clean electricity for homes and businesses in NSW. There are five priority REZs in NSW, as shown on the map. The Dinawan Energy Hub is within the South-West REZ.

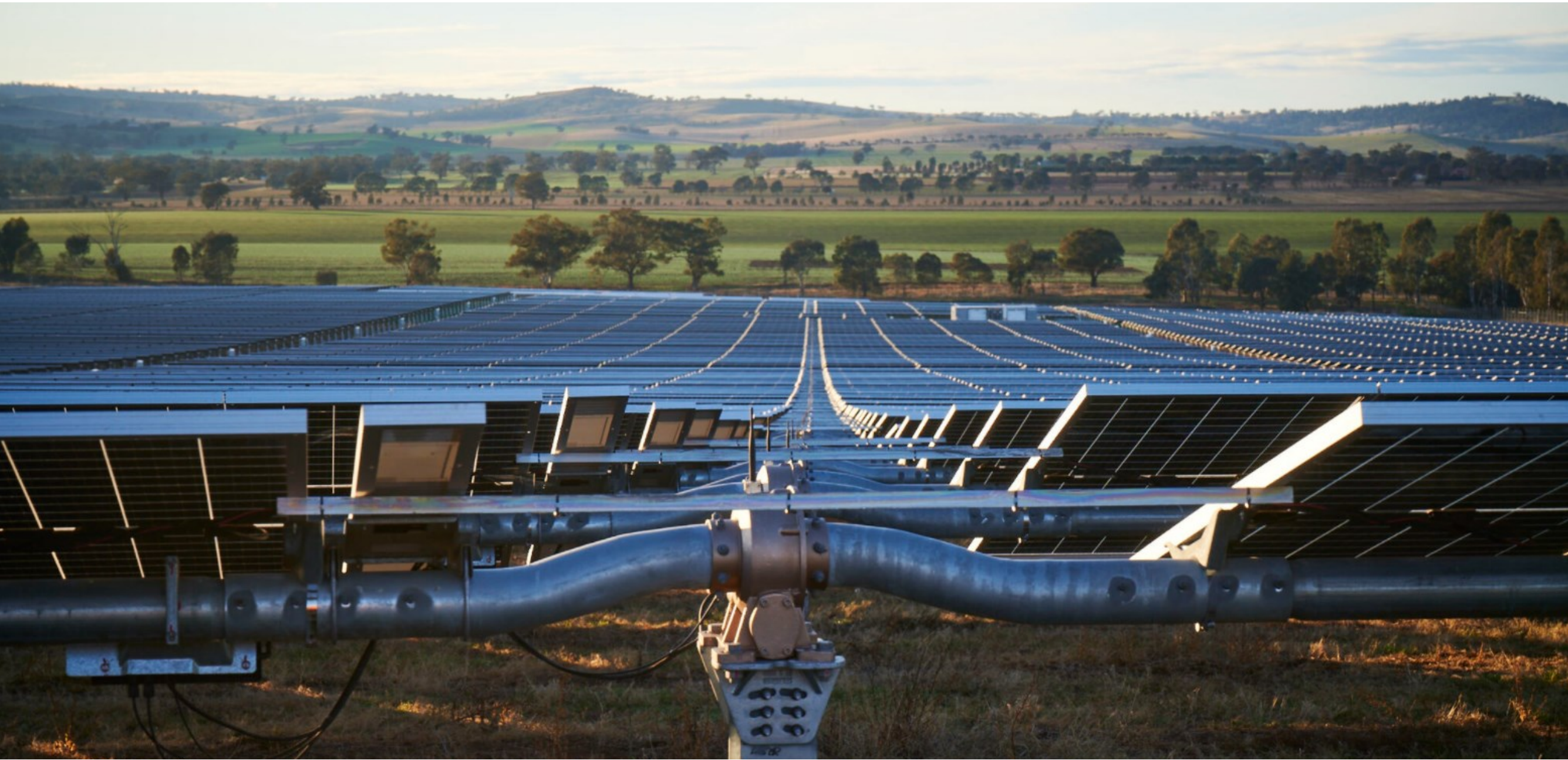


For more information about REZs please visit: www.energy.nsw.gov.au/renewables/renewable-energy-zones

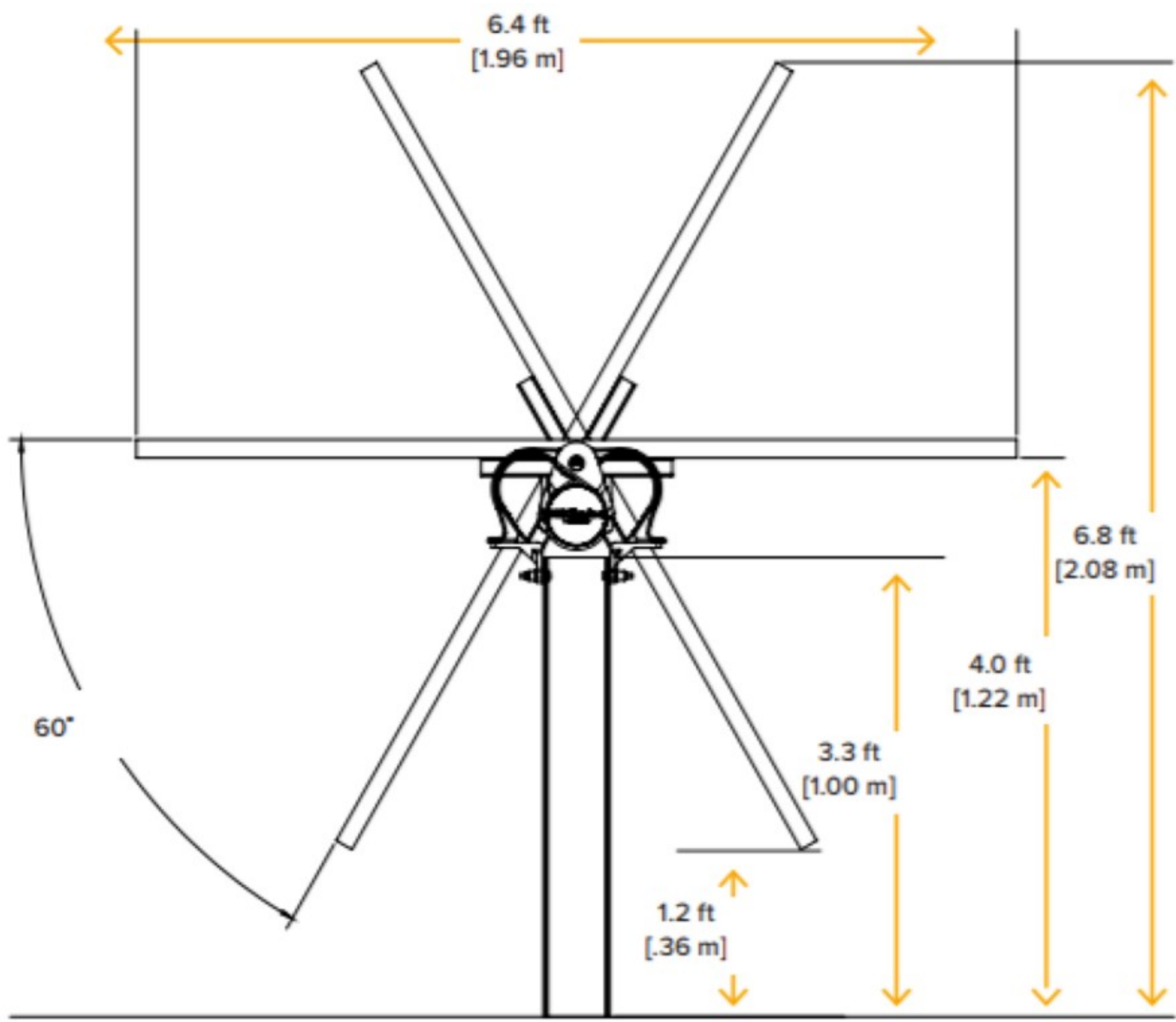
SOLAR FARM & BATTERY TECHNOLOGY

SOLAR FARM

Modules	~1.5 million bifacial modules (~600 watts each) which are ~2 x 1 metres in size
Mounting	Single axis trackers ~90 metres long and 80-90 modules per tracker
Inverters	Containerised power conversion stations to convert DC to AC power



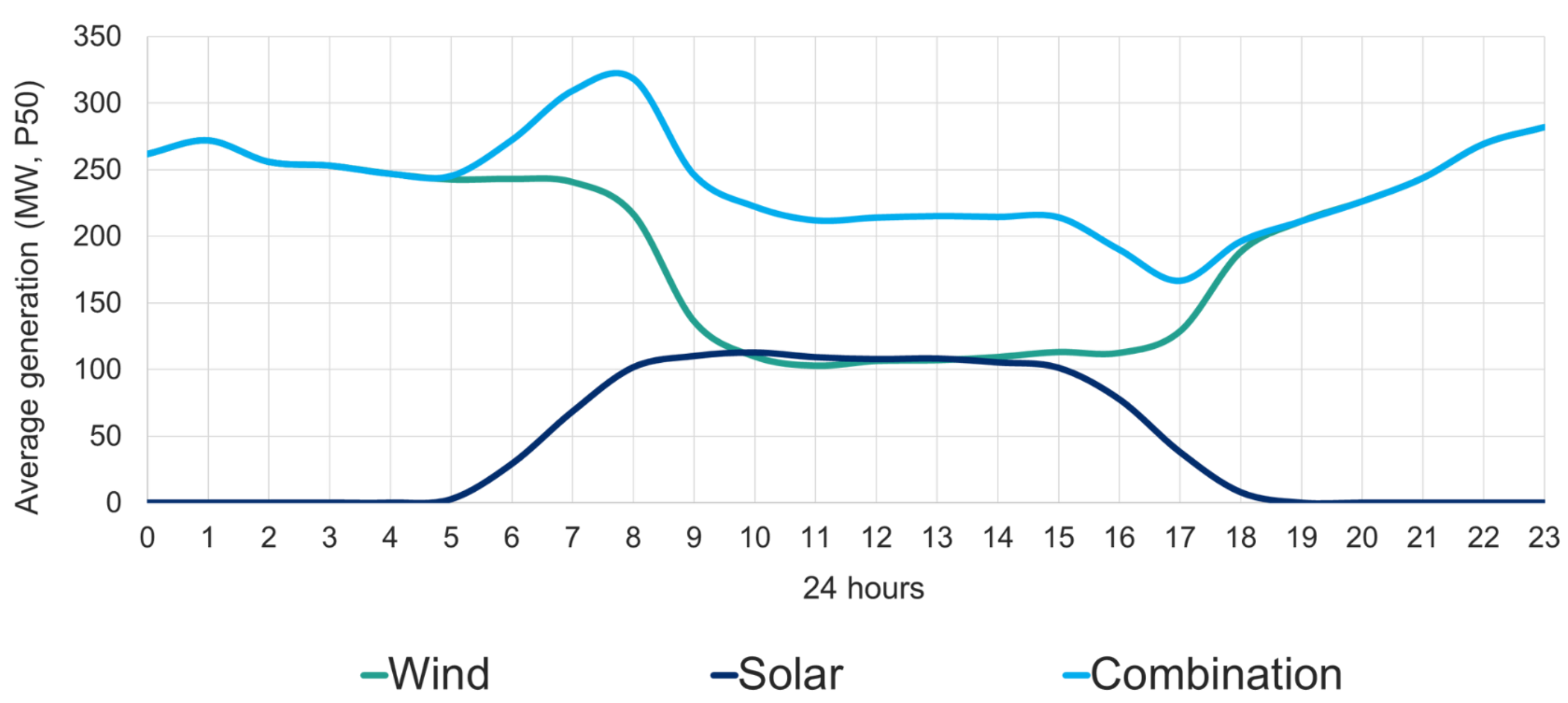
Approximate tracker directions:



WHY BATTERIES?

Batteries provide firm generation 'on demand' for the electricity grid. The battery will store electricity from the solar panels when the sun is at its peak, and then distribute to the electricity grid when demand is at its highest. Batteries help to balance variable generation supply of renewable resources, as illustrated in the diurnal generation profile below.

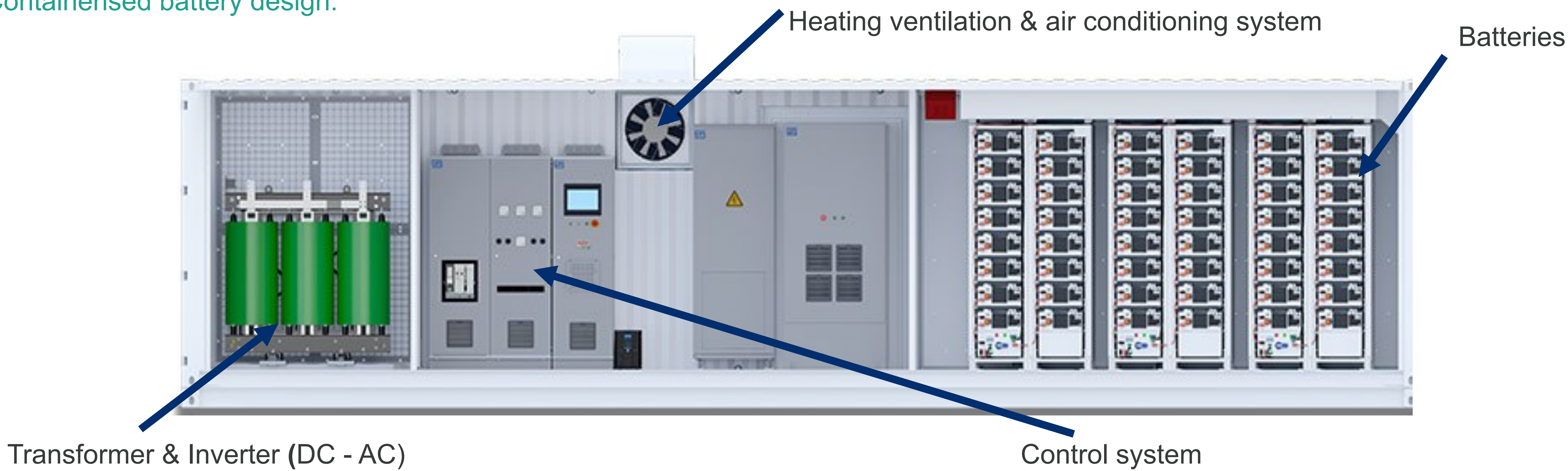
Dinawan Energy Hub diurnal generation profile:



BATTERY ENERGY STORAGE SYSTEM	
Chemistry	Lithium-ion or similar
Power	Energy stored from the solar farm and distributed into the electrical grid
Dimensions	Either 40 foot container or smaller units



Containerised battery design:



WIND FARM TECHNOLOGY

WHY WIND FARMS?

- Wind farms are a non-invasive and sustainable form of electricity generation.
- They require no water for cooling purposes.
- Wind turbines occupy less than 1% of the land on which they are sited.
- Farming practices including cropping and grazing are able to continue largely unaffected when operational.

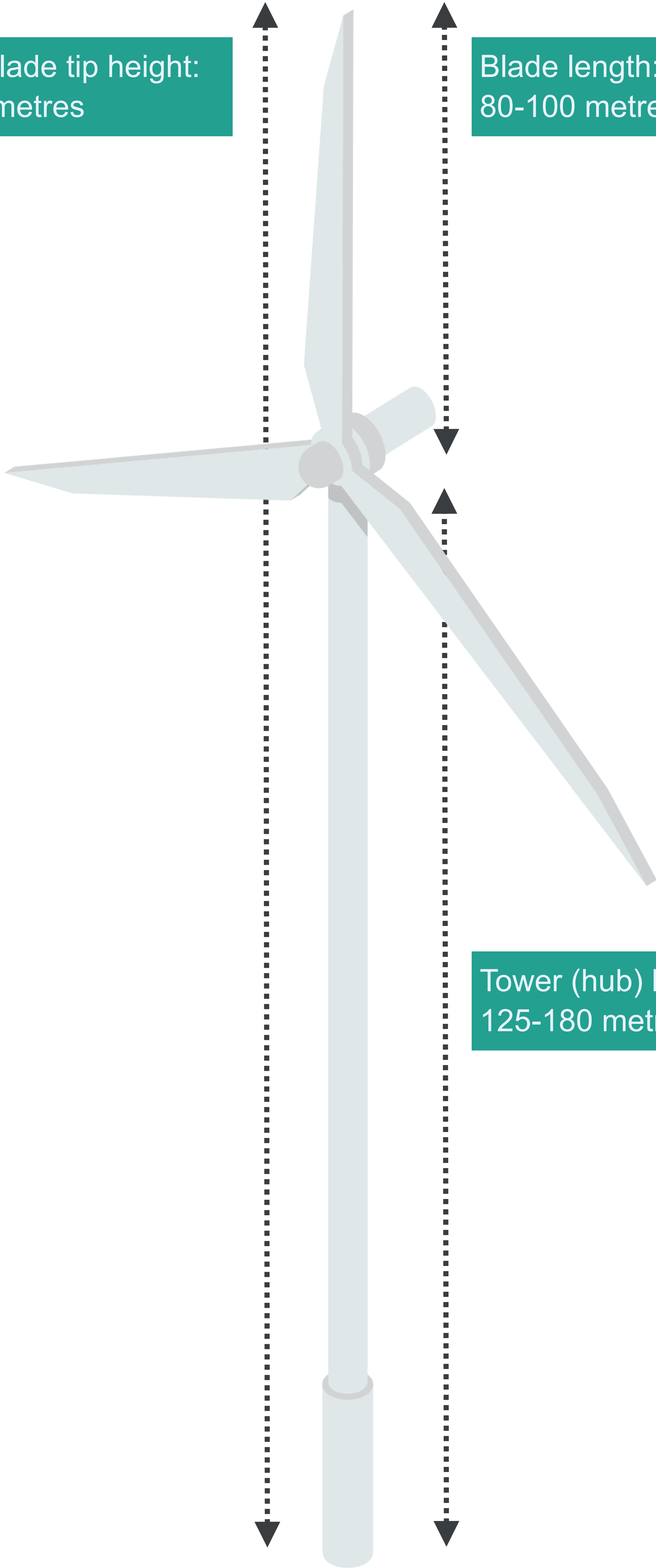


Approximate wind turbine height:

Base to blade tip height:
205-280 metres

Blade length:
80-100 metres

Tower (hub) height:
125-180 metres



WIND TURBINE GENERATORS	
Power	Up to 250 wind turbines (~6 megawatts each) with each turbine powering ~3,000 NSW households
Height	<ul style="list-style-type: none">• Tower (hub) height 125-180 metres• Blade length: 80-100 metres• Blade tip height 205-280 metres• Foundation 30-50 metre diameter
Emissions	Each wind turbine abates ~13,000 tonnes of CO ₂ equivalent greenhouse gases per year



OTHER INFRASTRUCTURE	
Crane hardstands	90 x 60 metres
Internal roads & drainage	12 metres wide
Substations	200 x 200 metres
Operations & maintenance	200 x 200 metres
Underground cabling typical	0.9 metres
Met masts	125-180 metres

COMMUNITY & ENGAGEMENT

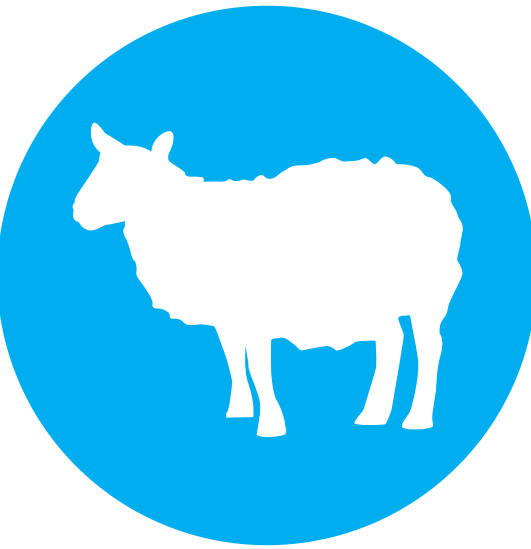
Spark Renewables is committed to engaging respectfully and transparently with the community throughout the lifetime of the project. As long-term developers, owners, and operators of renewable energy infrastructure, we are dedicated not only to understanding and mitigating community concerns, but also to ensuring we are giving back to the communities in which our projects operate. We look forward to working with stakeholders to ensure there is positive and sustainable economic benefit to the local community.

We will be setting up a Community Consultative Committee and will be hosting community workshops to keep stakeholders informed and incorporate community members into decision making processes. We will continue to engage with the community face-to-face, as well as through social media, our website, information hotline, and via newsletter drops.

Subscribe to project updates and provide feedback by scanning this code or visiting dinawanenergyhub.com



Benefits



LAND USE

We will ensure wherever possible, the land utilised for solar and wind infrastructure will maintain its strong ties to agricultural production, such as:

- Sheep grazing between panels
- Cropping and grazing on wind farm land
- Other agricultural opportunities like beekeeping



COMMITMENTS TO FIRST NATIONS REPRESENTATIVES

- Involvement of Traditional Custodians in project design and planning
- Guaranteed ongoing access to sites of significance
- Employment opportunities for Aboriginal & Torres Strait Islander workers
- Restored land at the end of the project



ELECTRICITY BENEFIT SHARING SCHEME

An electricity benefit scheme to provide the region with cheaper electricity



LOCAL SUPPLIERS

We are committed to engaging with local workers and services wherever possible



JOBS & TRAINING

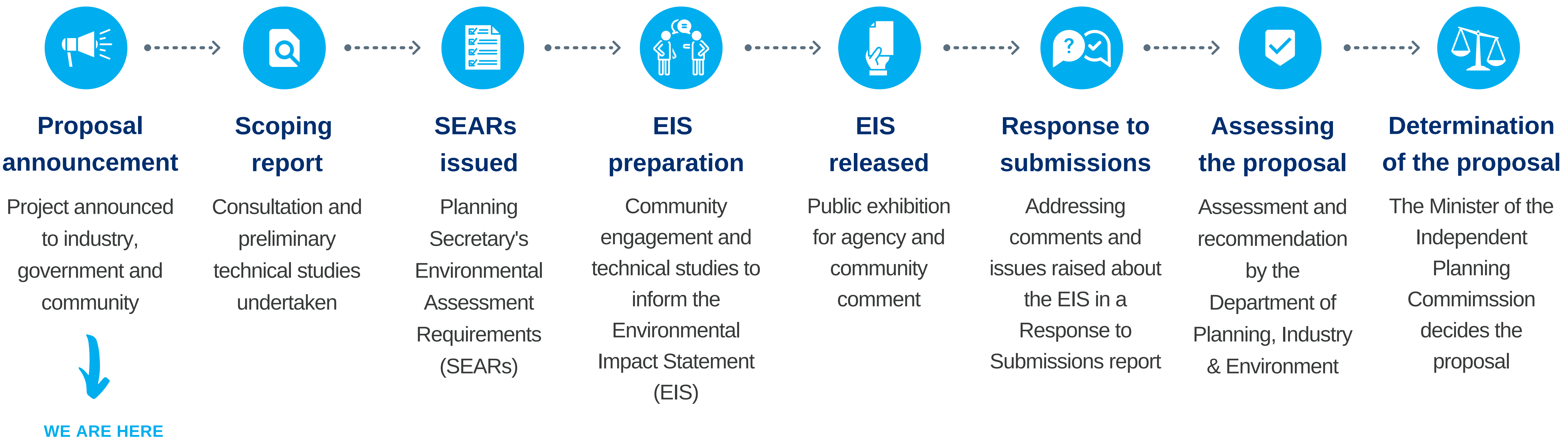
An estimated 1,000 jobs during construction, and 50 to 100 during the operational life



COMMUNITY FUND

A large community fund would be set up to support local businesses and green initiatives

Community engagement



Proposal announcement

Project announced to industry, government and community



Scoping report

Consultation and preliminary technical studies undertaken



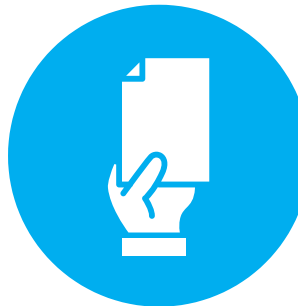
SEARs issued

Planning Secretary's Environmental Assessment Requirements (SEARs)



EIS preparation

Community engagement and technical studies to inform the Environmental Impact Statement (EIS)



EIS released

Public exhibition for agency and community comment



Response to submissions

Addressing comments and issues raised about the EIS in a Response to Submissions report



Assessing the proposal

Assessment and recommendation by the Department of Planning, Industry & Environment



Determination of the proposal

The Minister of the Independent Planning Commission decides the proposal



WE ARE HERE