Tasmanian Renewable Energy Alliance

www.tasrenew.org.au

221 Main Rd, Derwent Park TAS 7009

eo@tasrenew.org.au (0407) 486-651

A submission in response to the Marinus Link Regulatory Investment Test for Transmission Supplementary Analysis Report

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by email: team@marinuslink.com.au

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Summary

TREA welcomes the opportunity to comment on the RIT-T Supplementary Analysis Report.

Decisions about large scale investments in a national electricity system facing rapid transition are inherently risky and complex. AEMO and Project Marinus have worked closely together to document, model and test assumptions about possible different development paths. Despite these efforts we are concerned that assumptions still favour traditional technologies and large projects in a world which is rapidly moving towards more flexible and decentralised technology and smarter controls to match electricity supply and demand.

In order to test the benefits of the very large long term commitments required for Marinus Link and Battery of the Nation we are requesting both additional modelling and more information on the outputs of these models. This is essential to understanding whether the proposed investments are the most effective way of meeting the objective of least cost, most reliable electricity while addressing the need for rapid decarbonisation to mitigate climate damage.

We are requesting additional modelling to test the business case for Marinus taking into account:

- the initiatives being taken by state governments to progress renewable electricity generation and storage within their own jurisdictions
- the potential for demand response initiatives to match electricity supply and demand in a NEM with much greater penetration of variable renewable energy (VRE)
- the possibility that costs of large scale battery storage continues to be overstated (particularly in relation to replacement costs over decades).

We are also requesting that more information be provided on:

- the sensitivity of the business case to possibilities outlined below that are outside the current 'step change' assumptions
- the modelled demand for storage over durations longer than 8 hours
- the detailed make-up of the components of the modelled benefits of Marinus.

About TREA

The Tasmanian Renewable Energy Alliance represents solar sales and installation companies in Tasmania, as well as other developers of small scale renewable energy project. We provide services to members and a united voice for the renewable energy industry in dealing with government and regulatory agencies. Our broader aims also include promoting the development and use of renewable energy in Tasmania.

Context

TREA welcomes the opportunity to comment on the RIT-T Supplementary Analysis Report. We are highly appreciative of the transparent way in which this process has been conducted, including the release of underlying assumptions, the publication of the public consultation forum (TasNetworks 2020b) and the personal briefing and follow up information provided to TREA by Marinus staff.

The fact that the Supplementary Analysis Report has been brought into line with the final AEMO 2020 ISP also assists with informed and consistent public analysis of this complex issue and is much appreciated.

Assumed projects

We understand that in preparing ISPs, AEMO assumes that announced state government projects will go ahead. In particular the inclusion of the Tasmanian Renewable Energy Target (TRET) and the associated decision point based only on the fact that the TRET is legislated has the effect of preloading the planning

assumptions with the an additional 10,500 GWh of variable renewable energy (VRE) per year that is largely surplus to Tasmanian requirements.

As noted in Climate Tasmania's briefing on the TRET legislation (Climate Tasmania 2020), the legislation does not provide any mechanism (other than sharing information and reporting) for ensuring that the anticipated extra renewable electricity generation is built.

This creates a self-reinforcing loop of assumptions: the legislation implicitly assumes that Marinus will be built, the ISP assumes that the generation will be built, the ISP assumption that the generation will be built adds to the business case for building Marinus.

As far as we are aware, the cost of building additional wind generation in Tasmania is not factored into the business case for Marinus. It might be argued that there will be no public cost for new privately developed wind farms and that the investors will proceed based on the assumption that their output can be sold on the mainland. As documented in the Climate Tasmania briefing, the two most recent wind farm developments in Tasmania have in fact been supported by contracts entered into by state owned energy GBEs at costs which are listed as onerous or as a community service obligation entered in to at the instructions of the state government.

Who will pay for the new transmission infrastructure necessary to carry this generation to the Marinus converter station also does not appear to be resolved.

Since the ISP was developed the NSW state government has announced an ambitious energy plan with a budget of $50 million to support up to 3 GW of pumped hydro projects (NSW Gov 2020, p.22). This is in addition to the 2 GW anticipated to be available from Snowy 2.0. The first of three priority renewable energy zones (Central-West Orana) is anticipated to support 3 GW of new generation.

In order to bring the modelling of the business case for Marinus up to date with these announcements we believe the proposed NSW projects should be included in the modelling. Any other announced state targets involving renewable electricity *and particularly storage* should also be factored in for consistency.

Assumption of the need for deep storage

We would like to understand the basis of the difference between the Marinus business case set out in the Supplementary Analysis Report and the apparently contradictory finding in Mountain and Percy (2020, p.5) that:

> *"1,500 MW of four-hour battery can be provided for less than half the cost of Marinus Link. The same capacity of six-hour battery can be provided for 79% of the cost of Marinus Link and 1,500 MW of eight-hour battery storage is still cheaper than Marinus Link."*

The key difference appears to be in the modelled need for greater than 8 hours storage. Since we understand that both the Supplementary Analysis Report and the Mountain and Percy modelling are based on the assumptions behind the 2020 final ISP we would like to see some analysis of how the need for longer term storage is calculated. As we argue below, a relatively rare shortfall of generation is likely to be met more cost effectively by demand response mechanisms than the building of large scale storage and transmission infrastructure.

It should also be noted that the batteries to provide firming of VRE on mainland Australia would be located on the mainland and therefore the cost comparison should be for batteries alone versus the cost of both Marinus Link and Battery of the Nation pumped hydro.

Battery cost assumptions

Most of the assumptions about battery costs in the Supplementary Analysis Report seem reasonable. We note that AEMO ISP cost curves are used which are at the lower end of NREL figures (p.51 of the Supplementary Analysis Report).

One area which we question is the assumption that a total replacement of a battery installation is required every 20 years. A more likely scenario if battery degradation turns out to be a serious issue is re-powering (ie balance of plant does not need to be replaced and the cost of repowering is the replacement cost - new cells minus any residual value of the old cells).

Assumptions about demand response

We understand that the assumptions about the available capacity of demand response are taken from AEMO's assumptions for the ISP but that AEMO is working to further refine these.

There is a direct relationship between the assumed need for deep storage and the opportunity for demand response. If deep storage is only required a few times a year in periods of extended VRE drought then the premium available to balance supply and demand via demand response is correspondingly high.

Demand response opportunities exist via a variety of mechanisms and sectors:

- Simon Holmes à Court (Holmes à Court 2020b) has calculated that retrofitting currently available heat exchange technology to the existing aluminium smelters in Australia would provide flexible demand management equivalent to 625 MW of firm generation and 109,375 MWh of energy storage at much lower cost than existing batteries and proposed pumped hydro.
- Many organisations (most notably AGL) are developing virtual power plants (VPP) that are able to aggregate domestic batteries, electric vehicle charging and discharging, and control of industrial processes to provide both demand response and energy injection.
- A large scale roll out of electric vehicles combined with dynamically controlled charging and discharging could have the capacity to make available up to 450 GWh of storage (mainly over shorter time frames). (Attwater 2017)

Requests

Requested additional modelling

We would like to see a direct comparison between two options, both based on the step change scenario:

- With all announced mainland state projects but with no Marinus link (and therefore no need for Battery of the Nation or additional wind generation in Tasmania)
- With Marinus Link at 750 and 1500 MW and all associated projects (mainland and TRET)

Sensitivity analysis should be applied to model outputs to test the likely impact of the highest feasible development of demand response using available and foreseeable technologies.

Given that the modelling used in the Supplementary Analysis Report was conducted by EY using proprietary software, it would be desirable for the modelling (including the assumptions and the detailed outputs) to be independently reviewed by AEMO to check for consistency and highlight any unanticipated outputs.

Requested detail on benefits

As well as requesting that additional modelling be carried out to reflect the above scenarios, we request that more detail be provided on the outputs of the modelling. In particular:

- How often is it expected that deep storage will be utilised that is greater than can be provided cost effectively by batteries.
- More detail on the makeup of the various benefits identified on p.65 of the Supplementary Analysis Report. In particular we note that the most recent modelling by EY does not assume any new build of gas fired generation (although increased use of existing gas fired plant). We would therefore like to understand what are the 'deferred and avoided capital costs' that make up the largest component of the modelled benefits.

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