

Bowmans Creek Wind Farm



A photomontage showing what the wind farm would look like from Bowmans Creek Road, looking west from about 1 km away from the nearest wind turbine.

Bowmans Creek Wind Farm is a utility-scale wind energy generation project due to be installed on pastoral properties about 12 km east of Muswellbrook in the Hunter Valley region of New South Wales.

Planning and assessment

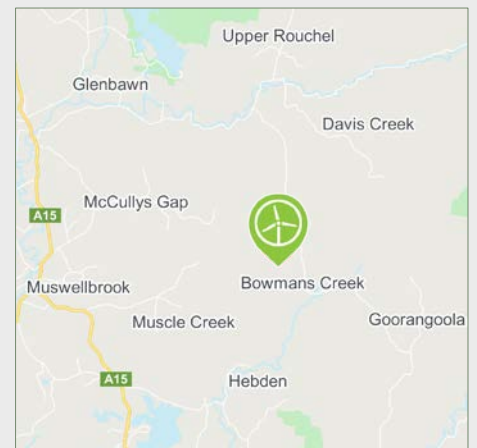
Utility-scale wind farm developments in New South Wales (NSW) are considered State Significant Development (SSD) and subject to a rigorous assessment process managed by the NSW Department of Planning, Housing and Infrastructure (DPHI).

Bowmans Creek Wind Farm, involving 54 wind turbines with a generation capacity of 335 megawatts (MW), was approved by the NSW Independent Planning Commission in February 2024 and the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) in July 2024. In June 2025 Ark Energy lodged an application to add a battery energy storage system (BESS) to the project. The BESS, with a power capacity of up to 250 MW and storage capacity of up to 2,000 MWh over eight hours, would allow for efficient storage of excess energy generated during peak production for later use during low production periods or high demand, improving reliability and reducing energy costs.

A separate development application is also being prepared for a Stage 2, for another 21 wind turbines that would add 120 MW of generation capacity. Planning Secretary's Environmental Assessment Requirements (SEARs) have been issued for the Environmental Impact Statement (EIS) and key matters to be addressed include landscape and visual impacts, noise and vibration, biodiversity, cultural heritage, transport, water and soils, land, hazards and risks such as aviation safety, telecommunications and bushfire, social impacts, economic impacts and waste.

DCCEEW has also determined the proposal for Stage 2 to be a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), so it will also require approval under the EPBC Act before it can proceed. The assessment will be undertaken by the DPHI under the bilateral agreement between the NSW and Commonwealth Governments.

Location



The Bowmans Creek Wind Farm site is approximately 12 km east of Muswellbrook, in the Hunter region of NSW, within the Muswellbrook Shire Council, Singleton Council and Upper Hunter Shire Council areas.

The Hunter region is significant for the NSW energy system and well placed to continue this into the future through renewable energy generation.

The project site has an excellent wind resource and is within the NSW Government's Hunter-Central Coast Renewable Energy Zone, an area identified as optimal for new renewable energy projects due to the natural resources and proximity to existing or planned network infrastructure.

Planning documentation for both projects is available from the NSW Government's Major Projects Portal: www.planningportal.nsw.gov.au/major-projects



For the Bowmans Creek Wind Farm page (SSD-10315) scan QR code left

For the Bowmans Creek Wind Farm Stage 2 page (SSD-73123714) scan QR code right



Landscape and visual impact

Assessment of a wind farm's visual impact on the landscape is required for the EIS. The approach and technical requirements for a Landscape and Visual Impact Assessment are outlined in the Department's *Wind Energy: Visual Assessment Bulletin*. Assessments are done by specialist consultants and consider shadow flicker, which is the appearance of shadows from rotating turbines under certain conditions and times of day.

Tools for the assessment include photomontages, produced by technical specialists using specialist industry software, to show what the wind farm would look like from representative public viewpoints where it could be seen. These involve combining photographs with a digital representation of the wind farm called a wireframe. Photomontages are based on precise wind turbine locations and dimensions to give an accurate and correctly scaled representation.

Noise

Wind turbines are much quieter than most people expect. Noise output from a wind farm can be accurately predicted using acoustic modelling, and a technical assessment by an acoustic specialist based on the characteristics of the candidate wind turbine is required for the EIS.

Operational noise limits for wind farms in NSW, and the technical criteria and methodologies for the assessment are outlined in the Department's *Wind Energy: Noise Assessment Bulletin*. The NSW Government has adopted the most stringent noise limit criteria for wind farms. The predicted equivalent noise level at a non-involved residence cannot exceed 35 dB(A) or the ambient background noise by more than 5 dB(A), whichever is greater. The diagram below shows the noise levels in decibels (dB) of various sounds for reference.

The noise limits have been established to ensure the health and safety of individuals and the community, and are designed to preserve peoples' amenity including the ability to sleep at night when background noise is usually low. Compliance with noise limits must be demonstrated before approval can be granted and via a noise monitoring program during operation.

Aboriginal cultural heritage

Ark Energy recognises the continuing connection that Aboriginal and Torres Strait Islander Peoples have to their land and Traditional Custodians are important project stakeholders. The project team is engaging with the project area's Traditional Custodians to ensure the protection and maintenance of cultural heritage on the site and respect to traditional values and culture are upheld.

Ecology

Avoiding, minimising and mitigating impacts to the natural environment and fauna species that might utilise the project area is a priority, and comprehensive and thorough assessment of potential ecological impacts is required by both the NSW and Australian Governments.

Key ecology matters that must be addressed in the EIS are identified in the SEARs and include assessment requirements under the Commonwealth EPBC Act provided by DCCEEW. The ecological assessment work is done by specialist ecologists and survey teams over multiple seasons. As findings from the ecology work become available the project's design may be refined and modified accordingly.

The project team is committed to collaborating with ecology stakeholders and host landowners to implement responsible strategies to mitigate construction impacts and a key aim of the project will be to achieve net gains for biodiversity in the area over the longer term.

Property values

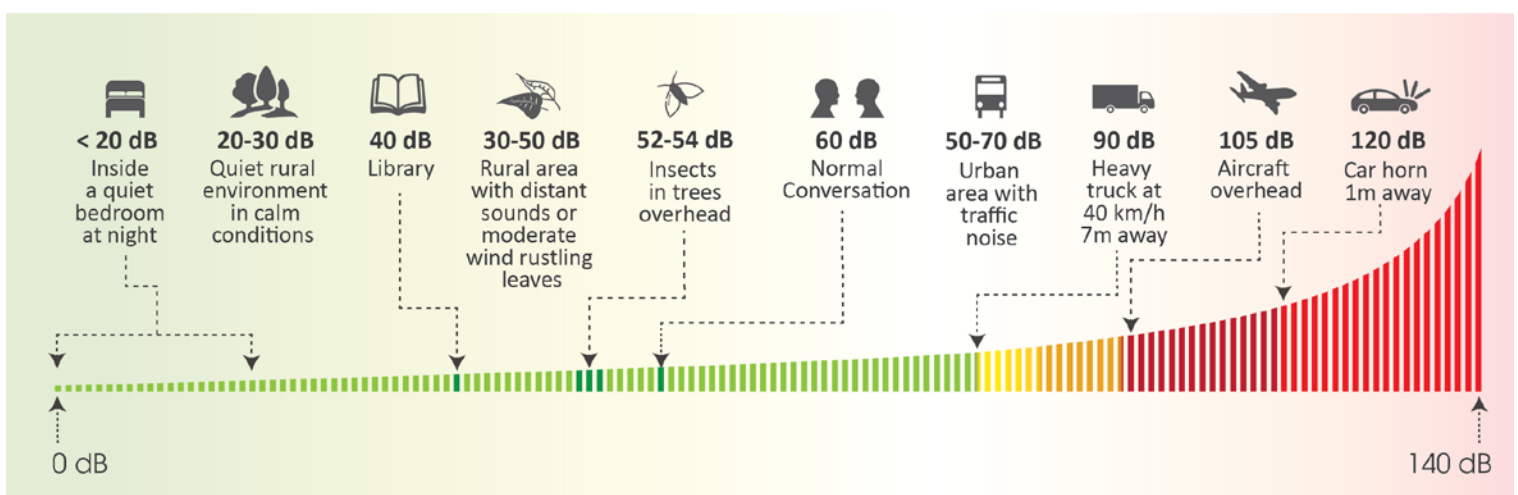
Property prices are influenced by many factors however there is no reliable evidence that proximity to a wind farm or the visibility of wind turbines has a measurable negative impact on land values and property sale prices. The potential for wind farms to impact the value of properties has been examined in studies by the NSW Valuer General and for the NSW Office of Environment and Heritage. These studies reviewed property transactions before, during and after the construction of nearby wind farms and analysed sale prices in the context of broader market trends. They did not find a negative impact on property prices from nearby wind farms.

More recently property market researchers and investors suggest that new renewable energy development is likely to have a positive effect on regional property markets.

Health

The relationship between operating wind farms and human health has been the subject of extensive review by medical and research organisations, including Australia's National Health and Medical Research Council (NHMRC) and the Australian Medical Association (AMA). Both organisations have published statements in relation to wind farms and health, stating that there is no consistent evidence that wind farms and wind turbine noise cause adverse health effects in humans.

Similarly, there is no evidence that wind farms cause adverse health impacts to livestock or domestic animals.





Co-existence opportunity - Hosting wind farm infrastructure is a productive land use that can be complementary to agriculture and can provide a reliable supplementary income stream. Livestock are unaffected by wind turbines and will often use the towers for shelter and shade.

Fire safety and management

Wind turbines are designed to mitigate fire risk. They are constructed with fire resistant materials and operated by sophisticated monitoring systems that follow automatic shutdown procedures in response to operational issues and can be remotely shut down in the event of fire in the area.

Wind turbines also provide a safe path for lightning strikes to the ground and access tracks serve as natural fire breaks.

A comprehensive bushfire management plan for the site would be developed in consultation with Fire and Rescue NSW, the local Fire Control Centre, National Parks and Wildlife Services and the NSW Rural Fire Service.

Fire services would manage firefighting on the site in the same way as any other area, using ground and air-based resources, subject to prevailing weather conditions and avoiding wind turbines in the same manner as any other obstruction such as buildings or powerlines.

Construction and traffic

Preparing for construction will require upgrades to local roads and some key intersections.

A Traffic and Transport Impact Assessment is required for the EIS, and the project will involve comprehensive construction management and traffic management plans, compliant with Occupational Health & Safety legislation and the local government planning scheme. These will cover all aspects of construction and traffic management including working hours, noise, traffic and dust.

Construction can only commence after the detailed engineering design has been completed. A detailed Construction Environment Management Plan will outline measures to mitigate and manage biosecurity risks and the spread of weeds or pathogens between infected areas and non-infected areas during construction. This will include cleaning of vehicles and construction equipment prior to entering the project site and crossing property boundaries. There will be a particular focus on weeds listed under the *NSW Biosecurity Act* (2015).

End of operation

Wind turbines have an operational life of approximately 25-30 years. Options at the end of this period include extending the life of the facility via refurbishment, repowering with new infrastructure or decommissioning.

If the operator decides not to extend or refurbish the facility it will be decommissioned, usually within 12-18 months of ceasing operation.

The costs of decommissioning are the responsibility of the asset owner. Decommissioning would involve the establishment of a decommissioning fund by the operator, and the removal of above ground infrastructure including wind turbines, electrical infrastructure and maintenance buildings. The site would be returned to its former state where practicable.

Wind turbines are predominantly made of recyclable materials and approximately 85-94% of today's wind turbines are recyclable. Research and developments in technology continue to advance recyclability of wind turbine components. Most – if not all – of the materials would be reused, repurposed, recycled and recovered.

What can the project bring to the community?

JOBS - Expected to generate 200+ direct/indirect jobs during construction and 30 direct/indirect jobs during operation.

ECONOMIC BOOST – Expected to generate ~\$179 million in the regional economy through direct/indirect expenditure including work for contractors and increased patronage for accommodation, retail, service and hospitality businesses.

COMMUNITY BENEFITS – Commitments to provide meaningful, lasting benefits for the local community including neighbour benefit sharing initiatives and significant funds. There's also a range of social licence commitments as part of the Long-Term Energy Service Agreement (LTESA) awarded to the BESS, including community development funding and commitments to First Nations participation, local workforce and local content.

RENEWABLE ENERGY - Renewable energy is the cheapest source of electricity and more is needed to meet emissions reduction targets and growing electricity demand. Increases in renewable energy capacity will put downward pressure on wholesale electricity prices and deliver more affordable, cleaner and reliable electricity.

NET GAINS FOR ECOLOGY – A goal of the project will be to achieve a net gain for biodiversity and key species in the project area over time. This might involve initiatives such as rehabilitation of the construction disturbance, strategic environmental offset management areas, and improved management regimes for fire, weed and pest control.

Community commitments

The Bowmans Creek Wind Farm Stage 1 and BESS involve a range of commitments to provide meaningful benefits for the local community.

For details visit the 'Community' page at bowmanscreekwindfarm.com.au or scan the QR code right.



Economic Opportunities

The renewable energy industry brings significant economic and job opportunities

New South Wales has abundant wind and solar resources and is well placed to take advantage of Australia's growing renewable energy economy.

The New South Wales Government has set a target to halve the state's emissions (compared to 2005 levels) by 2030 and achieve net zero by 2050. Achieving these targets will require harnessing the state's renewable energy potential as quickly as possible, and that requires a ready workforce.

Clean energy workforce demands already outstrip supply and will rapidly increase this decade. As NSW takes advantage of Australia's energy transition it provides a significant opportunity for job growth with the majority of new jobs being created in regional areas.

Ark Energy is committed to maximising the local benefits and opportunities of projects and the Bowmans Creek Wind Farm is expected to generate at least 200 direct and indirect jobs during the construction period and approximately 30 direct and indirect ongoing full-time jobs during operation.

The project also presents significant opportunities for local training, upskilling and capacity building, and work in ancillary areas such as community engagement, environmental rehabilitation and offsets management.

Construction will generate significant expenditure within the local, regional and economy, including work for contractors and increased patronage for surrounding accommodation, retail, service and hospitality businesses. It is estimated that a project of this scale would generate ~\$179 million in the regional economy, through direct and indirect expenditure, value-add and household income.



The Bowmans Creek Wind Farm is expected to generate more than 200 direct and indirect jobs during construction and around 30 direct and indirect jobs for operation. Stage 2 is expected to generate up to another 156 jobs during construction and 15 for operation. It is estimated that the project would also generate around \$179 million in the regional economy, through direct and indirect expenditure, value-add and household income.

- Target start of construction 2027
- Construction period ~24 months
- Target for completion 2030

Jobs in renewable energy

Clean Energy Careers Guide

The Clean Energy Council's online careers guide provides easy-to-follow information about the work opportunities in the renewable energy sector. Jobs are sorted according to occupation type and demand, technology, and entry pathway. The guide explains what jobs involve, qualifications required and transferable skills.

Scan QR code below or visit cleanenergycouncil.org.au and search 'careers guide'.



Launch your Career – Renewables

The Launch your Career in Renewable Energy program, a partnership between the NSW Department of Education and TAFE NSW, highlights opportunities and experiences of professionals working in the industry.

Scan QR code below to visit the web page and hear from Ark Energy's Rebecca Riggs and others working in the sector.



Launch your Career
in Renewable Energy



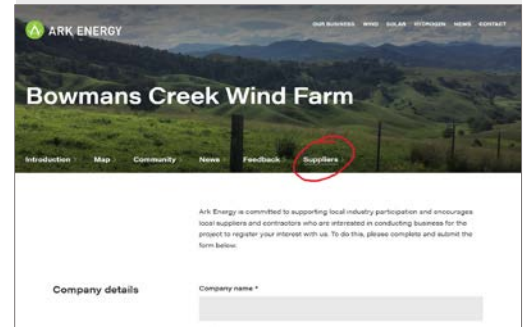
Construction and operation of a utility-scale wind energy project involves a range of jobs including labourers, machine operators and drivers, trades, professional services and managers. Below are some of the opportunities in different areas:

Civil works 	Site construction management 
<ul style="list-style-type: none"> • Labourers • Machinery operators for trucks, excavators, rollers, grader, dozers • Crushing plant operators and loader operators • Steel fixers • Concreters • Carpenters • Tree fellers • Agitator truck drivers • Crane operators, riggers & dogmen • Cleaners 	<ul style="list-style-type: none"> • Project manager • Project supervisors • Project administrators • Electrical engineers • Civil engineers • Lead electricians • Lead mechanical fitters • Health and safety advisors • Environmental services • Cleaners • Security
Electrical installation 	Wind turbine installation 
<ul style="list-style-type: none"> • Labourers for cable installation • Drivers for excavators, dozers, tractors (tow sand carts, cable reels etc) • Electricians • Cable joiners 	<ul style="list-style-type: none"> • Escort vehicle drivers for component delivery • Crane operators, riggers & dogmen • Truck drivers • Electricians • Mechanical fitters • Turbine cleaners
Local businesses 	Operations 
<ul style="list-style-type: none"> • Local sub-contractors supplying watercarts, 10-yard trucks, excavators and rollers etc. • Equipment hire suppliers • Shed construction for supply and installation of on-site offices and sheds • Carpenters, builders and plumbers to supply and install permanent offices and maintenance sheds • Local food providers, services and operators • Accommodation providers and retailers 	<ul style="list-style-type: none"> • Electricians • Mechanical fitters • Administrators • Site manager • Bird and bat monitoring • Environmental services e.g. weed, pest control and offsets management • Cleaners

Supplier expression of interest form

Ark Energy is committed to supporting local industry participation.

Companies that are interested in providing services to the project are invited to register and upload their credentials through the form under the 'Suppliers' tab on the project website.



Scan QR code to visit the 'Supplier' form on the Bowmans Creek Wind Farm project website



Project updates

To be notified of project updates we recommend registering to receive newsletters directly, by email or post.

To register for e-news visit arkenergy.com.au/mailling-list-details or scan the QR code below.

If you prefer to receive newsletters by mail, email your post address and a request to be added to the mailing list to info@bowmanscreekwindfarm.com.au.



Scan QR code to visit the e-news registration page



Involving the Community

Ark Energy's approach

Ark Energy appreciates the importance of engaging, listening to and involving community members and other local stakeholders throughout the project's development, and ensuring that local priorities and concerns are considered.

Ark Energy's approach to consultation is informed by the International Association for Public Participation's (IAP2) Core Values, Code of Ethics and Public Participation Spectrum, widely accepted as the industry benchmark. It is open, inclusive, responsive, accessible and transparent.

The company is also a signatory to the Clean Energy Council's *Best Practice Charter for Renewable Energy Projects*, a voluntary commitment to engage respectfully with communities, be sensitive to environmental and cultural values, and make a positive contribution to the regions in which we operate.

We are focused on providing opportunities for interested community members and stakeholders to participate, and maximising opportunities for the community to benefit from the project in meaningful ways.

We value input from local community members and community consultation is ongoing. There are many ways to stay informed, provide feedback and participate in the process, and where possible the community's input will be incorporated into project plans to improve outcomes and lasting benefits.

Ways to stay informed & participate

Website with 'Feedback' and 'Supplier' forms

The project website – bowmancreekwindfarm.com.au – provides up to date project information, maps and previously issued newsletters. It also includes a general 'Feedback' form and a 'Supplier' form for businesses to register interest in being considered for the project.

Project newsletters

Project newsletters are available by post and email.

To receive newsletters by email register online at arkenergy.com.au/mailling-list-details.

To receive newsletters by mail, please send your postal address and a request to be added to the mailout list to info@bowmancreekwindfarm.com.au.

We respect your privacy, and your details will only be used for this purpose.

All previously issued newsletters are available under the 'News' tab on the project website, bowmancreekwindfarm.com.au.

Community consultation sessions

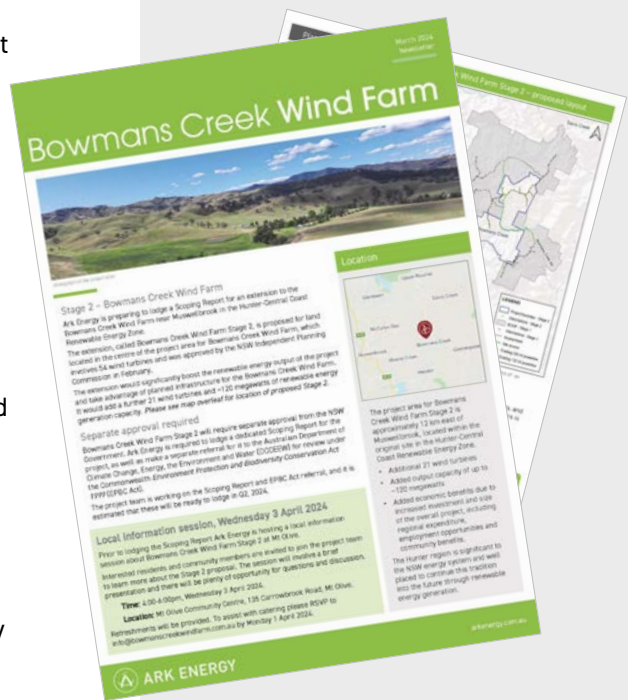
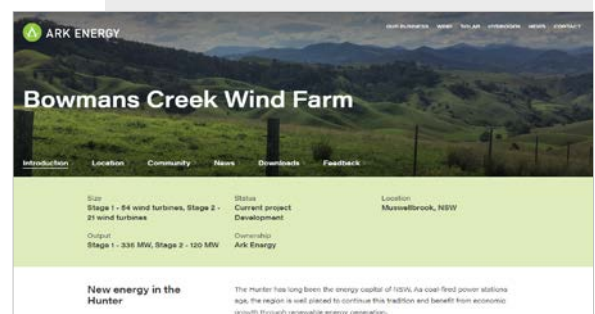
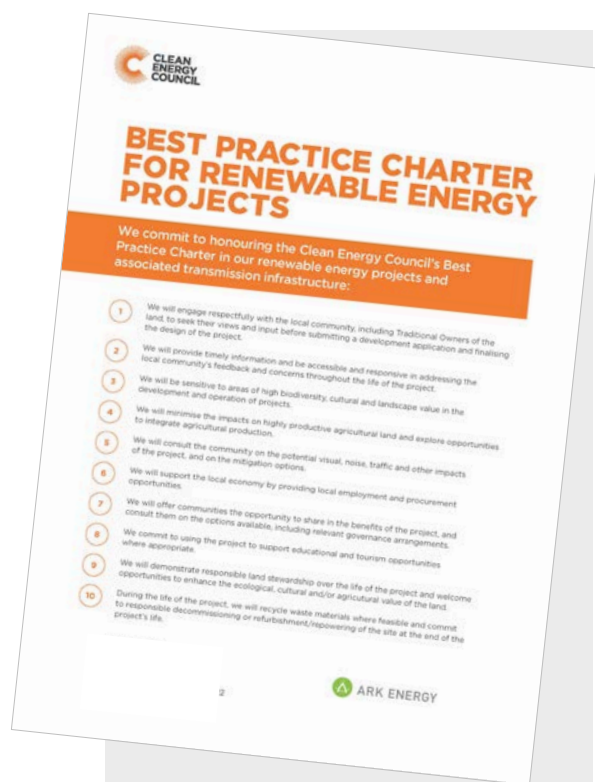
Local consultation sessions are held at regular intervals and key points in the planning process. Details are advertised in project newsletters.

Public exhibition of documents

After the Environmental Impact Statement (EIS) for Stage 2 has been accepted by the NSW Department of Planning, Housing and Infrastructure (DPHI) it will be placed on public exhibition and open for submissions. Exhibition periods will be advertised in project newsletters and through local media.

Community benefit sharing

The project will involve a range of commitments to provide meaningful, lasting benefits for the local community. Feedback on priorities for community benefit funds are welcome and can be sent directly to the project team.



Tell us what's important for Bowmans Creek Wind Farm's community benefit plans

Bowmans Creek Wind Farm will involve community benefit plans with funding for the life of the project. This is intended to:

- **Share** benefits with the broader local community.
- Make a **meaningful contribution** to issues the community cares about.
- Be **flexible** to focus on changing priorities over time.
- Ensure the project is a **positive, rewarding** and **beneficial** development for the local community.

Community members and other local stakeholders are invited to share their views on what is important for the local community.

This can be done through the Feedback form on the project website or by emailing the project team directly using the contact details below.

Community commitments

Bowmans Creek Wind Farm Stage 1 and BESS involve a range of commitments to provide meaningful local benefits.

For details see the 'Community' page on the project website or scan the QR code right.



Questions and feedback welcome at any time

Questions and feedback are welcome at any time.

Please send your comments directly to the project team via the contact details right.

We appreciate all input and will do our best to respond to enquiries as quickly as possible.

Ark Energy's engagement goals and commitments

Ark Energy's goals for community engagement include to:

- Ensure community members are well informed and kept up to date on project status and developments.
- Obtain feedback and provide ample opportunities for community members to communicate their views, concerns and aspirations for the project.
- Address any community member's issues or concerns promptly.
- Work to avoid and minimise the impacts and maximise the benefits of the project for the local community.
- Wherever possible utilise input from community members to optimise the design of the project.

Ark Energy commits to:

- Be proactive – connect early in the process and regularly share information so community members know what is happening and how to interact with the project team and provide feedback on the project.
- Be transparent – be honest and ethical in our dealings with all.
- Seek solutions – engage to understand, explore and collaborate on ways to avoid and minimise impacts and maximise the benefits of the project.
- Be flexible and inclusive – ensure that our engagement provides opportunities for all interested community members to have access to information and members of the project team.



Local consultation session

Battery Storage

Battery energy storage systems

A battery energy storage system (BESS) uses batteries that convert electrical energy into chemical energy so that it can be stored, collected, and distributed at a later time.

Utility-scale BESS installations enable variable and intermittent renewable energy sources like wind to provide a stable, steady supply of electricity to the grid. BESS systems are typically charged when generation supply is higher than demand and the excess energy is stored for release during lower production periods or when demand is high.

The process is managed by a monitoring system connected to the Australian Energy Market Operator (AEMO) and based on real-time data from the National Electricity Market (NEM).

By storing excess energy generated during peak production times, BESS can reduce waste, prevent curtailment and provide energy for use during periods of low production, demand spikes and backup power during network disruptions. By balancing the supply and demand for variable renewable energy sources, a BESS plays a critical role for grid stability and reliable energy supply.

Battery type

The batteries proposed for Bowmans Creek Wind Farm's grid-scale BESS would be Lithium Iron Phosphate (LFP) batteries, a type of lithium-ion battery.

Lithium-ion batteries are popular for utility-scale storage due to their high efficiency and safety, long lifespan and compact energy density.

Lithium-ion batteries are capable of storing large amounts of energy in solid state electrodes. LFP batteries are the same type of batteries that are commonly used in electric vehicles. They are typically made from lithium iron phosphate, graphite, aluminium and copper. They are cobalt free, use no rare earth metals, have a safe chemical and mechanical structure and are more resilient to extreme conditions.

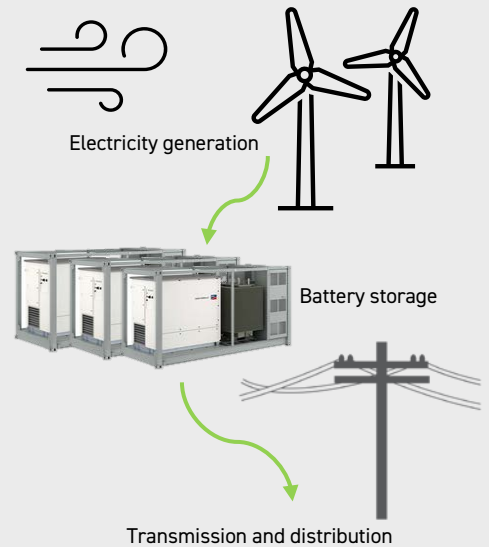
How a BESS works

Industrial-scale lithium-ion BESS are designed with modular units, which look a bit like shipping containers arranged in rows. Each modular unit contains interconnected battery cells as well as cooling, safety and firefighting systems. The modular units are connected to inverters that convert the electricity from the batteries from direct current (DC) to alternating current (AC) for the grid.





The smaller interconnected battery cells inside each modular unit operate like a typical battery, where chemical reactions across an anode and cathode create an electric flow. The components within lithium iron phosphate (LFP) battery cells include the cathode, anode, electrolyte, separators and current collectors.

An Energy Management System (EMS) monitors the energy stored and needed and manages charging and discharging of the batteries.



The Bowmans Creek Wind Farm BESS is proposed to have a power capacity of up to 250 megawatts (MW) and an energy storage capacity of up to 2,000 megawatt hours (MWh) over eight hours. It would charge when generation is higher and market prices are lower, and discharge when generation is lower and market prices are higher. This would optimise the wind farm's output, contribute to grid stability and reduce electricity costs.



Key functions of a BESS

-  **Energy storage**
Capture and store electricity during low-demand periods for use during peak hours.
-  **Grid stabilisation**
Provide rapid responses to fluctuations, ensuring steady power delivery.
-  **Renewable integration**
Stores excess energy to prevent waste and ensure availability during low-generation periods.
-  **Backup power**
Ensure critical facilities like hospitals, data centres, schools - remain operational in outages.

BESS proposed for Bowmans Creek Wind Farm Stage 1

-  Power capacity of up to 250 MW.
-  Energy storage capacity of up to 2,000 MWh over eight hours

BESS Safety

BESS in Australia are assembled and installed under a comprehensive standard focused on the installation and safety of their use with power conversion equipment (AS/NZS 5139:2019).

They must also operate in compliance with strict project approval conditions.

The chemical reaction in lithium-ion batteries produces heat and must be controlled to manage safety and fire risks. BESS are equipped with Battery Management Systems (BMS) to monitor charge, cooling systems, temperature in real-time, and fire suppression systems to reduce fire risks.

Each battery container includes a liquid cooling thermal management system designed to keep the batteries operating at the right temperature and its own comprehensive safety and fire suppression systems including detection, alarm, isolation, firewall and emergency cooling systems.

To mitigate the risk of runaway thermal events, non-combustible fire barriers are installed within BESS containers and there are separation distance requirements between each container.

As BESS units are self-contained, this provides for staged protection through internal containment of any event by the BMS and minimises the risk of spread to other units. LFP battery chemistry, which is the type Ark Energy plans to use, is less likely to experience thermal runaway than other battery types.

All renewable energy facilities including BESS involve multiple plans to manage and minimise hazards and risks and these are developed in accordance with guidelines and in consultation with relevant authorities such as Fire and Rescue NSW, the local Fire Control Centre and the NSW RFS. They typically include:

- Emergency Management Plan outlining measures to prevent, prepare and respond to emergencies, such as fire, that may impact the site.
- Fire Management Plan approved by the fire authority which includes procedures for dealing with fire and materials kept on site for that purpose.
- Risk Management Plan that identifies hazards and the strategies to be applied to lower the risks such as Asset Protection Zones to ensure appropriate clearances to surrounding vegetation and other fuel sources.

Decommissioning and recycling

LFP batteries have a longer life cycle than other batteries and can last up to 20,000 cycles.

Decommissioning a BESS is the responsibility of the operator and a Decommissioning Management Plan, clearly outlining processes for dismantling infrastructure, removing materials and rehabilitating the site, is typically a condition of project consent and must be approved by the regulator.

LFP batteries contain components that use lithium, phosphorus and graphite, and there are recycling technologies for these valuable materials.

When LFP batteries reach end-of-life most components and raw materials can be recovered and recycled through specialised processes by certified operators. If recycled, potentially 95 per cent of battery components can be recovered for alternative use or turned into new batteries (CEC 2025).

Other BESS facility infrastructure and plant materials such as concrete and steel are also typically recycled.

Ark Energy is committed to recycling batteries from its facilities when they reach end-of-life. Resource recycling is a focus business area for Ark Energy's parent company Korea Zinc, which has a battery recycling business that utilises its existing non-ferrous metals refining capability. End-of-life batteries from Ark Energy's projects will likely be recycled within the Korea Zinc Group.

Scan QR codes below for more information

Australian Renewable Energy Agency (ARENA) – Battery storage (web page)



Battery Energy Storage System (BESS) Fact Sheet – Queensland Renewable Energy Council (PDF)



Battery Energy Storage System container



Artist illustration of a Battery Energy Storage System



95%

of a lithium-ion battery is recyclable

Changing Energy Market

Australia's energy market is changing. Renewable sources of electricity are being harnessed to meet growing demand as coal-fired power plants are nearing retirement, and to reduce carbon emissions in line with global agreements.

The Australian Government has set a national target of 82% electricity in the National Electricity Market (NEM) from renewable sources by 2030 and through the *Climate Change Act 2022* has legislated national emissions reduction targets of 43% by 2030 (compared to 2005 levels) and net zero by 2050.

The NEM is one of the world's longest interconnected power systems and transports electricity to more than 85% of Australia's population. It is operated by the Australian Energy Market Operator (AEMO) and whole-of-system planning for the NEM is outlined in AEMO's *Integrated System Plan (ISP)*, which is updated every two years.

The objective of the ISP is to: *maximise value to end consumers by designing the lowest cost, secure and reliable energy system capable of meeting any emissions trajectory determined by policy makers at an acceptable level of risk.*

The Draft 2026 ISP, due to be finalised by end of June 2026, reaffirms that renewable energy, connected by transmission and distribution, firmed with storage and backed up by gas, is the least-cost way forward for Australia.

The Draft 2026 ISP forecasts that by 2050, in the 'Step-change' scenario for the NEM:

- Total electricity consumption will nearly double.
- Total generation and storage capacity will need to triple.
- Grid-scale wind and solar will increase five-fold.
- Coal capacity will decline and be completely phased out.

Renewables supply on average

48%

of electricity in the NEM with peak contribution of more than

78%

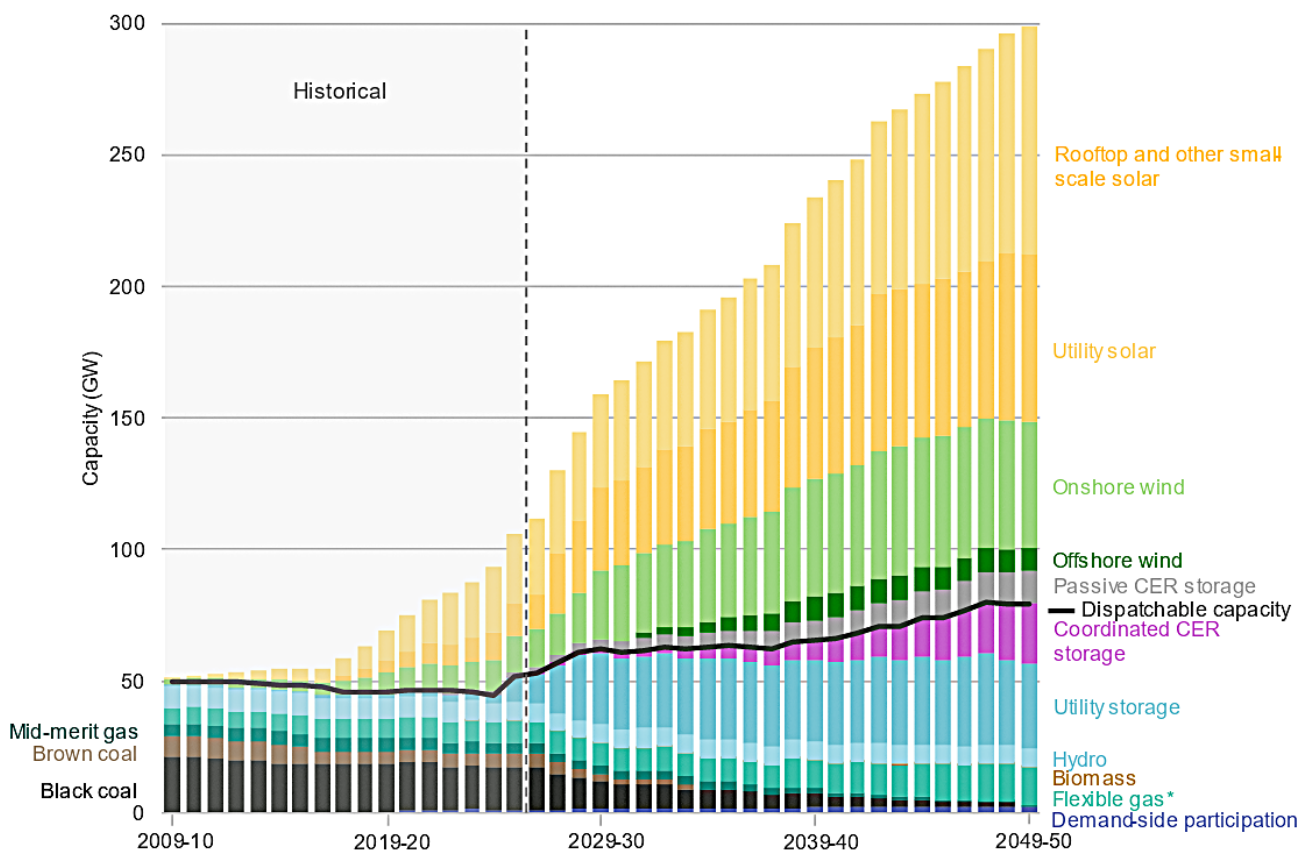
Meanwhile, in NSW about

36%

of electricity generation comes from renewable sources.

Sources: Australian Energy Market Operator, Clean Energy Council 2025.

Figure 1 NEM capacity (GW, 2009-10 to 2049-50, Step Change)



Notes: Projections for "Rooftop and other small-scale solar" and "CER storage" are forecast as outlined in the 2025 IASR. "Rooftop and other small solar" includes forecast residential and commercial rooftop photovoltaic (PV) systems as well as larger distributed PV systems referred to as PV non-scheduled generation (PVNSG) systems. "Utility solar" also includes other distributed PV systems, optimised through the ISP assessment process. "CER storage" means consumer energy resources such as batteries and EVs. "Flexible gas" includes gas-powered generation and potential hydrogen capacity.

Source: AEMO, Draft 2026 Integrated System Plan

NSW was one of the first Australian jurisdictions to commit to net zero emissions by 2050. The *Climate Change (Net Zero Future) Act 2023* commits to emissions reduction targets for NSW of 50% reduction (compared to 2005 levels) by 2030, 70% reduction by 2035 and net zero by 2050.

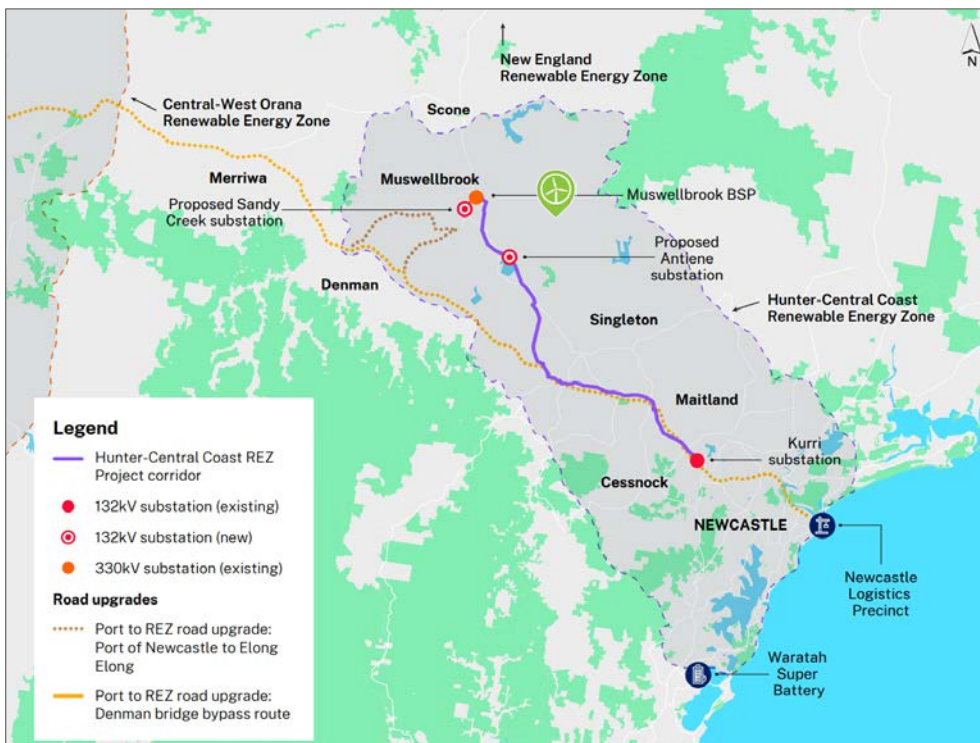
The NSW Government's plans to transition the state's electricity network are outlined in its *Net Zero Plan Stage 1: 2020–2030* and the *NSW Electricity Infrastructure Roadmap*. The NSW Government expects its plans to attract more than \$32 billion in private sector investment and support more than 9,000 jobs over the next 10 years, mostly in regional parts of the State.

The Roadmap involves development of renewable energy zones (REZ), areas that will help to deliver energy bill savings from reduced wholesale electricity costs, reduce carbon emissions, provide reliable clean energy supply, and enable strategic planning and best practice benefit sharing. To date five REZ areas have been identified. The Bowmans Creek Wind Farm site is located within the Hunter-Central Coast REZ, which was formally declared in December 2022.

The Hunter and Central Coast regions have unique features which make them ideal for a REZ, including excellent renewable energy resources, electricity network infrastructure, port and transport infrastructure and a skilled workforce. The Hunter-Central Coast REZ will ensure the region has a key role in a renewable energy future, powering existing industries and supporting economic growth.

The modernisation of the Hunter-Central Coast electricity network will assist industries to decarbonise and access cleaner, cheaper and more reliable renewable energy by connecting new renewable energy and storage projects.

The initial intended network capacity for network infrastructure in the Hunter-Central Coast REZ is 1 GW. EnergyCo's proposed Hunter Transmission Project would deliver up to 8 GW of additional transfer capacity from inland REZs to support the decarbonisation of existing industries and the growth of emerging technologies.



The *'Emissions reductions delivered by renewable energy, 2015-2025'* report published in November 2024 by the Clean Energy Council and Green Energy Markets showed that 40 gigawatts of large-scale renewables had been installed since 2015, avoiding 200 million tonnes of CO2 and resulting in emissions in Australia being 30% lower than they would have otherwise been.

'The Impact of a Delayed Transition on Consumer Electricity Bills' report by Jacobs Australia, published in February 2025, shows that renewables are the cheapest way to lower energy bills, and that power bills would increase by 30% for households and 41% for small businesses by 2030, if the rollout of renewable energy is stalled.

Scan QR codes below for more information

AEMO - Integrated System Plan (web page)



AEMO - Electricity market fact sheets (web page)



Clean Energy Australia Report 2025, Clean Energy Council (PDF)



NSW Government - Renewable Energy (web page)



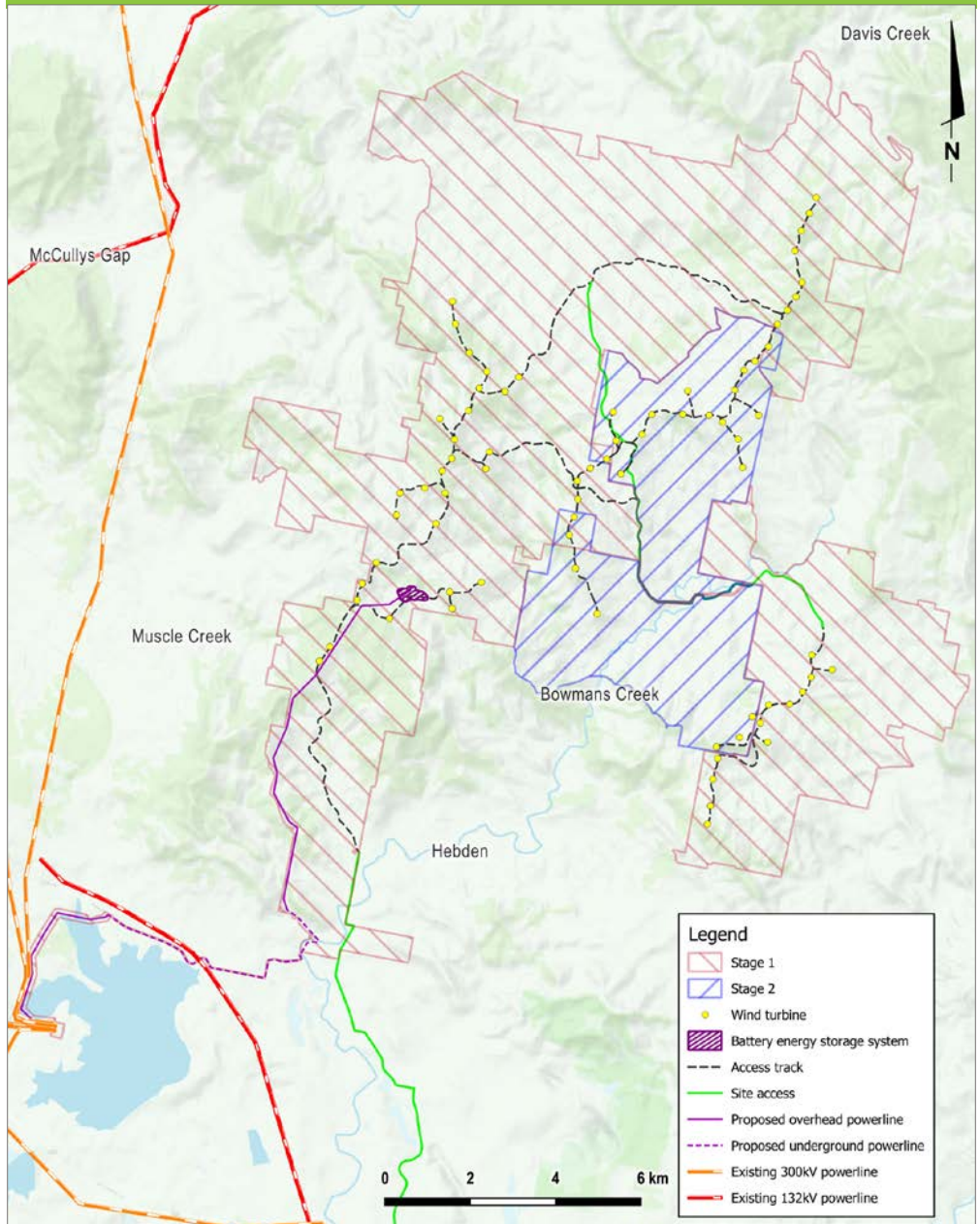
Hunter-Central Coast Renewable Energy Zone. Source: NSW Government EnergyCo www.energyco.nsw.gov.au/hcc-rez



Planning and assessment Stage 2

Utility-scale wind farms in NSW are considered State Significant Development and assessed by the NSW Government.

Bowmans Creek Wind Farm, Stages 1 and 2



The Bowmans Creek Wind Farm project area is about 12 km east of Muswellbrook and within the Hunter-Central Coast Renewable Energy Zone, in the Hunter region of NSW.

Questions and feedback welcome at any time

Ark Energy appreciates the importance of involving local stakeholders, and input from interested community members is welcome and valued.

Comments and feedback can be sent directly to the project team at any time via the details below.

Where practicable input from local stakeholders will be factored into the project's design to improve outcomes and community benefits.

1 Site selection and preliminary investigations ✓

2 Initial concept and consultation ✓

3 Referral to the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) for review under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). ✓

4 Scoping Report submitted to the NSW Department of Planning, Housing and Infrastructure (DPHI) ✓

5 Determination on EPBC Act referral by DCCEEW ✓

6 Secretary's Environmental Assessment Requirements (SEARs) for the Environmental Impact Statement (EIS) issued by DPHI ✓

7 Studies, assessments ✓

8 Finalising EIS for lodgment **WE ARE HERE**

9 Development application (DA) and EIS lodged with DPHI

10 DA and EIS on public exhibition and open for submissions

11 Response to submissions and requests for further information (if required)

12 Assessment by DPHI

13 DPHI assessment report and recommendation

14 Final determination by DCCEEW

More information

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Register for newsletters - arkenergy.com.au/mailling-list-details for email news, or to receive newsletters by post, send us your postal address and a request to be added to the mail list.

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