KIEWA VALLEY BESS FAQS

General

Q. What is proposed?

Trina Solar is proposing to construct and operate a 500MW Battery Energy Storage System (BESS) in the Kiewa Valley VIC, located approximately 3 km north-east of Dederang, on Yackandandah-Dederang Road. The purpose of the development is to assist the national electrical grid at times of peak demand and in times of emergency.

Q. Who is Trina Solar?

Trina Solar is an internationally recognised leader in solar farm developments, known for its supply of PV modules with its own manufacturing divisions of solar modules, trackers, electrolysers, and Battery Energy Storage Systems (BESS).
With local offices in Melbourne, Sydney, Perth and Brisbane, the company has demonstrated its capability to deliver renewable energy projects by developing, constructing, and operating over 8GW of solar farm projects worldwide. Trina also has a strong pipeline of new projects currently in the development and construction phase, indicating its ongoing global commitment with the transition to clean energy and reaching net zero.

With an enviable global manufacturing division, significant record of accomplishment, Trina Solar brings its demonstrated capability in renewable energy projects to the local Australian market. The company's expertise and experience make it well-positioned to play a leading role in Australia's transition to renewable energy.

Q. Why is this proposal needed? Isn't there enough renewable energy being produced in the area?

VIC has pledged to increase the state's renewable energy penetration to over 50% by 2030. This statewide initiative will create 25,996 construction and 2,162 ongoing jobs in regional Australia and will cut annual energy bills on average by $110 (for households) and $3,700 (for businesses) and reduce VIC's carbon emissions by approx. 55 million tons. Currently, the renewable energy penetration in VIC is 37.8%.

This proposal will contribute to reaching this target, create new jobs, and will contribute to electricity price reduction and carbon emissions reduction.

Q. What is a BESS?

A BESS is an energy storage system that uses a group of batteries to store electrical energy from a variety of sources, including solar. The system compensates for the intermittency of sources, providing backup power to address certain constraints such as weather conditions and lack of grid space. They are crucial to the increased adoption of dispersed energy sources and infrastructure, reducing the risk of widespread power outages. BESS's serve as a crucial type of generator, alongside synchronous machines, for maintaining system strength during both normal operation and contingencies to ensure network security.

Q. What stage is the project at?

Trina Solar is in the early investigation stages of a development application and is currently assessing the limitations and restrictions of the project through environmental assessments and stakeholder engagement. The information gathered at this stage will be compiled to ensure the development plans align with local landscape values and identity, and therefore inform the final planning permit application.

Once submitted, the Minister for Planning will decide whether to issue a development approval.

Q. Who approves the project?

Under Victoria's new Development Facilitation Program (DFP), the Minister for Planning will decide whether to issue a development approval. Decisions will be able to be made in as little as four months.

Q. When will construction commence and how long will construction take?

The construction start date is dependent on a variety of factors, including Minister for Planning approval, selecting a construction company, and receiving grid connection approvals, negotiation of a Power Purchase Agreement (PPA) and completion of the Financial Close process. Once construction contractors are appointed, works on site are to take approximately 18 months.

Q. How long will this project operate for? What will happen once the BESS reaches its end of life?

The operational life of the project is expected to be up to 20 years. After this time, the site will be decommissioned and the land rehabilitated and returned to its original use. The decommissioning process is a critical part of the development application process, and a decommissioning plan must be included for the development to be considered.

Q. What will happen to the residual land?

The residual land will remain as grazing land for the current dairy operations.

Design considerations

Q. Why has this specific site been chosen?

The development site was selected for its proximity to the Dederang terminal station — one of the largest grid terminal stations in VIC — and its minimal visual impact due to the surrounding undulating land. The site also features setbacks designed to minimise any impact on neighbouring properties, and the existing transmission lines traversing the land allow for reduced disturbance and expense to connect the BESS to electrical infrastructure.

Q. What does a BESS look like?

BESS's are container-like modular systems grouped with multiple inverter stations that are configured based on site and capacity obligations and can be compared to shipping container-like objects. The containerised form of the BESS will decrease installation and maintenance duration, enhance the electrical and environmental safety of the entire plant, and minimise the impact on the original landscape. As technology improves, the systems are becoming increasingly efficient and more compact.

Example battery container

Q. Will I be able to hear the BESS?

Like all large-scale developments, BESS facilities may generate noise, however, due to the Victorian EPA's Noise Protocol and the BESS's location, it is not expected to be heard by nearby residents or the community. The main source of the sound includes:

(1) inverter station and unit transformer,
(2) HV transformer in voltage step-up substation,
(3) cooling fans required to regulate the operating temperature of the individual battery cells.

The inverter stations are built in a containerised cabinet to reduce noise level naturally. The sound of HV transformers at fully loading conditions is lower than the existing transformer at Dederang Terminal Substation. The sound of the battery cooling load is similar to an air conditioning unit or a dull whirring noise.

The noise level will decrease with distance and can be further reduced by the installation of acoustic enclosures or barriers. Studies are ongoing to assess noise levels, the impact this may have on the area, and clear mitigation recommendations.

Q. Will there be any visual impact?

Inevitably, the installation of a BESS will have some effect on the current look of the landscape, though the BESS cubicles are unlikely to emit glare or reflection. The Development Application process consists of independent technical assessments, and visual impact will be assessed as part of this. If required, BESS facilities can be screened (by either vegetative or artificial means) to minimise any potential visual impacts.

Trina Solar is committed to working closely with the local community to address any concerns and encourages the community to approach them with any issues that may arise.

Technical

Q. How high will the units be?

BESS units will be installed on low-lying structures and are expected to not exceed 5.5m above the natural ground level. It is expected that the project area will be at the same height or lower than other existing features in the landscape.

Q. What type of BESS units will be used?

The design is still to be finalised; however, the latest technology will be used at the time of construction. BESS units also can be adapted to utilise updates in technology, and with Trina Solar being a global leader in battery research and development, they are well placed to make these adaptations.

Example inverter station

Q. How will construction traffic and road impacts be managed?

Access to the development site is anticipated to be from Yackandandah-Dederang Road. The anticipated 18-month construction period includes:

(1) An early works period like site levelling, clearing, fencing, survey, design, procurement, etc.
(2) An approximate 6-month peak period for equipment delivery, install, and civil works, and
(3) Finalisation period including testing and commissioning.

During the peak construction period, construction vehicles would range from light vehicles to 26 m B-Doubles. Light vehicles would arrive during AM/PM peaks with heavy vehicle deliveries to be spaced out during the day. Outside of this time, there will be much less transportation on local traffic.

Q. Will there be outages during construction?

There will be no outages expected during the construction phase. Trina will work closely with AusNet during the different phases of the project to minimise the impact to any distribution power line. Once the BESS is built and operational, it will help to increase the grid stability.

Environmental

Q. Are there known health risks associated with living near BESS technology?

There are no situations in which being in the proximity of a BESS can have adverse health effects. The operation of a BESS generates no emissions such as CO2 or any other harmful gases.

Q. Are batteries recyclable?

Battery manufacturing has greatly improved in efficiency and scale in the past decade, driven by the critical growth phase of battery recycling. Nearly all materials in a lithium-ion battery, including nickel, cobalt, graphite, copper, aluminium, iron, and lithium, can be recycled, with up to 99% recovery rate.

CSIRO is actively involved in supporting lithium-ion battery recycling through research on metal and material recovery processes, new battery materials development, and fostering a circular economy for battery reuse and recycling.

Australia's lithium battery recycling industry, though in its early stages, is already demonstrating progress towards a cleaner and more sustainable future, with operational recycling facilities like Envirostream in Victoria.

Q. Does it emit any radiation? Is there any risk of leaching into the local environment?

The BESS is safe and will not emit radiation. The battery is designed to prevent liquid leakage and therefore will not cause any hazardous chemical leakage to the surrounding environment.

Q. Will the surrounding land be impacted by any 'heat island' effects?

BESS units do not directly contribute to the urban heat island effect, as they do not generate any heat on their own, however; they can indirectly affect the urban heat island effect depending on their location and only temporarily through their construction management.

As the Kiewa Valley BESS will be in a rural area, the surrounding environment is not known to be a direct contributor to the heat island effect given its low density of human-made urban structures. Therefore, the combination of the BESS location with the surrounding environment will not pose a risk of contributing to the 'heat island' effect.

Q. What happens in the case of a chemical spill?

BESS facilities are designed to manage chemicals and avoid chemical spills on site. Batteries have an IP (Ingress Protection) rating that consists of two numbers. The first indicates the protection against solid objects, and the second indicates protection against liquids. The Kiewa Valley BESS has a protection level of IP67; '6' meaning complete protection against dust ingress (dust-tight), and '7' meaning protection against immersion in water up to 1 meter depth for 30 minutes.

The liquid-cooled bottom plate of a battery pack can prevent spills and the container is sealed from bottom side to avoid any leak. In the unlikely event of a leak, containment measures such as bunding (a form of secondary containment consisting of a raised, impermeable barrier used to retain liquids), spill trays at the BESS foundation, and chemical absorbents are in place to capture materials on site.

Q. Do batteries increase fire risk?

The Proposal will not increase the risk of bushfires in the area. The BESS plant will be located more than 120 m outside of the Bushfire Management Overlay boundary (an area where there is a bushfire hazard).

The project layout and design will be compliant with latest CFA design guidelines and model requirements for renewable energy facilities in terms of clearance, accessibility, firefighting water supply, fire break buffer zones, and so on.

Trina Solar will work closely with the relevant fire service agencies to confirm access requirements for the BESS if there is a bushfire that moves into the area, or if a fire starts in the BESS. Management Plans will be produced prior to construction commencing that will include site-specific Fire, Risk and Emergency Management Plans to address the management of potential fires during construction, operations, and decommissioning.

Trina Solar will continue to seek and take guidance from the CFA to ensure the final design meets all requirements and standards.

Q. Do the batteries have their own fire suppression capabilities?

The Kiewa Valley BESS will be designed with a multi-level approach to fire suppression:

Example battery cell

Equipment level:

(1) The battery cell features a gas outlet hole designed to release internal pressure in case of a fault like a short-circuit or overheating. This safety measure helps mitigate further damage to the battery.

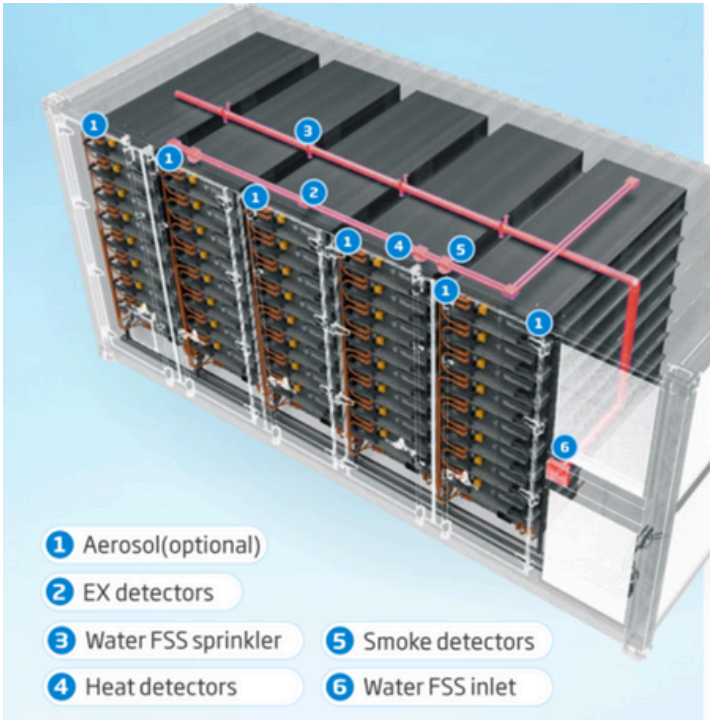
(2) Within the battery pack (image to the left), multiple battery cells are housed in an enclosed structure equipped with a signal interface. This configuration serves the dual purpose of fire prevention and continuous monitoring for potential issues.

(3) Each battery container (see below image) has a built-in liquid fire suppression system, combustible gas detection system, active ventilation system, and aerosol fire extinguishing system. Internally, the design ensures optimal heat distribution within the cabinet and maintains a strict isolation between the coolant and the electrical circuitry.

Control and plant level:

(1) All sensors and equipment at different levels are connected to a monitoring system called BMS and the plant's supervisory control and data acquisition (SCADA) system. If there's a problem like overheating or a fire, these systems will send out signals like an alarm. This alarm can be sent to a phone number or email address that's been chosen beforehand, so someone can respond quickly, day or night.

(2) The BESS will have an automatic shutdown control for safety. If there's a problem with any part of the battery system — whether it's the electricity, heat, or chemicals — the system can shut down automatically to prevent any accidents. The inverter, which helps generate electricity, also has an alarm system to stop it if there's a problem. The SCADA system can be programmed to turn off the battery system if there's an alarm.



Example battery container - inside view

Q. Is the site affected by flooding?

Assessments completed to date indicate that the site is not flood-prone. In the unlikely event of stormwater flooding, where water may pool from heavy rainfall events, BESS infrastructure is expected to remain stable.

Social and Economic

Q. How many jobs will be created by the construction and operation of the project?

Employment opportunities will range from skilled to manual labour, with an estimated 50 full time equivalent (FTE) construction jobs at peak construction, and up to 10 contractors annually. Using qualified local contractors is always a key element for Trina when developing a project, and they intend to work with local service and product suppliers to boost the local economy.

Q. What other benefits will the community receive?

As the project will be operating for 35 years, Trina is committed to delivering long-term investment in the regions and the communities in which they operate. Engaging with the community is essential and ensures that the project offers mutually beneficial economic and social outcomes.

Trina will be continuing to engage and update all stakeholders that have an interest in – or may be impacted by – the project and will use information gathered to develop the most appropriate community benefit programs that foster positive outcomes and provides value to the local community.

Benefits will also include potential road or intersection upgrades, diversified income within the community, and clean, zero-emissions electricity to meet the region's energy needs.

Q. Will there be always a contact onsite in case of emergency?

There will be a 24/7 contact and other staff members will be based near the project. The project will also be monitored continuously by remote CCTV.

Q. What is a Power Purchase Agreement (PPA)?

A power purchase agreement or a PPA is simply a contract to buy power at a specific price. The 'Seller' in this type of agreement is usually a utility-scale generator e.g. solar, BESS and wind farms. The 'Purchaser' in this type of agreement will have significant electricity requirements which allow them to purchase all or some of the output of a project.

Examples of buyers include utilities, governments, and major corporates. Examples of companies that have entered into PPAs across Australia include Telstra, Mars, Blue Scope Steel, Snowy Hydro, UNSW, and Coles, with many others considering this option.