



# Tasmanian Renewable Energy Alliance

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## A green light for Marinus?

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### Summary

The release of the Project Assessment Conclusions Report (PACR) for Project Marinus is an important point in the analysis of the project but it is not in itself a green light for the project to go ahead and it does not guarantee that the project is a viable investment and says nothing about how the project will be paid for.

The economic modelling done for the PACR show benefits exceeding costs across the whole NEM for a range of scenarios. However 'perfect foresight, least cost' modelling is a long way from the reality of how developments take place in the real world.

As with any modelling, the benefits are highly dependent on input assumptions. The modelling assumptions closely follow those in the market operator's 2020 Integrated System Plan. However historical evidence suggests that traditional modelling consistently understates how rapidly costs can fall for new distributed technologies such as solar PV, battery storage and electric vehicle integration with the grid. Despite the rigour of the costing estimates for Marinus, large engineering projects are often subject to cost increases and unexpected complications.

Despite the unresolved issues around who pays for the Marinus project, the political momentum behind the project suggests that it is likely that some combination of partial solutions to the issues of uncertainty and financing will lead to the project being contracted either on or before the current Final Investment Decision target date of December 2023.

### What is the PACR

The PACR is the last of the three stages of the Regulatory Investment Test - Transmission (RIT-T), an assessment structure administered by the Australian Energy Regulator (AER) to assess whether a proposed investment in transmission infrastructure should go ahead (because it has a net benefit for electricity consumers).

The PACR produced by TasNetworks reports conclusions after consultation undertaken in the earlier stages and will not be subject to any further consultation.

### How are the benefits and costs of Marinus modelled in the PACR?

The cost-benefit analysis of Marinus is a combination of two separate processes, costs estimates as developed by TasNetworks and Jacobs, and market benefits as calculated by consultancy EY.

Costs have been estimated at \$3.5bn for two 750MW links including associated transmission infrastructure in Tasmania and Victoria. While major capital projects often end up being over budget, these costs are based on detailed discussion between the Marinus team and potential suppliers. Both land based transmission lines and underwater HVDC cables are now fairly mature technologies and there is no reason to anticipate major cost increases.

As with any economic modelling, to understand how much confidence to place in the modelled benefits it is important to understand both the modelling methodology used and the assumptions used in the model. Most of the assumptions used in the EY modelling are the same as those used by the Australian Energy Market Operator (AEMO) in the development of their 2020 Integrated System Plan (ISP).

The modelling software used by EY is a proprietary internal product. They describe it as a Time-Sequential Integrated Resource Planning (TSIRP) model that is used to calculate “a least-cost, whole-of-NEM, hourly time-sequential dispatch and development plan spanning 30 years from 2020-21 to 2049-50.”

This very detailed model calculates, for each hour over a 30 years span, what combination of existing and new-build generation should be used to minimise the total cost of electricity generated. It takes into account many of the real-world constraints on the operation of the National Electricity Market (NEM) including expectations of weather, generator availability, retirement of coal fired power station (either because they have reached their end of technical life or are no longer economic to run) and electricity demand in each region.

The approach is described as ‘perfect foresight’ model in that it assumes that future demand will be known and it assumes that the cheapest overall generation will be used to meet this demand. This includes building new generation knowing when it will be needed, either because it is cheaper than using existing generation or because existing generation cannot meet demand.

## How does the National Electricity Market actually work?

The market theory behind the operation of the NEM is that private companies or public entities will build electricity generation and storage capacity (whether based on coal, gas, wind, solar or hydro) when they anticipate that the price they will receive for the electricity over the life of the capacity is a worthwhile investment taking into account the upfront and operational costs of the capacity.

In reality a number of factors diverge from this pure economic model:

- State governments set renewable energy targets and encourage the building of new solar and wind capacity based on environmental benefits, anticipated job creation and the need for extra security of supply in anticipation of retirement of coal fired power stations.
- The Federal Government has invested heavily in buying the NSW and Vic share of Snowy Hydro and committing to the Snowy 2.0 pumped hydro development.
- The Federal Government has committed to a new gas fired power station and has encouraged the building of new coal fired power stations.
- Households and businesses invest in distributed solar PV, batteries and electric vehicles (EVs) based on various factors including the financial benefit to themselves. Surplus exported solar PV is already contributing significantly to the operation of the NEM. Future uptake of household batteries and EVs will add significant storage capacity to the grid but these investments are not determined mainly by the economics of feeding energy into the market.

The ‘perfect foresight’ approach taken in the Marinus modelling is more akin to a central planning model and does not match the reality of a dynamic market in transition with many levels of uncertainty.

## Who will pay for Marinus

The EY modelling predicts that, on the basis of its input assumptions, the cost of generating electricity nationally would be lower if Marinus was built than if it was not. In a normal RIT-T process it would be assumed that if a transmission project between two regions had a net benefit this benefit would be to both regions and the default assumption is that the cost would be shared equally and paid by electricity consumers in both regions.

(This is the approach for a ‘regulated asset’. An alternative would be that private investors build the interconnector and make a profit by charging for its use or use it to trade electricity profitably between the two regions. No-one is suggesting that this will happen for Marinus. While in theory the project may be beneficial, the size of the investment and the risks resulting from uncertainty about the future operation of the NEM are almost certain to discourage private investors.)

Marinus is different to other interconnectors in Australia in that the modelled benefits of its operation occur throughout the NEM<sup>1</sup>. Since Tasmania is basically already self-sufficient in renewable electricity and has substantial storage capacity in its dams, the project provides little benefit to Tasmanian electricity users. (Although there *is* an argument that the construction of Marinus, together with the wind and pumped hydro projects provide an economic and job creation benefit to Tasmania.)

TasNetworks has been arguing for a change to the arrangements for paying for transmission infrastructure to reflect this situation. The initial RIT-T proposal included an appendix [TasNetworks 2019] which proposed a ‘beneficiary pays’ mechanism for inclusion in the RIT-T process for new interconnectors.

TasNetworks’ submission to the Energy Security Board’s post-2025 Market Design review [TasNetworks 2021a] raises the possibility of a ‘ministerial Rule change’ as well as the possibility of a ‘national investment package’ to support interconnectors as part of the market transition.

The PACR states:

*“The pricing issue is being progressed by the National Cabinet Energy Reform Committee, ... We are continuing to work with the Commonwealth and state governments to deliver a fair pricing outcome.”* [TasNetworks 2021b, p.20]

Recently reported statement by the Tasmanian Energy Minister [Maloney 2021] suggests this will be discussed at the August meeting of this committee.

Senior Marinus team members have consistently stated that the project will not go ahead unless the cost allocation issue is resolved satisfactorily.

## Is it a green light?

In principle Marinus Link would not proceed unless the cost allocation issue is resolved. A clear cut rule change to change pricing arrangements in the NEM to reflect modelled benefits is unlikely, however a number of partial solutions might be possible which would see the project proceed.

The federal government has already demonstrated preparedness to invest directly in energy market developments outside the traditional market model of the NEM. Recent examples include the \$6bn purchase of the Victorian and NSW owned portions of Snowy Hydro, the accelerated development of the Snowy 2.0 pumped hydro project, the commitment of \$600m to build the Kurri Kurri gas-fired power station in the Hunter Valley and the ongoing discussion of investing in new coal fired power generation.

Even if the traditional economic analysis of the Marinus project was not beneficial there is also a case that it provides, in effect, an insurance policy against uncertainty in the NEM. The Marinus economic analysis assumes an orderly retirement of existing coal-fired power stations based mainly on their technical life and economic viability. However there is a distinct possibility that generators will cease operation early, either as a result of breakdowns which are too expensive to fix, or because the increase in cheap renewable energy makes them uneconomic faster than currently anticipated [TasNetworks 2021, p13-14].

Building the Marinus link to a faster timetable than indicated by existing economic analysis also makes it more feasible to retire coal generators early as a way of reducing greenhouse gas emissions.

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<sup>1</sup> Benefits by NEM region for Central Scenario. Figure 1 in Wholesale Pricing Impacts paper: NSW 38%, Vic 28%, Qld 20%, SA 8%, Tas 6%.

Experience shows that once major infrastructure projects have been widely researched and statements made about their benefits, it becomes politically difficult to decide *not* to proceed, even if changing conditions mean that anticipated benefits are less than originally expected. This was arguably the case with Basslink the first Tasmanian interconnector.

In theory a final investment decision to proceed with Marinus is not due until the 2023-2024 financial year, probably by December 2023. However investments to date and political factors may lead to an earlier decision, or a decision to proceed at that point despite uncertainties.

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