MARINUS LINK

How do customers benefit from Project Marinus?

Summary Report

TasNetworks
Delivering your power

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Executive Summary

TasNetworks engaged independent global consulting firm, FTI Consulting LLP (**FTI**), to consider how Project Marinus would affect customers across the National Electricity Market (**NEM**). Specifically, TasNetworks wanted to understand how the project would affect the electricity prices that customers pay compared to an alternative case 'without Project Marinus'. This complements work undertaken by TasNetworks to understand the economic costs and benefits to the NEM of Project Marinus, as part of the regulatory investment test for transmission (**RIT-T**) process.

Throughout this report, 'Project Marinus' refers to the high voltage direct current and converter interconnector assets, known as Marinus Link, and the alternating current transmission investment in Tasmania, known as the North West Transmission Developments. These investments together constitute the modelling undertaken for this pricing report.

Conclusions and implications

The environment surrounding energy policy in the NEM is continually evolving. FTI's 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**) 2020 Integrated System Plan (**ISP**) information. The modelling focuses on the Central and Step Change scenarios of the ISP, as the 2020 ISP determined these to be the most relevant scenarios for Project Marinus. Key findings and implications are:

- The NEM is forecast to witness wholesale energy price increases as coal-fired generators continue to retire and higher priced dispatchable energy solutions are required to meet customer demand. As witnessed with the closure of the Hazelwood Power Station in 2017, the potential for the wholesale energy price increase is significant.
- Project Marinus has the ability to put downward pressure on wholesale energy prices by introducing an additional 1500 MW of dispatchable capacity into the NEM, accessing the existing spare and refurbished dispatchable capacity in the Tasmanian hydro-electric system for the first stage of the link, and enabling the development of long-duration pumped hydro facilities with the second stage of the link. This lower cost dispatchable energy assist in minimising market volatility thereby suppressing energy price rises from more expensive solutions that are otherwise required in the NEM.
- The modelling is comparing two possible 'futures': one with Project Marinus and one without Project Marinus.

- The benefit from Project Marinus in terms of lower wholesale electricity prices is widely spread across the NEM; therefore a pricing method where all customers contribute to Project Marinus would be fair and efficient. This pricing approach would require each NEM region to pay an amount approximately equal to the share of benefits customers receive in that region.
- Total customer benefits are difficult to estimate precisely, especially as energy market policy settings continue to evolve. However, the overall robustness of the net market benefits provided by Project Marinus to the NEM is substantiated with the publication of Project Marinus Project Assessment Conclusions Report (**PACR**) analysis[1] which demonstrates that, despite the continual evolution of inputs and assumptions, the Project Marinus continues to provide significant benefits to the NEM.
- The pricing modelling for this analysis assumes a free market economy system, with demand and supply the principal factors for determining the wholesale energy price. However the quantum of modelled benefits could be altered depending on regulatory policies of various governments, for example to support regional investment or to protect customers from dramatic wholesale energy price increases. For instance, the Tasmanian Government is presently reviewing the Tasmanian wholesale pricing instrument that could see different outcomes than those modelled by FTI. Similarly, energy policy frameworks in other Australian states could have some impacts on the precise quantum of modelled benefits.
- Based on the modelling undertaken by FTI, the gross customer benefits are between $3.2 billion for the Central Scenario and $6.5 billion for the Step Change Scenario for the modelling period 2020 to 2040. These benefits compare to total network costs of approximately $1 billion over the same period.[2]

FTI's analysis differs from the cost benefit assessment that transmission networks are required to undertake in accordance with the RIT-T. The RIT-T examines the economic case for network investment, having regard to all those who produce, consume, and transport electricity in the NEM. In contrast to the RIT-T, **FTI's analysis adopts the customers' perspective by focusing on the impact of Project Marinus on future electricity prices,** and in particular the wholesale energy price component. There are further benefits delivered by Project Marinus, including benefits to regional economies and contributions to reduced carbon dioxide levels in the NEM; however, these are not captured by the RIT-T or in FTI's wholesale pricing analysis.

FTI employs two scenarios and input assumptions which are broadly consistent with AEMO's 2020 ISP – the Step Change and Central Scenarios. The choice of scenarios is compatible with AEMO's 2020 ISP, which indicated that our RIT-T should focus on these two scenarios. FTI's modelling employs 'Bertrand pricing' to

[1] Project Marinus RIT-T PACR, TasNetworks, June 2021.

[2] The total expected project cost remains at $3.5 billion ($2021) however, as the duration of the calculated benefits is only for approximately 30 per cent of the life of the assets, the costs are allocated accordingly.

forecast wholesale prices, which recognises that generators may exercise market power to bid above their marginal costs.

Application of Bertrand pricing assumes that all generators understand their position in the merit order and increase their bid to just below that of the next generator in the merit order (i.e. bids increase but the merit order remains unchanged). As competition increases, generators' ability to 'bid-up' wholesale prices is constrained. FTI's model also assumes that retail margins remain constant, so any reductions in wholesale electricity prices feed through to customers' bills.

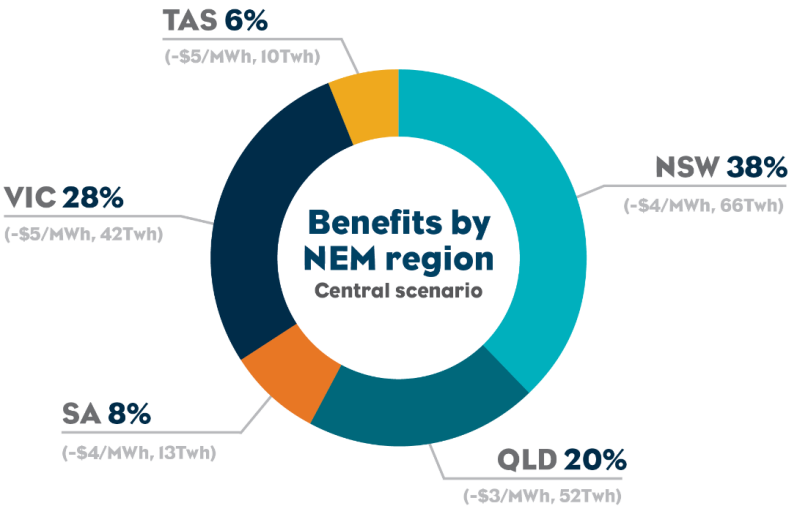
FTI measures customer benefits in terms of the savings in wholesale electricity prices 'with' and 'without' Project Marinus. FTI's analysis finds that Project Marinus exerts downward pressure on projected wholesale energy prices and the customer benefits are spread relatively evenly across NEM customers. This ability of Project Marinus to exert downward pressure on power prices in regions not physically connected by the interconnector may not be intuitive to some readers, but the interconnected nature of NEM and the ability of an asset to exert pricing impacts across all regions was highlighted by the recent event in Queensland with the unexpected outage at the Callide power station.[3] This incident led to a doubling of wholesale energy prices compared to the previous year across most of the NEM[4] as the finely balanced supply and demand balance was disrupted. Similar to a power station outage impacting the wholesale energy prices across all jurisdictions, Project Marinus has the ability to put downward pressure on energy prices by introducing additional dispatchable capacity and bringing further diversity to the Variable Renewable Energy portfolio in the NEM.

FTI's forecast wholesale electricity prices for each region 'with' and 'without' Project Marinus are presented in the appendix. Figure 1 below summarises the benefits received by each NEM region for the Central scenario based on the projected reduction in wholesale electricity price and annual energy consumption.

[3] Update on incident at Callide power station, CS Energy, 25 May 2021.

[4] Callide outage feeds power price surge, Australian Financial Review, June 2021.

Figure 1: Benefits by NEM region for Central Scenario based on projected reduction in wholesale electricity price and annual energy consumption[5]



Customers across all NEM regions see relatively lower energy costs per megawatt hour (**MWh**) with Project Marinus in service. The total benefit for each NEM region (generally aligned with State borders) is a function of both the level of savings per MWh and the consumption.

Under the current transmission pricing arrangements, costs of transmission are largely based on geographic location of transmission assets, so that Victoria and Tasmania would share the cost of Project Marinus. However, Figure 1 indicates, the two states receive only 34 per cent of the combined wholesale energy market benefit.

Where the costs of Project Marinus are recovered from all customers across the NEM, such that each customer in a NEM region pays a contribution according to their benefits, each NEM region would obtain a net customer benefit. In other words, **all customers are better off if Project Marinus proceeds and the costs are shared fairly and efficiently across all NEM customers**.Purpose and scope of this report

The purpose of this summary report is to present the results of modelling work undertaken by FTI consultants[6] on behalf of TasNetworks, which analyses how customers would benefit if Project Marinus proceeds.

FTI's modelling approach differs in two respects from the analysis presented in our Project Marinus PACR[7], which is published in conjunction with this report:

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[5] The FTI analysis relies upon the efficient-market hypothesis and prevalence of a free market system with supply and demand determining the electricity market price with minimal government control. However, in instances of extreme price volatility, governments do intervene in the market to protect customers from excessive price increases. For instance, the analysis assumes that Tasmanian consumers pay the Tasmanian contract price, which is assumed to equal the Victorian price. The Tasmanian regulatory instrument that this assumption relies on is currently under review and this may reduce the level of modelled benefits received by Tasmanian customers.

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

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

- FTI focuses exclusively on the impact of Project Marinus on customers, rather than considering the net economic benefit 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.

By focusing specifically on customer benefits, FTI's modelling approach is targeted to address the question of whether customers can expect to be better off 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.

There are further benefits delivered by Project Marinus, including benefits to regional economies and contributions to reduced carbon dioxide levels in the NEM; however, these are not captured by the RIT-T or the FTI wholesale energy modelling approach.

In addition to assessing how customers will benefit from Project Marinus, FTI's modelling examines how those benefits are likely to be distributed across the NEM regions. For example, can customers in Queensland expect to benefit from a new interconnector between Tasmania and Victoria?

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, constructed in two 750 MW stages, maximises the potential value from the interconnector.**

From the perspective of customers, the principal benefit[8] from Project Marinus is reduced wholesale electricity prices compared to the case where Project Marinus does not proceed**. FTI's modelling therefore analyses how wholesale generation prices are expected to change 'with and without' Project Marinus.** This is a challenging exercise because it requires forecasts of wholesale generation prices over an extended period (as Marinus Link and North West Transmission developments are long-lived asset), at a time when the electricity sector continues to experience unprecedented change. Inevitably, therefore, FTI's modelling results – and indeed any modelling of the energy market – are subject to caveats and uncertainties, particularly as policy settings continue to evolve.

[8] Historically, Basslink has provided reliability benefits to Tasmania during 'dry' years. In future, however, the growth in Tasmania's wind generation, coupled with a more conservative approach to managing hydro storage levels, will reduce reliability risks. On this basis, Project Marinus is not expected to provide significant reliability benefits to Tasmanian customers.

Scenario analysis is a useful tool for examining a number of different possible futures. It is a central feature of the planning undertaken by network companies and AEMO in preparing the ISP. FTI also uses scenario analysis in its modelling, focusing on two scenarios – 'Step Change' and 'Central' Scenario – which are the scenarios that AEMO's 2020 ISP considered should be applied in our future RIT-T analysis for Project Marinus.[9]

In addition to considering 'possible futures' through scenario analysis, in order to estimate the benefits that customers may obtain from Project Marinus, several other matters need to be considered:

- Will generators bid strategically to maximise their profits, rather than bidding in accordance with their marginal costs?
- Are retailers expected to pass on savings in wholesale generation costs to electricity customers?

In relation to generation bidding behaviour, FTI assumes each generator bids in such a way to maximise its bid whilst preserving its position in the merit order. This pricing strategy – known as Bertrand Pricing – recognises that generators will not necessarily bid according to their marginal costs. Instead, generators will exercise market power if this can be achieved without reducing their output.

In reality, actual bidding strategies will be more complicated than those assumed in FTI's model. This observation, however, does not invalidate FTI's modelling approach. **As a model, the task is to adopt an approach that is a reasonable proxy for generator behaviour, noting that it will not be possible to forecast generator bidding behaviour accurately over the model timeframes.**

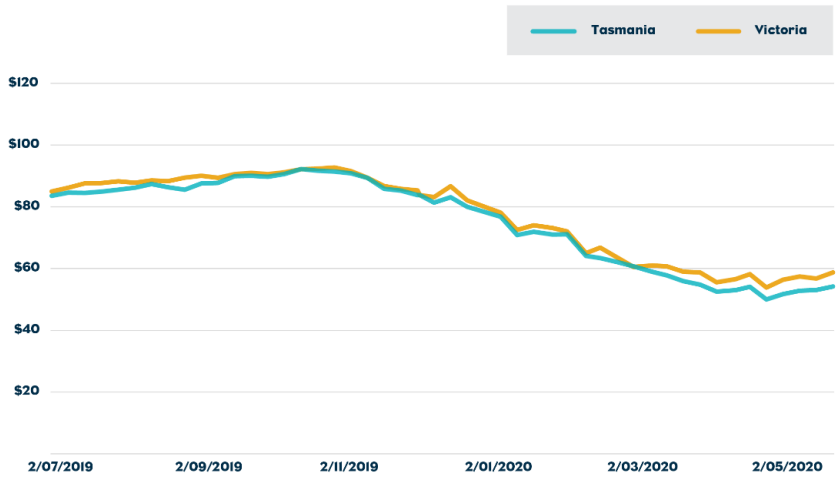
In relation to retail prices, FTI assumes that retail margins are preserved so that any change in wholesale generation prices is passed on to customers. This is a simplifying assumption, as we know that retail margins are likely to change over time. Nevertheless, for the purpose of FTI's analysis, the assumption of constant retail margins is considered to be a reasonable one.

For Tasmanian customers, there is an added complexity because certain financial risk **contractual arrangements that apply between retailers in Tasmania and Hydro Tasmania are regulated by legislation** which links the Tasmanian wholesale contract price to the Victorian spot price[10]. For this modelling analysis, it is assumed that the existing legislated arrangements remain in place. As a result, the Tasmanian wholesale contract price is assumed to be the same as FTI's estimate of the Victorian price. Figure 2 shows the historical comparison between Tasmania and Victorian wholesale contract prices.

[9] For the sake of brevity, we do not describe the scenarios in detail in this summary report. Further detailed information is available in AEMO's 2020 ISP.

[10] While Tasmanian contract prices are "regulated" this is a safety net price and retailers can contract with Hydro Tasmania below the regulated price. In addition, retailers can procure contracts from other non-hydro generators as new generation supply is added to Tasmania.

Figure 2: Tasmania and Victoria (Base/Flat) contract price



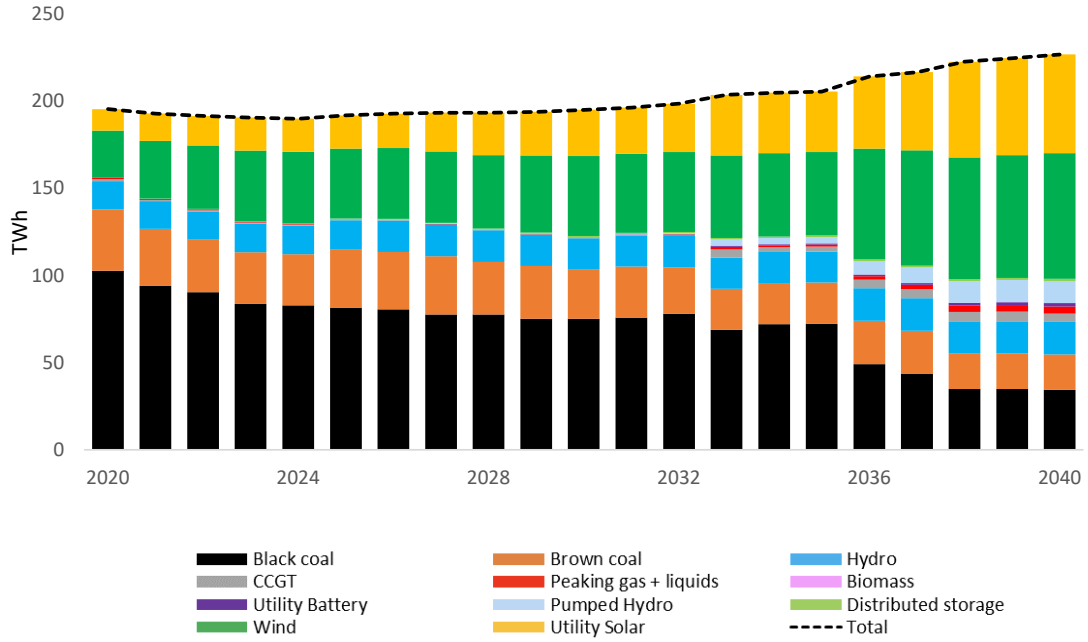
As noted earlier in the report, the FTI analysis relies upon the efficient-market hypothesis and prevalence of a free market system with supply and demand determining the electricity market price with minimal government control. However, in instances of extreme price volatility, governments do intervene in the market to protect customers from excessive price increases. For example, the future relationship between Victorian and Tasmanian wholesale prices is expected to depend on the regulatory arrangements implemented. The existing arrangements are currently under review and this may affect the level of modelled benefits received by Tasmanian customers.

Having adopted these input assumptions, **FTI's model examines wholesale electricity prices 'with and without' Project Marinus over the period until 2040.** It is important to note that FTI's modelling examines two alternative futures – one with Project Marinus and one without Project Marinus. The customer benefits described in FTI's report compare the wholesale price outcomes for customers in these two alternative futures. In this context, when we describe Project Marinus as delivering 'lower wholesale prices', this is relative to future wholesale prices in a scenario where Project Marinus does not proceed.

Source of benefits

FTI's analysis is based on the unprecedented transition underway in the NEM, in which the share of generation from renewable sources is increasing rapidly. This transition is expected to become even more pronounced as coal-fired generators – which have traditionally supplied a large proportion of the NEM's electricity – continue retiring in the 2020s and 2030s. Figure 3 indicates that under a Central Scenario (without Project Marinus) coal will no longer be a dominant source of generation by 2040.

Figure 3: Evolution of generation sources – Central Scenario, without Project Marinus[11]



The reduction in coal-fired generation must be replaced with other generation sources to meet customer energy and peak demand requirements. Figure 3 (taken from FTI's analysis that is broadly aligned with the inputs and assumptions as outlined in the 2020 ISP) shows that renewable generation, particularly wind and solar, will play a growing role in bridging the energy gap as coal capacity exits the market. FTI forecasts that under the Central Scenario the contribution of coal generation (energy output) across the NEM drops from over 70 per cent in 2020 to less than 25 per cent by 2040.[12]

From the perspective of electricity customers, the challenge for the electricity sector is to meet their future electricity needs at the lowest total cost. It is not sufficient to have enough energy being generated in total; it must actually be available at the times customers need it. In this context, much of the potential benefit from Project Marinus is derived by providing the mainland NEM with access to Tasmania's **lower cost, dispatchable renewable generation and storage** capacity. According to FTI's analysis, three sources of lower cost generation would be unlocked by Project Marinus:

1. Underutilised existing and refurbished hydro capacity in the Tasmanian system;
2. Long-duration pumped hydro storage capacity developments in Tasmania (together with other Tasmanian hydro resources, typically referred to as 'Battery of the Nation'); and
3. Additional wind and solar generation developments in Tasmania.

[11] Source: FTI analysis, NEM generation, without Project Marinus case, 2020 – 2040.

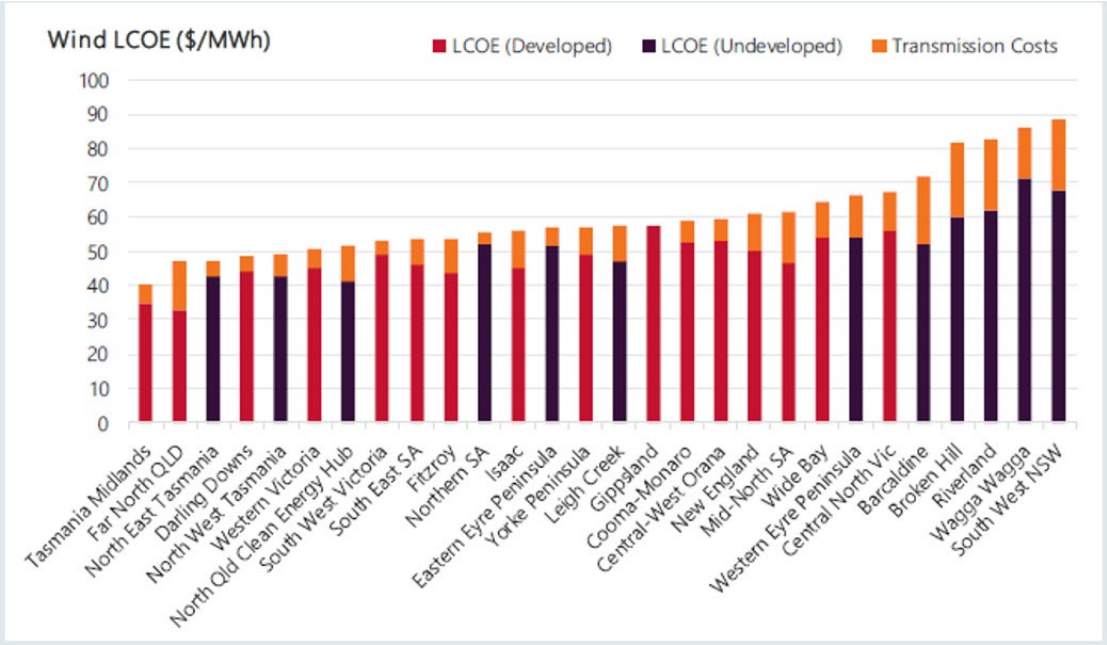
[12] The decline in coal generation is even more significant in the Step Change scenario, with coal generation contributing around 15 per cent of total generation across the NEM.

Each of these sources of benefit reflects a natural cost advantage enjoyed by Tasmania compared to the mainland NEM, as follows:

1. Accessing existing underutilised dispatchable hydro capacity is cheaper than building new capacity;
2. Pumped hydro capacity in Tasmania is lower cost than alternatives on mainland Australia; and
3. Based on the independent analysis conducted for the ISP, Tasmania has one of the best wind resources in the NEM.

In relation to the latter point, the Final 2020 ISP presents the levelised cost of electricity for each renewable energy zone (**REZ**) in the NEM. As indicated in Figure 4, amongst the 35 REZs, **Tasmania's Midlands, North East and North West regions are among the top five wind resources in the NEM.**

Figure 4: Tasmania's natural advantage in wind generation[13]



FTI's modelling shows that Project Marinus would enable electricity to be exported to mainland Australia to support peak energy use periods, and/or when renewable generation on mainland Australia is low. Tasmanian wind resources would be used where available, with conventional hydro capacity able to be used more strategically to provide valued dispatchable energy services, including at times of high system demand and peak prices. Access to these lower cost, lower priced Tasmanian resources would put downward pressure on wholesale energy prices across the NEM.

From the perspective of electricity customers, lower wholesale prices[14] should feed through to lower retail prices as lower cost generation and storage in Tasmania replaces higher cost alternatives on mainland

[13] Final ISP 2020, AEMO, July 2020. Note the chart only contains data for 28 of the 35 REZs.

[14] 'Lower' reflects a comparison between the 'with' and 'without Project Marinus' cases. Project Marinus will avert a price increase compared to the 'without Project Marinus' case, in which gas generation sets prices more often.

Australia. In particular, Project Marinus will assist in mitigating volatility in the wholesale energy markets by reducing the impact that higher cost generators (typically gas, diesel, steam turbines) are expected to play a reduced role in meeting customers' demand and (most importantly) will set wholesale prices less often if Project Marinus proceeds. In the absence of Project Marinus, the modelling indicates that higher cost generators would be the marginal generator setting the wholesale energy price. Owing to the higher marginal cost of generation for a fossil-fueled generator, the wholesale electricity price is expected to be higher in the 'no Project Marinus' case.

What are the wholesale electricity savings and how are they distributed across the NEM?

FTI's modelling shows that the benefits of Project Marinus in delivering lower wholesale electricity prices are not confined to the directly connected regions of Tasmania and Victoria. Instead, these benefits flow to other NEM regions by making use of the existing and proposed interconnector capacity between these regions.

The ability of Project Marinus to exert downward pressure on power prices in regions not physically connected by the interconnector may not be intuitive to some readers, but the interconnected nature of NEM and the ability of an asset to exert pricing impacts across all regions was highlighted by the recent event in Queensland with the unexpected outage at the Callide power station.[15] This incident led to a doubling of wholesale energy prices compared to the previous year across most of the NEM[16] as the finely balanced supply and demand balance was disrupted. Similar to a power station outage impacting the wholesale energy prices across all jurisdictions, Project Marinus has the ability to put downward pressure on energy prices by introducing additional dispatchable capacity and bringing further diversity to the Variable Renewable Energy portfolio in the NEM.

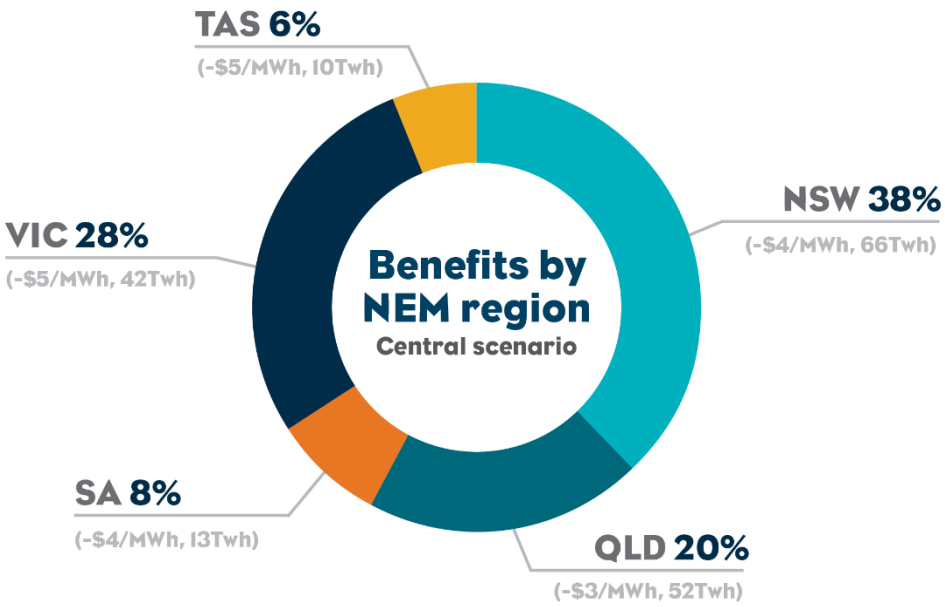
Figure 5 summarises the Project Marinus benefits received by each of the NEM regions based on the projected reduction in wholesale electricity price and annual energy consumption. The customer benefits are shown for the Central Scenario in terms of wholesale electricity price reductions expressed as a $/MWh to each region if Project Marinus proceeds, compared to the alternative 'without' Project Marinus case.

As already noted, the saving is not a comparison with current wholesale electricity prices. Instead, it shows that Project Marinus avoids a significant increase in wholesale electricity prices that would occur if gas generation sets electricity prices more often (as would be the case in the 'without Project Marinus' case).

[15] Update on incident at Callide power station, CS Energy, 25 May 2021

[16] Callide outage feeds power price surge, Australian Financial Review, June 2021

Figure 5: Gross benefits by NEM region for Central Scenario based on projected reduction in wholesale electricity price and annual energy consumption[17]



The above analysis is presented for the Central Scenario and reports the average reduction in wholesale electricity prices (excluding changes in network costs) over the modelling timeframe to 2040. These reductions in wholesale electricity prices equate to a total gross customer benefit from Project Marinus of $3.2 billion over the modelling period (excluding the impact of higher network costs). As already noted, the estimated savings arise by avoiding the effect of prices being set more often by gas-fired generation. In the absence of Project Marinus, gas-fired generators are the predominant source of dispatchable generation and routinely set the wholesale energy price.

FTI conducted the same analysis under a Step Change Scenario and found that the average wholesale electricity price reductions were almost double those presented in Figure 5.

The nature of this type of market modelling is that the results will depend on the input assumptions, scenarios and policy settings. The current environment is continuing to evolve rapidly, which means that FTI's modelling results – and indeed any energy market modelling forecasts – are subject to caveats and uncertainties. Nevertheless, even if the gross customer benefits are half of those estimated by FTI, they would remain very substantial.

Although the magnitude of the estimated wholesale electricity price reductions is broadly similar across the NEM regions, the aggregate benefits by region reflect the total electricity throughput in each region, which

[17] As already noted, the analysis assumes that Tasmanian consumers pay the Tasmanian contract price, which is assumed to equal the Victorian price. The Tasmanian regulatory instrument that this assumption relies on is currently under review and this may change the level of benefits received by Tasmanian customers.

differ significantly. FTI's calculation of the gross customer benefits from the reductions in wholesale electricity prices for each region, under the Central and Step Change scenarios, are set out in Table 1. The proportion of energy consumption in each NEM region remains comparable across scenarios. Therefore, the allocation of benefits across the NEM regions remains mostly unchanged too.

Table 1: Gross benefits from wholesale electricity prices from Project Marinus, by region under Central and Step Change scenarios

Region	Central Scenario Gross benefits ($ billion)	Step Change Scenario Gross benefits ($ billion)	Total benefit range across scenarios (%)
VIC	0.90	1.85	28%
TAS	0.21	0.42	6%
NSW	1.23	2.38	36 - 38%
QLD	0.63	1.43	20 - 22%
SA	0.24	0.46	7- 8%
NEM	**3.21**	**6.54**	**100%**

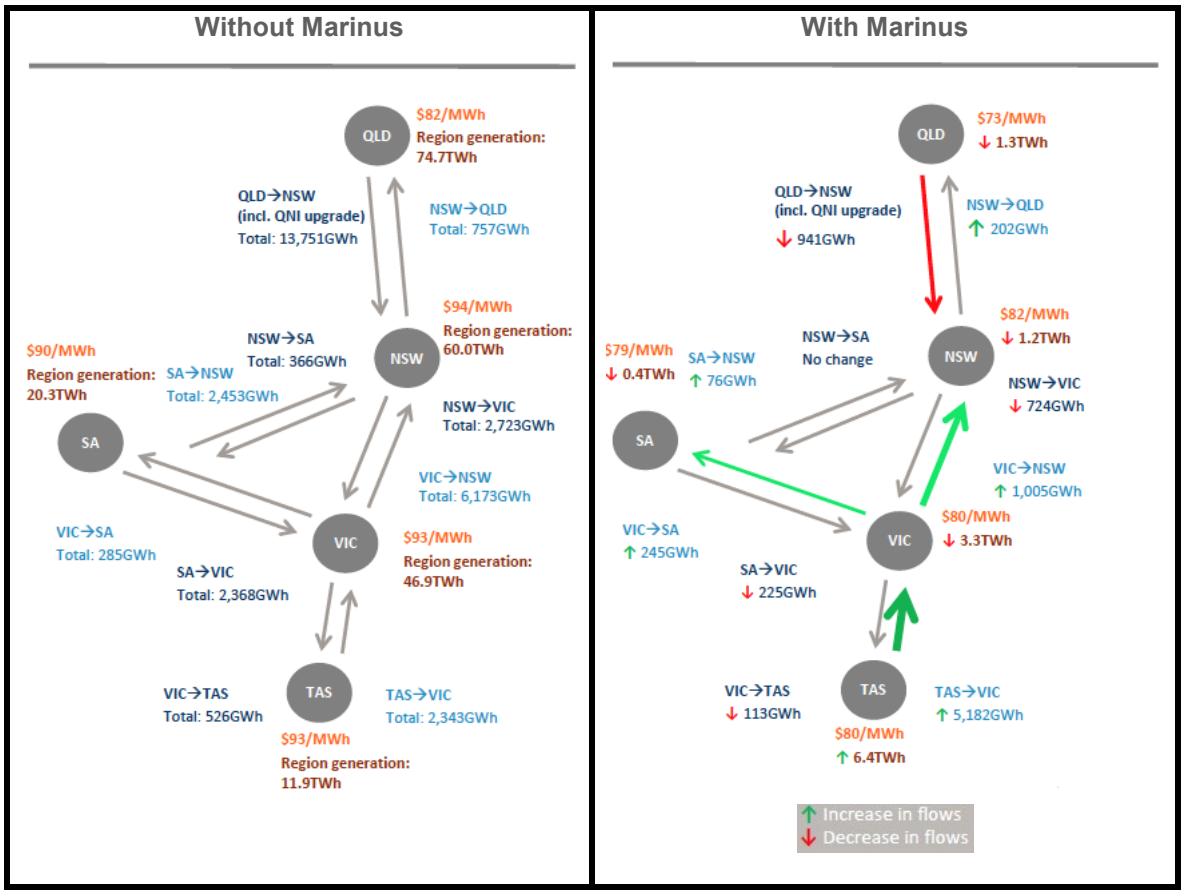
While Tasmanian customers see similar wholesale energy cost reductions to customers right across the NEM, Table 1 shows that **in total** Tasmanian customers enjoy 6 per cent of the gross benefits from the lower wholesale electricity prices that result from Project Marinus . The region's relatively small share of the benefit reflects the lower energy consumption in Tasmania compared to other NEM regions.

An interesting result from FTI's analysis is that the gross customer benefits (excluding the change in network costs) are broadly distributed across the NEM regions, with NSW and Queensland customers obtaining gross benefits of up to $2.4 billion and $1.4 billion under the Step Change scenario respectively. **NSW and Queensland together enjoy on average 58 per cent of the total savings in wholesale electricity prices that would result if Project Marinus proceeds.**

FTI summarises how these gross benefits are distributed through the NEM regions by showing the changes in the energy flows and wholesale energy prices 'with and without' Project Marinus, in Figure 6 below. Red depicts a reduction in a value and green depicts an increase, if Project Marinus proceeds (shown in the 'with Project Marinus' case below). Figure 6 demonstrates the extension of Project Marinus benefits beyond Victoria for the modelled financial year of 2035-36, although the narrative remains unchanged for most years. Commissioning of Marinus Link and the North West Transmission Developments unlocks Tasmanian renewable generation that subsequently enables Victorian renewable generation to be better shared with NSW.

With Project Marinus, NSW and Queensland better utilise the renewable diversity from southern states rather than reliance on higher cost generation such as gas and diesel. This ability to better share renewable and dispatchable resources between the southern states (including long duration pumped hydro generation from Battery of the Nation and Snowy 2.0 assets) assists in lowering wholesale energy prices across the NEM. In summary, it illustrates that all NEM electricity customers can expect their wholesale electricity prices to be lower compared to the alternative case where Project Marinus does not proceed.

Figure 6: Changes in flows and wholesale electricity prices with Project Marinus in 2036, Step Change Scenario



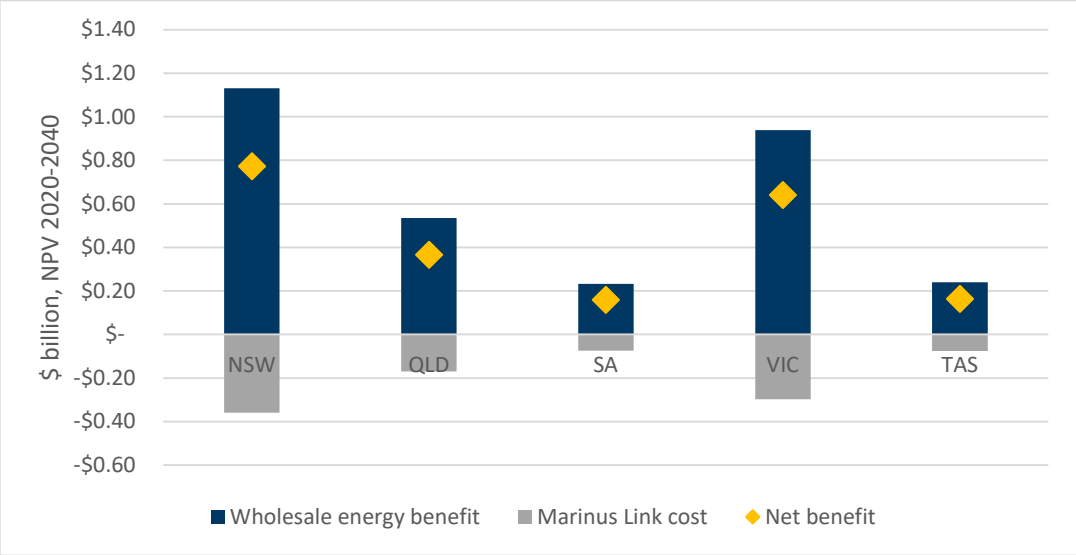
Overall customer impact – taking account of network costs

The analysis so far has focused on the gross benefits from Project Marinus in terms of lower wholesale electricity prices. In addition to lower wholesale electricity prices, however, customers will need to pay higher network charges arising from Project Marinus. The existing inter-regional network charges are the subject of an ongoing review because of a concern that the charging arrangements are not consistent with the 'beneficiaries pay' principle – the proposition that customers should pay according to the benefit they receive.

The current transmission network pricing arrangements are likely to allocate the costs of Project Marinus evenly between Victoria and Tasmania;[18] however, the two states would only receive 34 per cent of the gross customer benefits.[19]

FTI's analysis shows that each NEM region obtains a gross benefit from Project Marinus. Furthermore, the reduction in wholesale energy price is fairly evenly spread across the NEM. This modelling outcome suggests that an approach that shares the cost across all customers may be a more equitable and efficient pricing method than the current pricing methodology. In particular, it would mean that each NEM region contributes to the annual costs of Project Marinus, resulting in a net customer benefit for each region as illustrated in Figure 7.[20]

Figure 7: Net customer benefits by region - Central Scenario and allocation of transmission network pricing by regions based on beneficiaries[21]



In contrast, a continuation of the current pricing arrangements would mean that only two regions pay for the network investment when all regions benefit from reduced wholesale energy prices. The current pricing arrangements would therefore result in Victorian customers and Tasmanians paying a disproportionate share of the annual project costs.

The disparity between the allocation of benefits and costs under the present interconnector pricing methodology, and the need to address this, is recognised. In its 2020 ISP, AEMO included Project Marinus as an Actionable Project with 'decision rules'. One of these decision rules is that there must be a satisfactory

[18] The costs of interconnector assets are allocated to the region in which the assets are physically located. In the case of Project Marinus, there is an almost exact 50/50 split in the asset values located in Victoria and Tasmania, assuming that the Bass Strait undersea cables' costs are also split 50/50 between Victoria and Tasmania. (Bass Strait is Commonwealth waters. The Project Marinus assets located in Bass Strait would not currently be located in any NEM region.)

[19] Based on calculations in figure 5 with Victoria receiving 28 per cent and Tasmania 6 per cent.

[20] For the Step Change Scenario, total net customer benefits of $5.4 billion are distributed in similar ratios as illustrated in Table 1.

[21] The wholesale energy benefits include the impact of inter-regional settlement residues, which are netted off transmission network charges.

resolution of cost recovery arrangements as a precondition for Project Marinus proceeding. Interconnector pricing resolution is being progressed by the National Cabinet Energy Reform Committee, building on work undertaken by the Energy Security Board and the Australian Energy Market Commission.

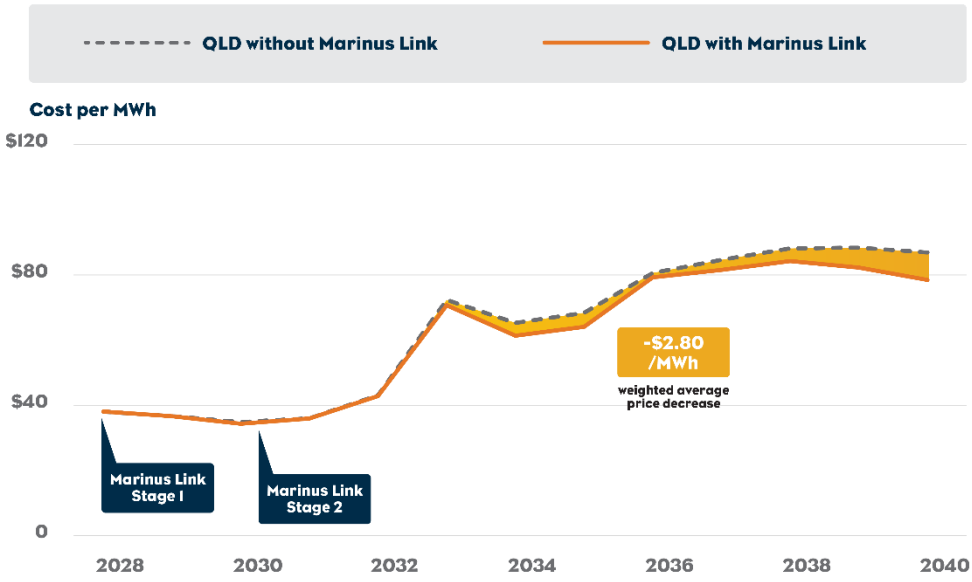
FTI's analysis has demonstrated that **if this interconnector pricing issue can be adequately resolved, then customers in all NEM regions will experience a net benefit – that is, relatively lower prices – with Project Marinus in service.**

Appendix: FTI wholesale energy price projects ($/MWh) – Central and Step Change scenarios

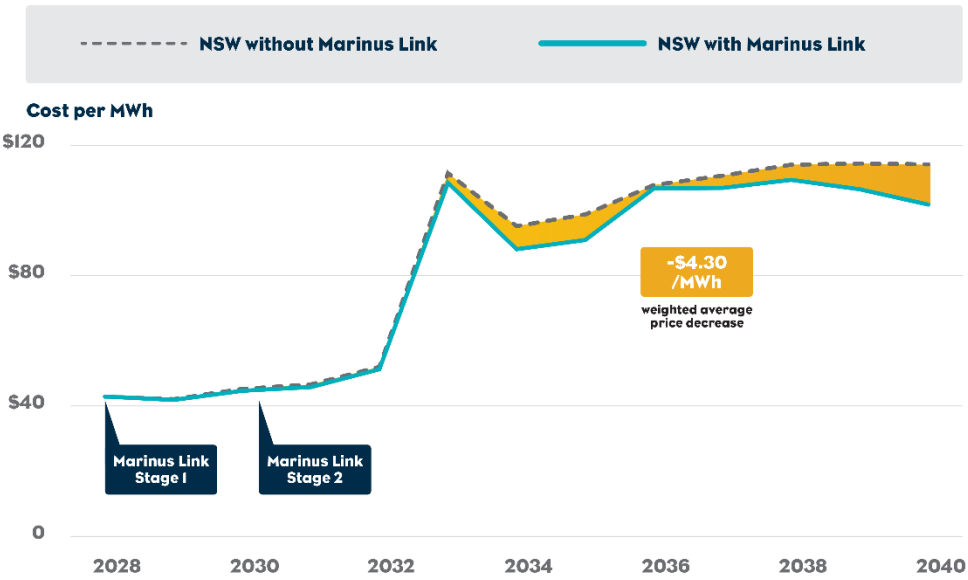
1. **Average annual wholesale price projections ($/MWh) – No Project Marinus Case (Central Scenario)**

The price increase between 2033 and 2035 coincides with retirement of significant black coal capacity in the NEM, particularly in NSW with the retirement of Eraring (2,880 MW by 2033) and Bayswater (2,640 MW by 2035) generators. In the Central Scenario, retirement of thermal generators is predominantly driven by its technical life rather than economic, environmental or mechanical considerations, therefore the impact of Project Marinus is subdued in the initial years of commissioning.

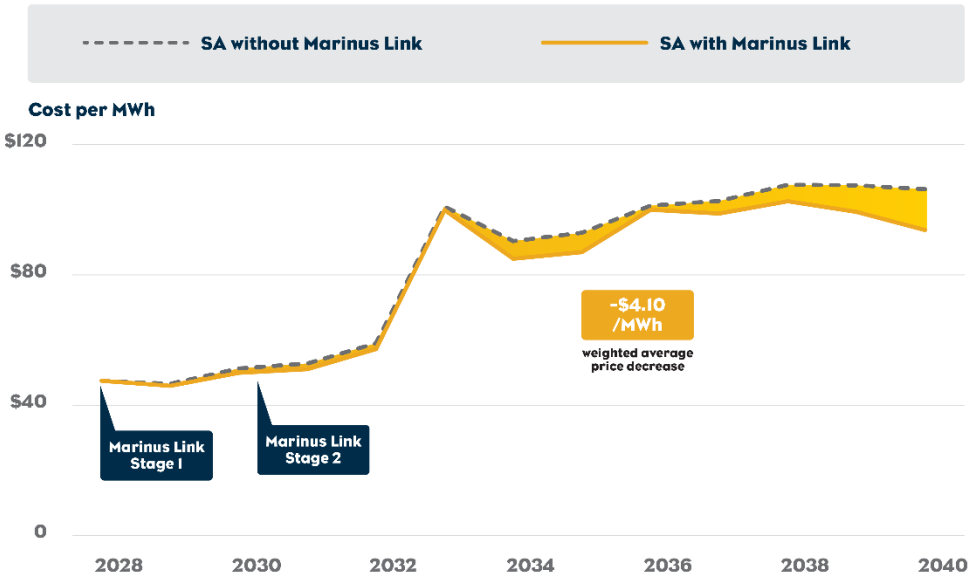
2. **Average annual wholesale price projections in Queensland ($/MWh) – With and without Project Marinus Case (Central Scenario)**



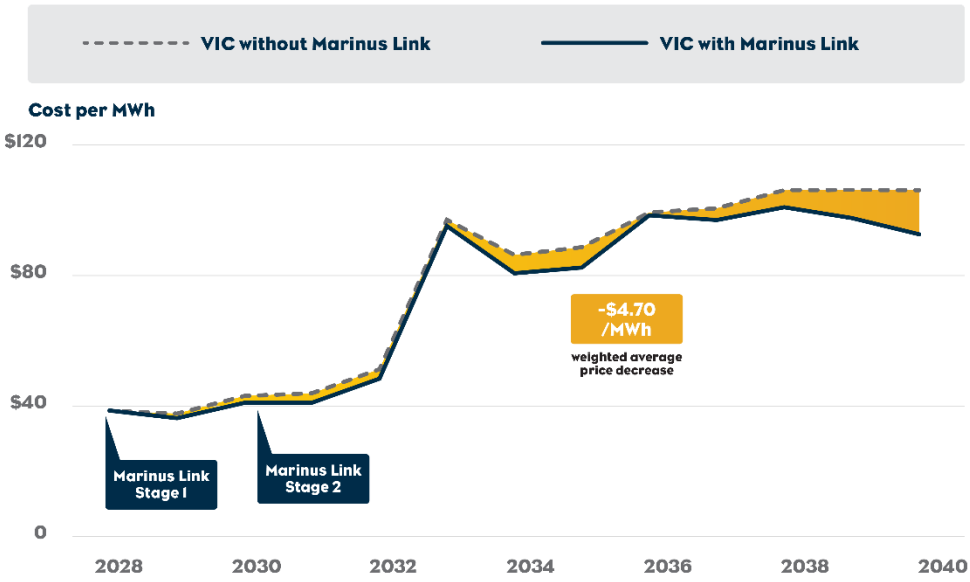
3. **Average annual wholesale price projections in New South Wales ($/MWh) – With and without Project Marinus Case (Central Scenario)**



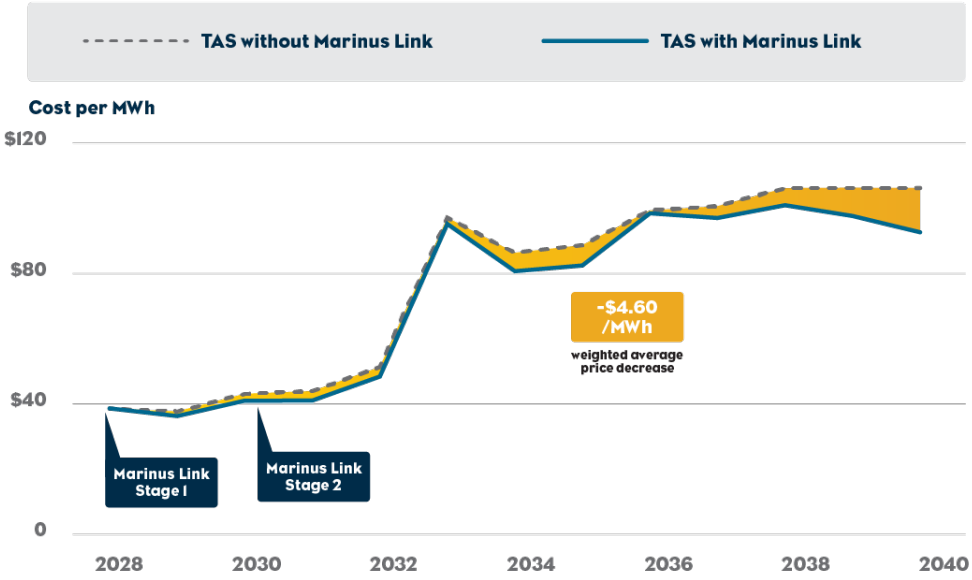
4. **Average annual wholesale price projections in South Australia ($/MWh) – With and without Project Marinus Case (Central Scenario)**



5. **Average annual wholesale price projections in Victoria ($/MWh) – With and without Project Marinus Case (Central Scenario)**

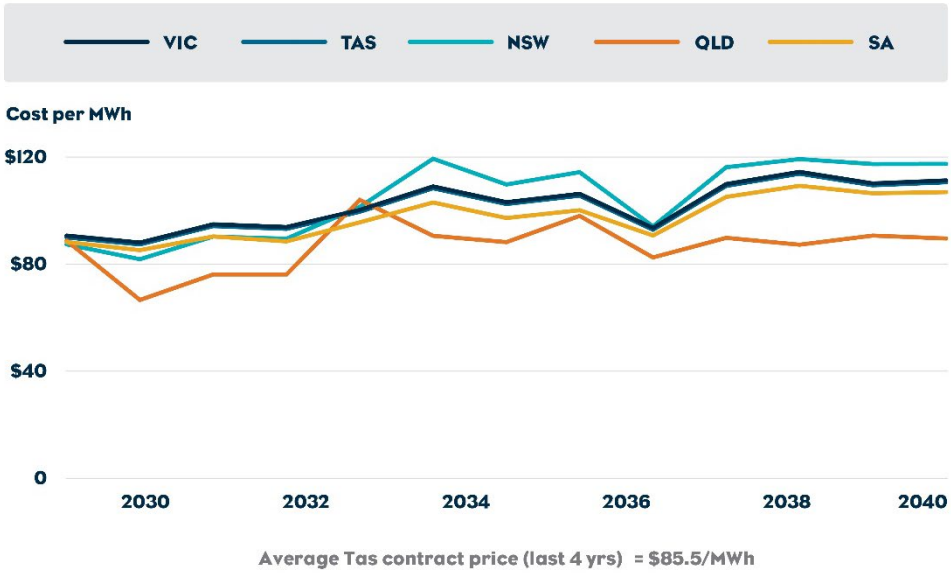


6. **Average annual wholesale price projections in Tasmania ($/MWh) – With and without Project Marinus Case (Central Scenario)**

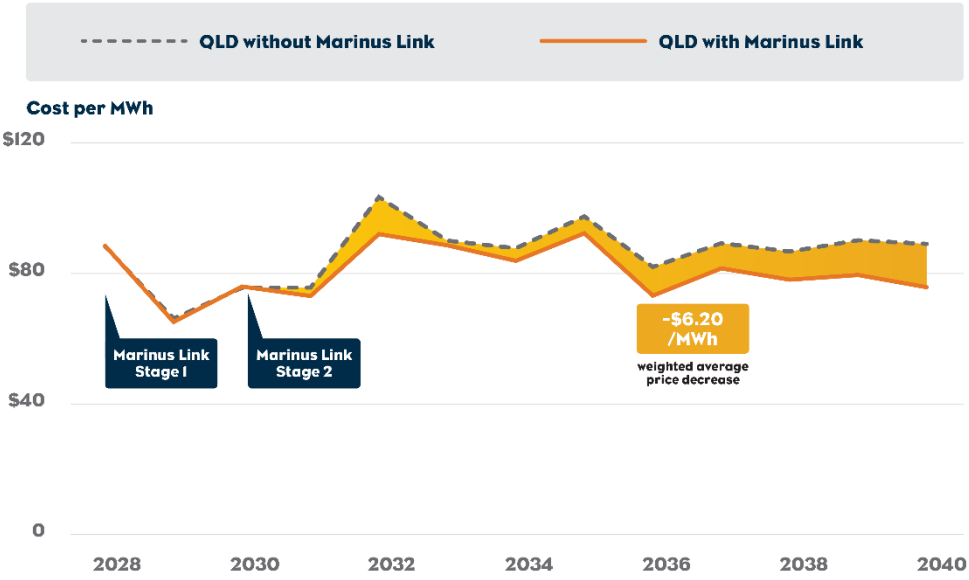


7. **Average annual wholesale price projections ($/MWh) – No Project Marinus Case (Step Change Scenario)**

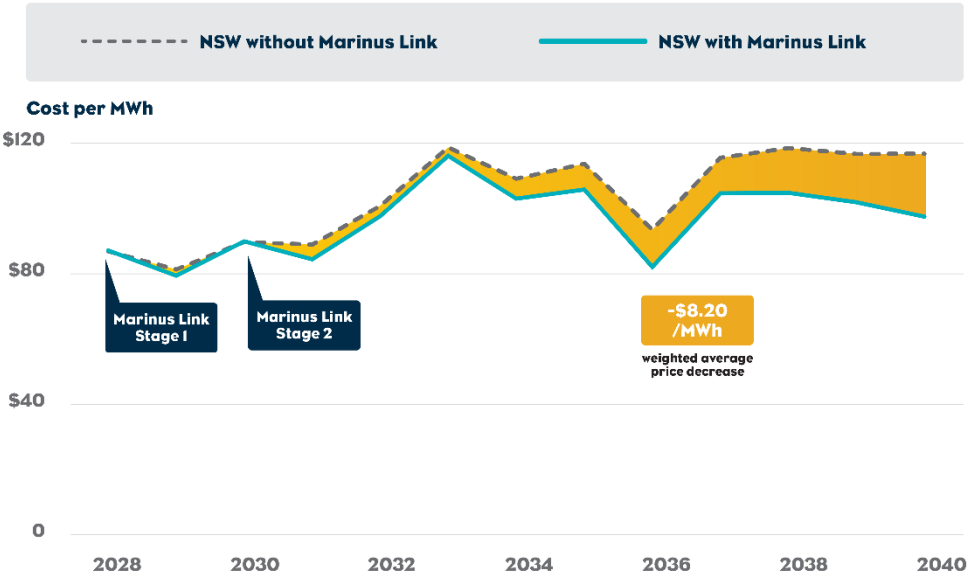
In the Step Change Scenario, retirements of coal fired generators occur prior to their technical life due to various factors including environmental and economic reasons. This creates a need for more dispatchable capacity in the NEM, thereby the impact of Project Marinus on wholesale energy prices is apparent from the commissioning year.



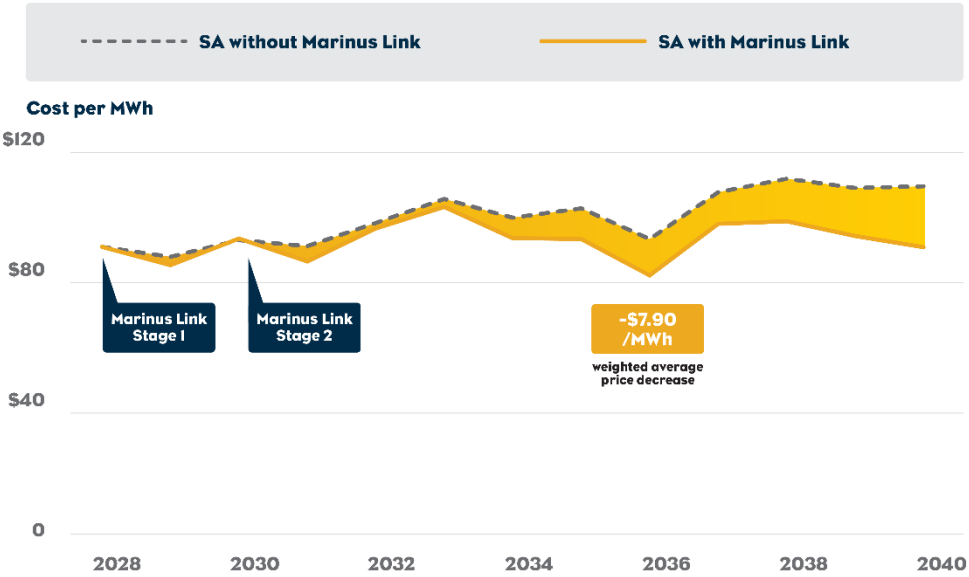
8. **Average annual wholesale price projections in Queensland ($/MWh) – With and without Project Marinus Case (Step Change Scenario)**



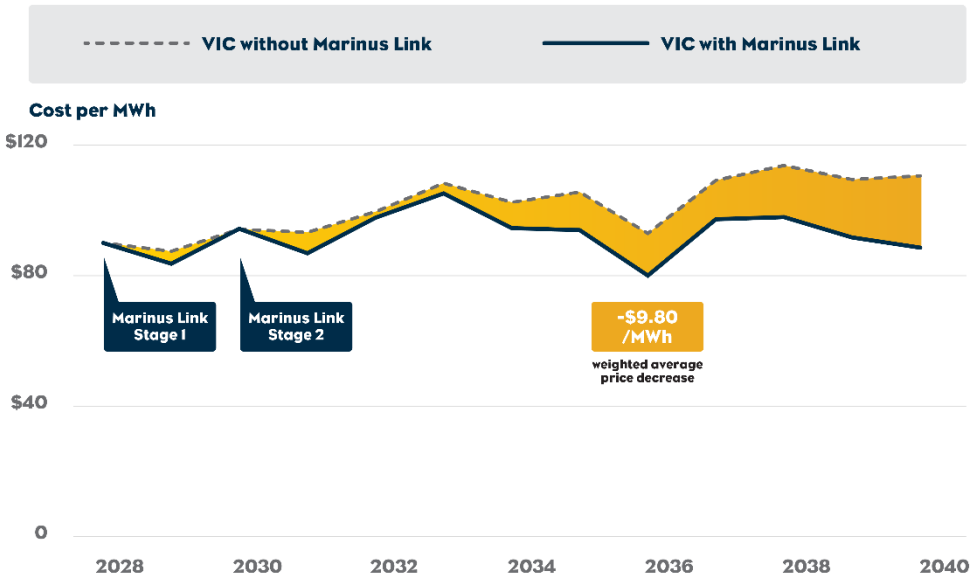
9. **Average annual wholesale price projections in New South Wales ($/MWh) – With and without Project Marinus Case (Step Change Scenario)**



10. **Average annual wholesale price projections in South Australia ($/MWh) – With and without Project Marinus Case (Step Change Scenario)**



11. **Average annual wholesale price projections in Victoria ($/MWh) – With and without Project Marinus Case (Step Change Scenario)**



12. Average annual wholesale price projections in Tasmania ($/MWh) – With and without Project Marinus Case (Step Change Scenario)