MARINUS LINK

How do customers benefit from Project Marinus?

Summary Report 2024

TasNetworks
Delivering your power

This document has been produced by Marinus Link Pty Ltd and Tasmanian Networks Pty Ltd, ABN 24 167 357 299 (hereafter referred to as "TasNetworks").

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1. Summary

In late 2023, Marinus Link Pty Ltd (**MLPL**) engaged independent global consulting firm, FTI Consulting LLP (**FTI**), to consider the impact that Project Marinus is expected to have on customers across the National Electricity Market (**NEM**). This represents an update to a similar study carried out by FTI in 2020 and is being undertaken due to the significant changes in NEM forward outlook that have occurred in the last 3 years. Both studies have focussed on customer benefits: how Project Marinus would affect the electricity prices that customers pay compared to a counterfactual case 'without Project Marinus'.

Conclusions and implications

FTI's updated analysis of customer benefits is based on market modelling, using inputs, assumptions and policy scenario settings that are broadly consistent with the Australian Energy Market Operator (**AEMO**) 2023 Inputs, Assumptions and Scenarios Report (IASR), focussing on the Step Change scenario. Key findings and implications are:

- Consistent with FTI's previous customer benefits analysis, FTI's latest study indicates that Project Marinus is expected to materially reduce wholesale prices in all NEM regions. The largest average wholesale price reductions during the 2031-50 study period occur in Tasmania ($20-22/MWh reduction[1]) and Victoria ($17-20/MWh reduction).
    - Project Marinus provides material downward pressure on wholesale prices due to the additional Tasmanian generation it unlocks (high quality wind and pumped hydro resources, as well as better access to the existing hydro fleet), coupled with the benefit of displacing higher-priced generation (largely gas-fired generation and demand response).
    - The effect of the reduction in wholesale electricity prices is expected to equate to an annual $148 to $165 reduction in the wholesale energy element of customer energy bills in Tasmania and $70 to $78 in Victoria relative to the Without Project Marinus counterfactual. Project Marinus is also expected to reduce wholesale energy element of customer energy bills in all the other regions of the NEM.
- FTI's updated assessment estimates net customer benefits[2] from Project Marinus to be $10.0-12.5 billion[1] over the study period of 2031-2050.

[1] Range is based on results across 2 different scenarios; more details on these scenarios is provided later in this report.

[2] Net customer benefits are calculated as the gross customer benefit arising from lower wholesale cost minus Project Marinus cost and interconnector residues.

- Net customer benefits have increased relative to the 2020 study, which estimated net customer benefits of $5.4 billion (in 2020 dollars)[3]. Changes in the forward outlook since 2020 include more rapid exit of coal-fired generation, faster entry of renewable generation and higher fuel costs (reflecting changing market conditions and inflation).

2. Purpose and scope of this report

The purpose of this summary report is to provide a high-level summary of the results of modelling work undertaken by FTI consultants[4] on behalf of MLPL, which assesses how NEM customers would benefit if Project Marinus proceeds. FTI's report is published alongside this summary report and provides more details on the inputs, assumptions, methodology and results of their study.

This work represents an update to a similar assessment carried out by FTI in 2020 and is being undertaken due to the significant changes in NEM forward outlook that have occurred in the last 3 years. In particular, the rapid transformation taking place across the NEM means that many of the input assumptions adopted in the 2020 study – including expected government policies, market developments (including the timing of coal plant closures), and new generation/storage projects – no longer reflect the latest available information.

FTI's modelling approach differs in two respects from the analysis presented in our 2021 Project Marinus Project Assessment and Conclusions Report (PACR)[5] and AEMO's Integrated System Plan,:

- FTI focuses exclusively on the impact of Project Marinus on customers, rather than also considering the impact on other market participants, i.e. generators, across the NEM; and
- FTI's modelling takes account of generators' likely bidding behaviour, rather than assuming that generators' bids will always reflect their marginal costs.

Specifically, FTI's modelling approach is targeted to address the question of whether and how much customers can expect to be better off through reduced wholesale electricity prices if Project Marinus proceeds compared to a situation in which it does not. This analysis differs from the Regulatory Investment Test for Transmission (**RIT-T**), which considers the net economic benefit to all those who produce, consume and transport electricity – without specifically considering how the proposed project will affect customers.

[3] Net customer benefits across the different studies are not directly comparable due to different price bases and different modelling period.

[4] FTI Consulting is an independent global business advisory firm.

[5] The Project Marinus PACR adopted the market-wide cost benefit assessment that is embodied in the RIT-T.

3. Background and key assumptions

Project Marinus is a staged 1500 MW high voltage direct current interconnector between Tasmania and Victoria, including supporting high voltage alternating current interconnector transmission developments in Tasmania. Our project assessments have consistently shown that a 1500 MW capacity interconnector, constructed in two 750 MW stages, maximises the potential value from the interconnector.

The complementary components of Project Marinus are the North West Transmission Developments (NWTD) in Tasmania, which are being progressed by TasNetworks. The NWTD include new and upgraded overhead transmission lines that will link Cressy, Burnie, Sheffield, Staverton, Hampshire, and East Cam. These new and upgraded transmission lines are required to support the interconnector capacity to be provided by Marinus Link.

Key modelling assumptions: FTI's report outlines the inputs, assumptions and scenarios that have been employed in the updated customer benefit analysis. Where possible, this information is consistent with data and assumptions set out in AEMO's 2023 Inputs, Assumptions and Scenarios Report (IASR)[6], largely in line with the 'Step Change' scenario. Where other data or assumptions have been adopted, the reason for using that information is explained in FTI's report.

Marinus Link timing: for the purposes of this modelling exercise, FTI assumes the first cable to be in operation by 2030, with the second cable assumed to be in operation from 2033. The timing for operation of the second stage is under review and continuing to be informed by AEMO's 2024 ISP and subsequent ISPs.

Competition benefits: to estimate wholesale prices, FTI uses a "Bertrand" pricing methodology, which assumes that generators have, over time, learned or understand their position in the merit order and increase their bid to just below that of the next generator in the merit order. This typically results in market prices that are higher than the short run marginal cost of production of the marginal generator and is more reflective of actual NEM spot market outcomes. FTI uses this approach as it has found that it reflects more accurately actual bidding behaviour of generators in the NEM.

Project Marinus dependent supply: FTI assumes that introducing Project Marinus will unlock a combination of upgrades to existing hydro capacity (390 MW), new pumped hydro (750 MW), and additional high capacity factor wind (600 MW). With two Marinus Link cables, FTI assumes that the Tasmanian Renewable Energy Target (TRET)[7] is met given the additional export capacity that Project Marinus provides.

Scenarios: FTI carried out its assessments across a range of demand scenarios given there is material uncertainty around projected electricity demand in Tasmania across AEMO's forecasting scenarios.

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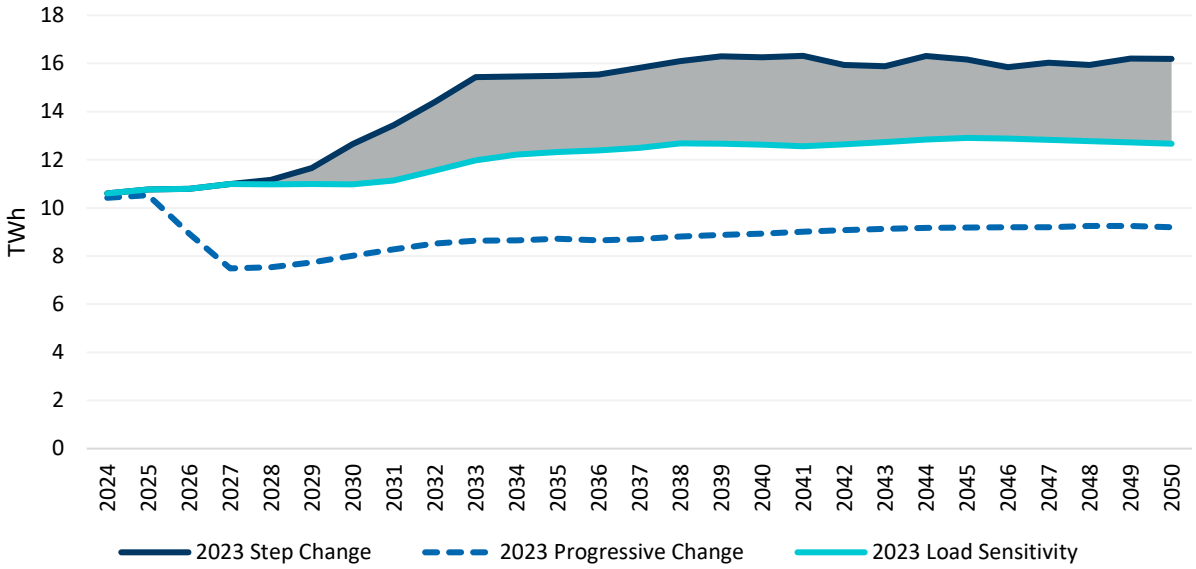
[6] https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf?la=en

[7] FTI assumes meeting TRET requires 21 TWh of renewable generation by 2040.

FTI modelled AEMO's 2023 Step Change scenario and a Load Sensitivity with reduced Tasmanian electricity demand (**Figure 1**).

Figure 1: FTI's assessment covers a range of demand outcomes to reflect uncertainty



4. Impact of Project Marinus on wholesale electricity prices

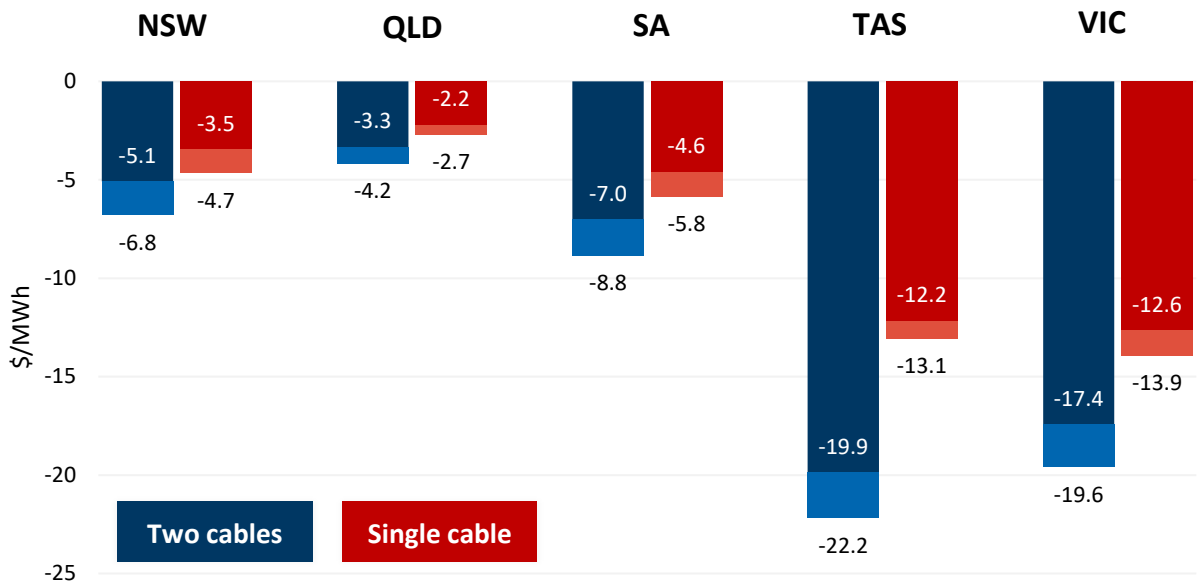
Electricity interconnectors are transmission assets that link two different price zones and allow for generation to be transferred from lower-priced regions to higher-priced regions. This benefits customers in the high price region, who now have access to cheaper sources of electricity, and it also benefits both connecting regions in the sense that customers now have access to additional sources of electricity, which increases the security of supply at both ends.

Consistent with FTI's previous customer benefits analysis, FTI's 2023 study shows that Project Marinus is expected to materially reduce wholesale prices in all NEM regions. The largest average annual wholesale price reductions during the 2031-50 study period occur in Tasmania ($20-22/MWh reduction[8]) and Victoria ($17-20/MWh reduction), with smaller price reductions forecast for other NEM regions (Figure 2). FTI also modelled wholesale price reductions under a one cable scenario, which reduced the expected wholesale price impact to $12-13/MWh in Tasmania and $13-14/MWh in Victoria.

The effect of the reduction in wholesale electricity prices is expected to equate to an annual $148 to $165 reduction in energy bills in Tasmania and $70 to $78 in Victoria compared to the Without Marinus counterfactual.

[8] Range is based on whether the Step Change scenario or Load Sensitivity is used.

Figure 2: Average reduction in wholesale prices, 2031-2050 (2023 dollars)[9]

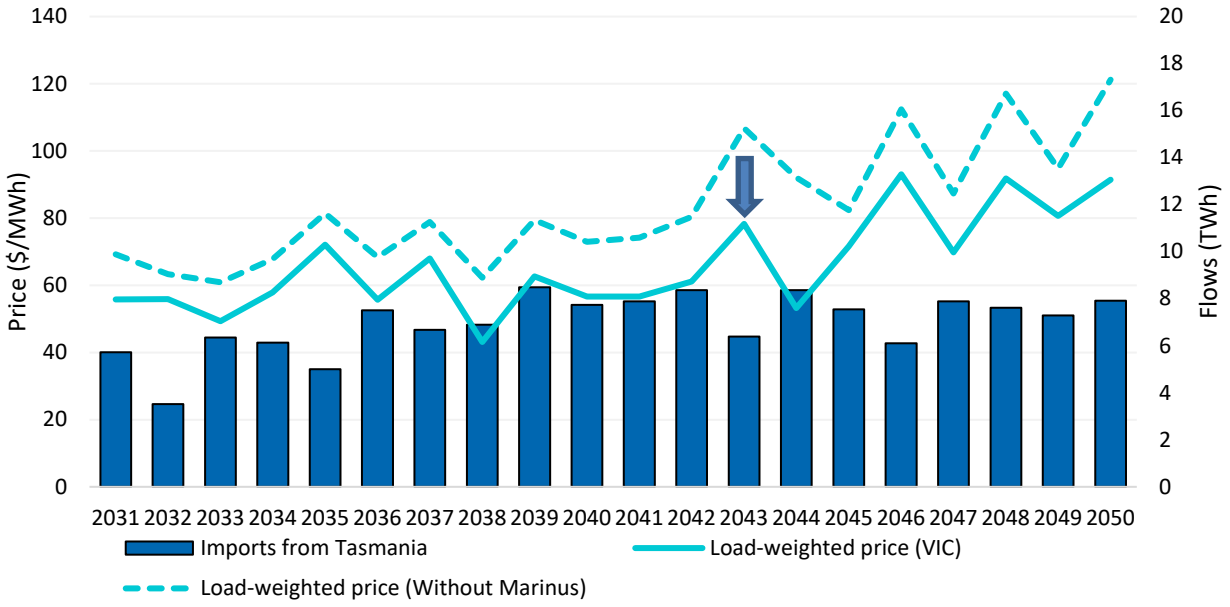


The decrease in wholesale prices in FTI's modelling is primarily driven by:

- **Unlocking large volumes of renewable generation in Tasmania.**
    - In the absence of Project Marinus, Basslink (the sole link between Tasmania and the mainland NEM), is frequently fully utilised. FTI's modelling indicates that Basslink's maximum capacity constrains exports from Tasmania in 83% of all periods modelled from 2031-2050, in the absence of Project Marinus.
    - Introducing Project Marinus reduces congestion between Tasmania and Victoria, which paired with Project Marinus-dependent capacity additions, allows for large volumes of low-cost Tasmanian generation to flow to the mainland (Figure 3). For example, FTI forecasts that in 2035 a two cable Marinus Link increases Tasmania to Victoria flows by 3.6 TWh.

[9] Light blue and light red shading represent the range of outcomes, based on whether the Step Change scenario or Load Sensitivity is used.

Figure 3 Prices and imports from Tasmania to Victoria, with Project Marinus

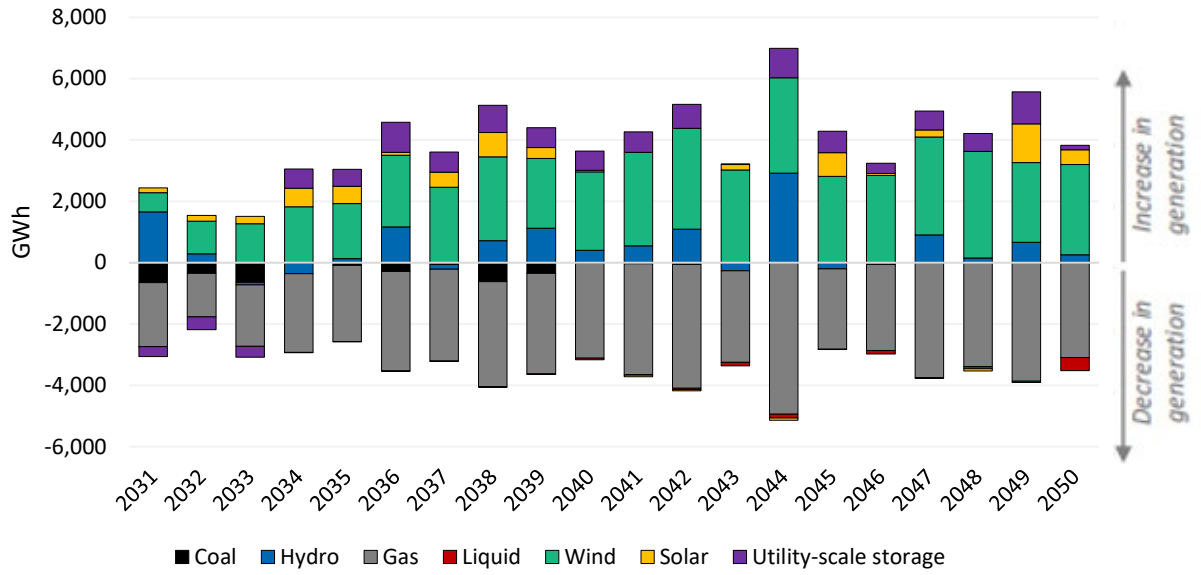


- **Allowing more displacement of thermal gas generation with lower cost renewables.**
    - In the Without Project Marinus counterfactual, gas generators are increasingly used to cover periods of low renewable generation, as coal-fired generators retire and NEM-wide demand increases.
    - Project Marinus has a material impact on NEM-wide gas generation, as the additional interconnection, combined with low-cost Tasmanian pumped hydro capacity and high-quality wind resource, enables renewable capacity in Tasmania to cover periods of low renewable generation and high demand on the mainland.
    - Tasmanian wind has a high capacity factor relative to mainland wind and solar[10], and also provides greater resource diversity to mainland wind farms[11]. This complementary profile increases the share of demand (including periods of high demand) that low-cost renewable generation can meet.
    - The marginal gas peaking plants on the mainland are significantly displaced as a result of Project Marinus, with annual gas generation reducing by between 2-5 TWh from 2033-2050 relative to the Without Project Marinus counterfactual (Figure 4).

[10] See AEMO's 2023 Inputs, Assumptions and Scenarios Report workbook: https://aemo.com.au/en/energy-systems/major-publications/integrated-system-plan-isp/2024-integrated-system-plan-isp/current-inputs-assumptions-and-scenarios

[11] AEMO 2022 Integrated System Plan. https://aemo.com.au/-/media/files/major-publications/isp/2022/2022-documents/2022-integrated-system-plan-isp.pdf?la=en

Figure 4 Annual change in NEM generation resulting from Project Marinus



5. Customer benefit of Project Marinus

Despite significant changes in market dynamics and outlook since the 2020 study, as well as increased Project Marinus costs, FTI's updated analysis indicates that customers could still expect to benefit materially from Project Marinus.

As outlined above in Section 4, Project Marinus provides material downward pressure on wholesale prices due the additional Tasmanian generation it unlocks, coupled with the benefit of displacing higher-priced generation (largely gas-fired generation and demand response). These reductions in wholesale electricity prices equate to a total gross NEM customer benefit from Project Marinus of $14.8-16.9 billion[12] over the modelling period (excluding the impact of higher network costs). In the one link scenario, the gross customer benefit is $10.4-11.8 billion.

After project costs[13] and interconnector residues are accounted for, FTI forecasts net customer benefits of $10-12.5 billion for two cables and $7.6-9.4 billion for one cable (Figure 5). This suggests that around 75% of the net customer benefits that could be realised from building two Marinus Link cables could be realised by constructing only one Marinus Link cable.

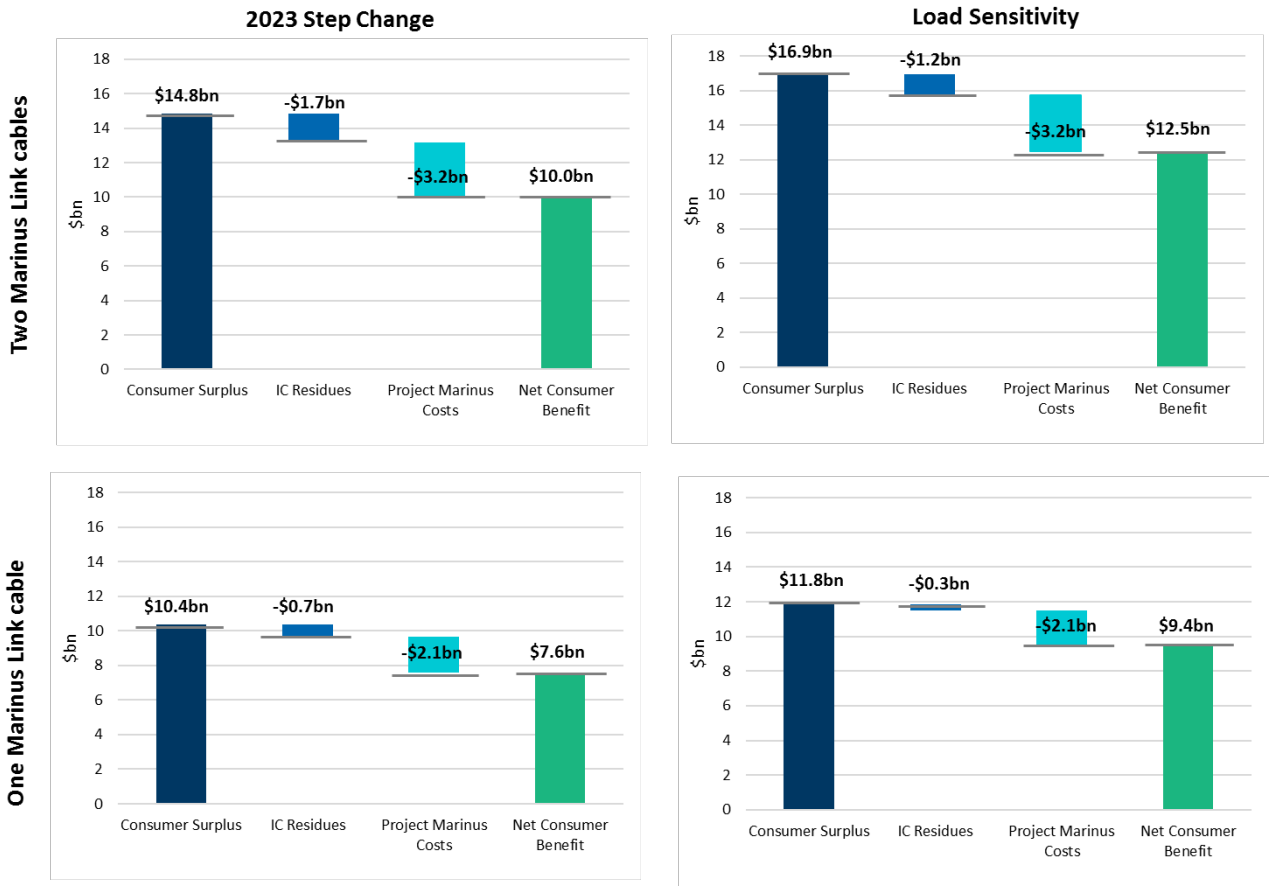
[12] Range is based on whether the Step Change scenario or Load Sensitivity is used.

[13] FTI use a single discount rate of 7.0% (real, consistent with AEMO's 2023 IASR Central) to calculate the present value of costs and benefits. Project Marinus costs includes forecast annuitised capex and annual opex across our modelling period (2031 to 2050) for both Marinus Link and NWTD Project.

FTI also notes that net customer benefits associated with Project Marinus in this 2023 study are higher than net customer benefits of $5.4 billion in their 2020 work[14]. They highlight the following factors as contributing to this outcome:

- Faster exit of coal-fired generation and faster uptake of renewable capacity increases the firming value provided by Tasmanian hydro and pumped hydro resources.
- Gas and coal prices have increased, reflecting changing market conditions and inflation.
- Small increase in assumed capacity factors for Tasmanian wind generation relative to the 2020 ISP.

Figure 5 Net customer impact of Project Marinus, $bn, Present Value 2031-2050 (2023 dollars)



[14] Net customer benefits across the different studies are not directly comparable due to different price bases and different modelling period.