
Volume I

Chapter 2

Project rationale

2 Project rationale

This chapter describes the rationale for the project – the reason why it is needed. This chapter includes details of:

- The energy transformation occurring across the NEM and how the project will play a part in the transition from coal and gas fired power to renewable energy generation.
- The key benefits of the project.

2.1 Supporting energy transformation

Australia's eastern and south-eastern states operate as an integrated NEM, with five regions (Victoria, Tasmania, Queensland, New South Wales including the Australian Capital Territory, and South Australia) able to trade electricity across boundaries depending on available supply and demand.

The NEM is experiencing a rapid transition from dependence on fossil fuels toward a low emissions power system. Significant investments in generation, storage and transmission and system services are required to facilitate this transition (AEMO 2022).

In its role in maintaining and improving system security and reliability in the NEM, the AEMO publishes an ISP every two years. The ISP is a 'whole-of-system plan for the efficient development' (AEMC 2022) of the NEM that achieves 'power system needs' (AEMC 2022) such as reliability and security. In the 2022 ISP, AEMO forecast the withdrawal of 14 gigawatts (GW) of the current 23 GW coal capacity in the NEM by 2030. This trajectory also suggests that all coal capacity could close as early as 2040. This presents technical challenges in maintaining reliability and security in the NEM, as coal currently makes up more than half of the NEM's supply capacity (AEMO 2022).

The ISP suggests that the share of renewable energy sources (e.g., solar and wind) of the total annual energy generation is expected to rise to 83% by 2030-2031, 96% by 2040 and 98% by 2050 (AEMO 2022). As renewable energy sources become the dominant source of generation, dispatchable resources are required to address the effect of variable weather conditions and therefore energy generation. The retiring coal capacity will need to be replaced with low-emission, dispatchable alternatives such as large batteries and pumped hydro storage to support a reliable and secure NEM.

A range of different storage types are required to complement variable renewable energy developments to manage the daily, weekly and seasonal balance of energy availability and energy consumption (AEMO 2022). Pumped hydro storage provides the large-scale and longer duration storage required to absorb excess generation within the system when available, store this energy and dispatch it in peak times or when renewable energy generation may be lower. The AEMO acknowledges the important contribution of this storage in managing seasonal and long duration variations in renewable resource availability, particularly as the ability of coal to provide these services decreases (AEMO 2019).

Tasmania has significant renewable energy generation potential, which outweighs current demand within Tasmania. The Tasmanian Government has also legislated a target to double renewable energy generation in Tasmania by 2040 (Rockliff J, Barnett G 2020). Not only are Tasmania's renewable energy and storage capacity resources abundant, but they have also historically been cost-competitive when compared to similar developments on mainland Australia.

Energy trading between Tasmania and other NEM regions is currently made possible by Basslink, a 600 MW HVDC interconnector between George Town in Tasmania and Loy Yang in Victoria. Available capacity on Basslink is often highly utilised, restricting the amount of energy transmission between Tasmania and the other NEM regions.

The project will substantially increase the capacity for energy trading between Tasmania and the rest of the NEM, allowing for surplus renewable energy generation above the current Basslink capacity to be available to the NEM. The additional transmission capacity will also allow storage of surplus renewable energy from the mainland when available, and dispatch of stored energy in times of high demand or low renewable energy output.

The project provides the infrastructure to unlock Tasmania's renewable energy and energy storage capacity, delivering power system security, reliability, and affordability required for the NEM.

2.2 Key benefits of Marinus Link

The key benefits of the project are:

- Significant enabler of energy transition to renewable energy generation through better access to hydro resources, wind generation and future pumped storage in Tasmania.
- Increased resilience for Tasmania, with additional trade capacity and reduced reliance on the single existing interconnector.
- Wholesale energy cost reductions in the NEM.
- Economic benefits through construction and operations.
- Increased telecommunications capacity and resilience between Tasmania and mainland Australia, with the potential for the creation of a data hub in Tasmania.

These are described in further detail below.

2.2.1 Energy transition

The project provides the additional trading capacity between Tasmania and mainland Australia to support the transition of the NEM to a lower emissions system, while maintaining a secure and stable power system. The additional transmission capacity allows for higher amounts of renewable energy in the NEM, while providing firming capacity (i.e., 'deep storage') to replace the current stabilising function of coal fired generation. These benefits support a low emission energy future and the Commonwealth Government's reduction target of net zero by 2050 (Albanese A, Bowen C 2022).

Further to the system stability and security offered by the additional transmission capacity, the transmission technologies proposed for the project are more controllable and capable of providing power system stability services beyond what is currently achievable from Basslink (TasNetworks 2019).

2.2.2 Improving Tasmania's energy security

Tasmania's energy security is challenged by issues arising from the reliance on a single interconnector across Bass Strait (Basslink). A second link that is geographically separate to Basslink will provide Tasmania with increased resilience in the event of a failure of Basslink. The additional trade capacity will also encourage additional renewable energy development and help meet Tasmania's total energy needs.

The project will enable the continued trading, transmission and distribution of electricity within the NEM. It will also reduce the risk of a single interconnector failure across Bass Strait and complement existing interconnector infrastructure within the wider NEM.

2.2.3 Energy cost reduction

The project contributes to energy cost reduction in the NEM through multiple channels, including:

- Reducing the capital cost of future generation, energy storage and transmission augmentation by using existing infrastructure to its' full potential (i.e., Tasmanian wind and hydro power).
- Increased development and availability of relatively low-cost renewable energy capacity.
- Reducing reliance on expensive gas generation to provide dispatchable energy.

2.2.4 Economic benefits

Modelling completed by Ernst & Young (2023) demonstrates that the construction and operation of the project will provide \$1.47 billion in economic contribution for Tasmania and \$1.78 billion in economic contribution for Victoria. The project is also predicted to support the following jobs during peak construction:

- Stage 1: 673 jobs per year in Tasmania and 857 jobs per year in Victoria.
- Stage 2: 643 jobs per year in Tasmania and 818 jobs per year in Victoria.

The construction and operation of the project and associated network augmentation, coupled with induced investment, is expected to support jobs across a wide range of industries, education levels and occupations. These include those physically involved in the building and installation process, such as carpenters, plumbers, welders, metal workers and support workers. Indirect jobs in the building and installation process include cost estimators, engineers, financial advisors, technicians, construction managers, surveyors, architects, safety and incident support staff. Core jobs in the operations phase include safety and incident support staff, operations and maintenance managers, plumbers, welders and other maintenance staff, corporate and financial staff, and asset managers.

Further details of the economic benefits of the project are provided in Volume 1, Chapter 7 – Economics.

2.2.5 Telecommunications capacity

The project will also provide additional telecommunications capacity and resilience through construction of a fibre optic cable, which will be bundled with the interconnector. The Marinus Link telecommunications cable will increase Tasmania's current optical fibre capacity by 150 times.

There is also the potential to create a data hub in Tasmania that would utilise the increase in telecommunications capacity from the project.