

23 October 2020

Ms Merryn York
Acting Chair
Australian Energy Market Commission
Level 15, 60 Castlereagh Street
SYDNEY NSW 2000

Contact: merryn.york@aemc.gov.au

Dear Ms York

Rule Change Proposal – Making ISP Projects Financeable

The 2020 Integrated System Plan (ISP) released by the Australian Energy Market Operator (AEMO) sets out an optimal development path to support the ongoing transformation of the National Electricity Market (NEM) and deliver least cost outcomes to customers. Project EnergyConnect is identified as one of the actionable ISP projects required to support this plan.

Project EnergyConnect is a landmark project that will deliver the first new interconnector between Australian States in 15 years, delivering significant benefits to customers through lower generation costs and improved security of supply, while supporting the transition to a lower emissions future.

The Australian Energy Regulator (AER) is currently assessing Contingent Project Applications from ElectraNet and TransGrid for the regulated revenue to deliver their respective components of the project as the final regulatory approval step under the National Electricity Rules (the Rules).

As supported by ElectraNet, the Commission introduced significant changes to the planning and investment decision making arrangements under the Rules in July 2020 to ensure that actionable ISP projects, such as Project EnergyConnect, proceed on a timely basis.

However, the current revenue setting arrangements under the Rules, together with the unprecedented level of transmission investment projected in the ISP, create unintended consequences in relation to the financeability of this increased level of investment.

In particular, the approach to revenue setting under the Rules has the effect of producing delayed revenue recovery and consequently weak cashflows for new assets compared to existing assets. This is amplified for projects that are large and have long asset lives.

There are two key aspects of the current revenue setting framework that contribute to this effect:

- The RAB is indexed for inflation, which means that compensation for inflation is capitalised and recovered over the remaining life of the assets; and
- Capital expenditure for depreciation purposes is only recognised when the project is commissioned, rather than as the expenditure is incurred (whereas capital expenditure is already recognised on an “as incurred” basis for return on capital purposes).

ElectraNet’s analysis has therefore revealed an inconsistency in the current revenue setting process which adopts a BBB+/Baa1 benchmark credit rating but provides a revenue stream that is insufficient to sustain it.

A lower credit rating increases the cost of debt and increases the possibility that the TNSP may be unable to obtain finance, threatening timely delivery of ISP projects.

The proposed Rule change directly addresses these issues through a targeted approach that rebalances the profile of ISP project revenue, while not increasing total revenue in present value terms. ElectraNet’s analysis shows that the proposed Rule change would address the financeability issues arising from Project EnergyConnect.

Importantly for customers, the impact of this Rule change - estimated as an annual increase in customer charges of approximately \$4 per household in the current regulatory period - will continue to be more than offset by the price reduction benefits of Project EnergyConnect when balanced against expected annual average reductions of \$100 per residential customer in South Australia based on independent modelling.

ElectraNet’s proposed Rule change is submitted as an urgent Rule change request given the importance of a timely final investment decision on Project EnergyConnect. It takes the form of a participant derogation equivalent to that recently proposed by TransGrid, and should be read in conjunction with that proposal. Given that these Rule change proposals address the same issues, ElectraNet requests that the AEMC consider and consult on them jointly.

We look forward to engaging with the Commission as it considers this important Rule change request and appreciate the initial engagement with staff on this proposal. Please feel free to direct any queries in relation to this proposal to Simon Appleby in the first instance on 08 8404 7324.

Yours sincerely


Steve Masters
Chief Executive

A photograph of high-voltage power lines and towers stretching across a landscape under a sunset sky. The image is overlaid with a large, semi-transparent teal shape that tapers from the bottom left towards the top right. The text is positioned within this teal area.

RULE CHANGE PROPOSAL

Making ISP Projects Financeable – Participant Derogation

23 October 2020

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Executive Summary

ElectraNet and TransGrid are joint partners in Project EnergyConnect, which involves the construction of a new interconnector between South Australia and New South Wales. The total cost of the project is estimated at \$2.4 billion, with ElectraNet's share for South Australian works being approximately \$474 million¹. The 2020 Integrated System Plan (ISP) identified Project EnergyConnect as an actionable ISP project, which means that it is a key project in AEMO's optimal development path for the National Electricity Market.

Independent modelling has shown that Project EnergyConnect is expected to deliver average annual savings of \$100 per residential customer once commissioned and proportionately higher savings for business customers².

The National Electricity Rules (the Rules) revenue setting arrangements, together with the unprecedented level of transmission investment projected in the ISP, create unintended consequences in relation to the financeability of this increased level of investment.

On 30 September 2020, TransGrid lodged a Rule change proposal in the form of a participant derogation in relation to the revenue setting arrangements for actionable ISP projects, including Project EnergyConnect. TransGrid's concern is that revenue recovery is delayed under the current application of the building block methodology in Chapter 6A of the Rules in two respects:

- The regulatory asset base is indexed for inflation, which means that compensation for inflation is capitalised and recovered over the remaining life of the asset; and
- Capital expenditure for depreciation purposes is only recognised when a project is commissioned, rather than as the expenditure is incurred.

TransGrid's proposed Rule change would modify these elements of the revenue setting arrangements for actionable ISP projects, to ensure that ISP projects are able to be financed.

ElectraNet shares the challenges faced by TransGrid and therefore is lodging an equivalent Rule change proposal in the form of a participant derogation in relation to its actionable ISP projects, with a particular focus on Project EnergyConnect. The rationale for making this proposed Rule change for actionable ISP projects is two-fold:

- These projects are typically large compared to the existing Regulatory Asset Base (RAB) and have longer asset lives, which means that financeability is more likely to be an issue; and
- The timely delivery of these projects is important in achieving the \$11 billion in net benefits identified in the 2020 ISP.

¹ The figures contained in this proposal are presented in real terms (in \$2017-18) unless otherwise indicated.

² ACIL Allen Consulting, *Project EnergyConnect: Updated Analysis of Potential Impact on Electricity Prices in South Australia*, 24 September 2020. A copy of this report accompanies this Rule change proposal.

The proposed Rule change has the effect of rebalancing the profile of revenue, increasing it in the early years of an actionable ISP project and reducing it in later years. The total amount of revenue to be recovered would be unchanged in net present value terms. By addressing the financeability issues, the proposed Rule change will promote efficient investment in the provision of network services, in accordance with the National Electricity Objective (NEO).

ElectraNet's analysis indicates that the proposed Rule change will address the financeability issues arising from Project EnergyConnect. The additional short-term cost increases for electricity customers will be modest, increasing network costs by approximately \$4 per annum for a typical residential customer in the current regulatory period. In addition, the required change to the Rules does not have significant implementation costs, as the required changes to the AER's Roll Forward Model (RFM) and the Post-Tax Revenue Model (PTRM) can be introduced easily.

ElectraNet supports TransGrid's view that the Rule change is urgent because a timely investment decision regarding Project EnergyConnect is required. As Project EnergyConnect forms part of the optimal development path in the 2020 ISP, the project is important to the security and reliability of the national electricity system, consistent with the definition of an 'urgent Rule change' in the National Electricity Law (NEL).

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1. Introduction

1.1 Overview

On 30 September 2020, TransGrid lodged a Rule Change Proposal to address concerns regarding the financeability of its actionable ISP projects under Chapter 6A of the Rules. TransGrid has raised concerns in relation to Project EnergyConnect, which is an actionable ISP project.

TransGrid and ElectraNet are partners in this project, which has a total expected cost of \$2.4 billion. ElectraNet's share of the project is expected to be \$474 million.

ElectraNet's analysis indicates that it also faces financeability issues in relation to Project EnergyConnect. These issues are exacerbated because Project EnergyConnect is superimposed on other significant, committed transmission projects in South Australia, including:

- The Eyre Peninsula Reinforcement, which is an approved \$283 million contingent project; and
- The Main Grid System Strength project, which is an approved \$183 million contingent project to install four high-inertia synchronous condensers to address the system strength gap in South Australia.

ElectraNet is therefore submitting an equivalent Rule change in the form of a participant derogation. As noted by TransGrid, the purpose of this Rule change is to achieve a revenue profile that is neutral in present value terms, but enables the efficient financing of actionable ISP projects that will deliver significant benefits to electricity customers, including the timely delivery of Project EnergyConnect as an investment essential to Australia's energy future.

1.2 Structure of this Rule change proposal

The remainder of this Rule change proposal is structured as follows:

- Chapter 2 provides background information on Project EnergyConnect and the recent ISP Rule change to facilitate the timely delivery of actionable ISP projects;
- Chapter 3 explains the nature and scope of the issues with the existing Rules that this proposal is seeking to address;
- Chapter 4 explains how the proposed Rule change would address the issues described in Chapter 3 as a targeted and proportional change;
- Chapter 5 explains how the proposed Rule change will promote the achievement of the NEO;
- Chapter 6 explains the expected costs and benefits, and the impact of the proposed Rule change on those likely to be affected by it;

- Chapter 7 explains the case for expediting the proposed Rule change, as it meets the definition of an urgent Rule change in the NEL.
- The Appendix sets out ElectraNet's proposed Rule change, which is consistent with the form proposed by TransGrid.

1.3 Contact details

The contact details for the person making this Rule change on behalf of ElectraNet are:

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2. Background

Key Messages

- Project EnergyConnect is a landmark project that is being undertaken jointly by ElectraNet and TransGrid to deliver the first new interconnector between Australian States in 15 years.
- The project forms part of AEMO's optimal development path in its 2020 ISP, and is expected to deliver significant benefits to customers in terms of lower generation costs, improved security of supply and support for the transition to a lower emissions future.
- Delivering the actionable ISP projects has been a key focus of the recent ISP Rule change, which included measures to ensure that TNSPs could obtain cost recovery for these projects.
- ElectraNet considers that the financeability of actionable ISP projects is also a key issue in ensuring that those projects are delivered in a timely manner.

Project EnergyConnect involves the construction of an 860-kilometre interconnector linking Robertstown in mid-north South Australia and Wagga Wagga in New South Wales via Buronga, with an extension linking Buronga with Red Cliffs in Victoria. The interconnector will provide 800 MW of nominal transfer capacity in both directions.

The project has been declared to be Critical State Significant Infrastructure for NSW³ and a 'Major Development'⁴ for South Australia. AEMO has also identified increasing system security risks in South Australia in a recent report to the South Australian Government, recommending that Project EnergyConnect proceed as an "essential foundational measure" to address these risks⁵.

A comprehensive assessment of Project EnergyConnect has been undertaken in accordance with the Regulatory Investment Test for Transmission, followed by an updated cost benefit assessment undertaken by ElectraNet in September 2020. This updated analysis has been accepted by the AER, confirming that Project EnergyConnect is the preferred option and delivers positive net market benefits to customers.

Both TransGrid and ElectraNet have now lodged Contingent Project Applications with the AER seeking the regulated revenue required to deliver their respective components of Project EnergyConnect as the final regulatory approval step under the Rules.

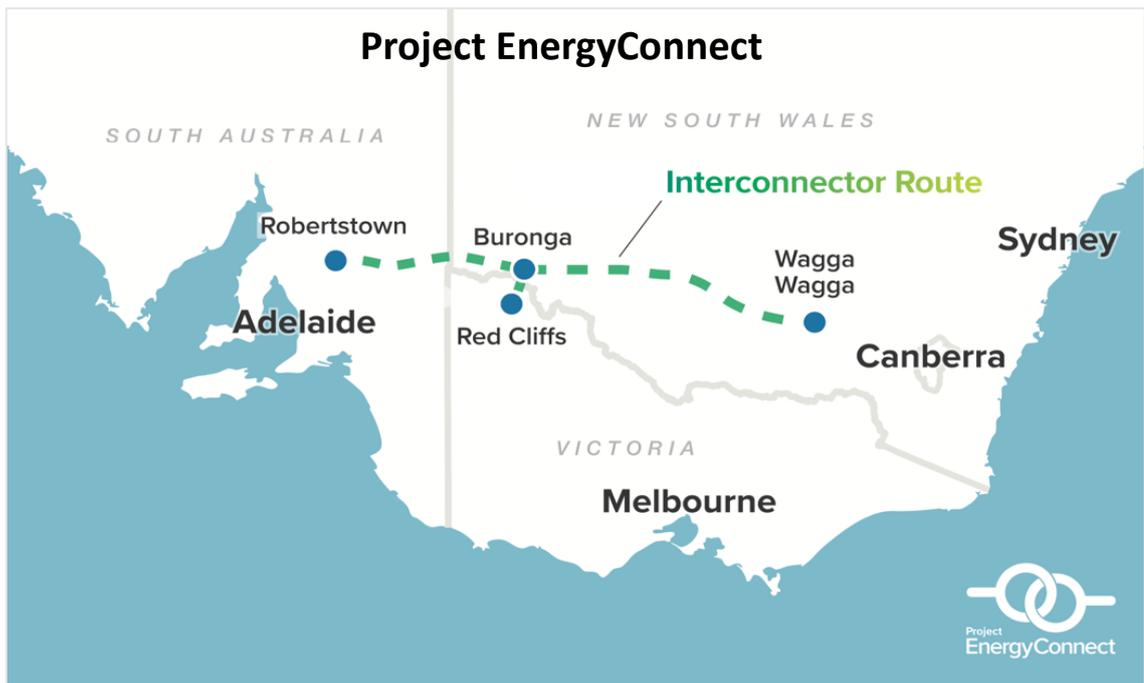
shows the line route for Project EnergyConnect.

³ Media Release, NSW Planning and Public Spaces Minister Rob Stokes, 29 August 2019.

⁴ Media Release, SA Premier Steven Marshall, 27 June 2019.

⁵ AEMO, [Minimum Operational Demand Thresholds in South Australia](#), May 2020.

Figure 1: Line route for Project EnergyConnect



As an actionable ISP project, Project EnergyConnect is expected to deliver significant benefits to the NEM. Economic modelling shows the new interconnector will deliver substantial benefits as soon as it is built, leading to reductions in wholesale and retail electricity prices in South Australia and New South Wales, by enabling access to lower cost generation. To summarise, the principal customer benefits are as follows:

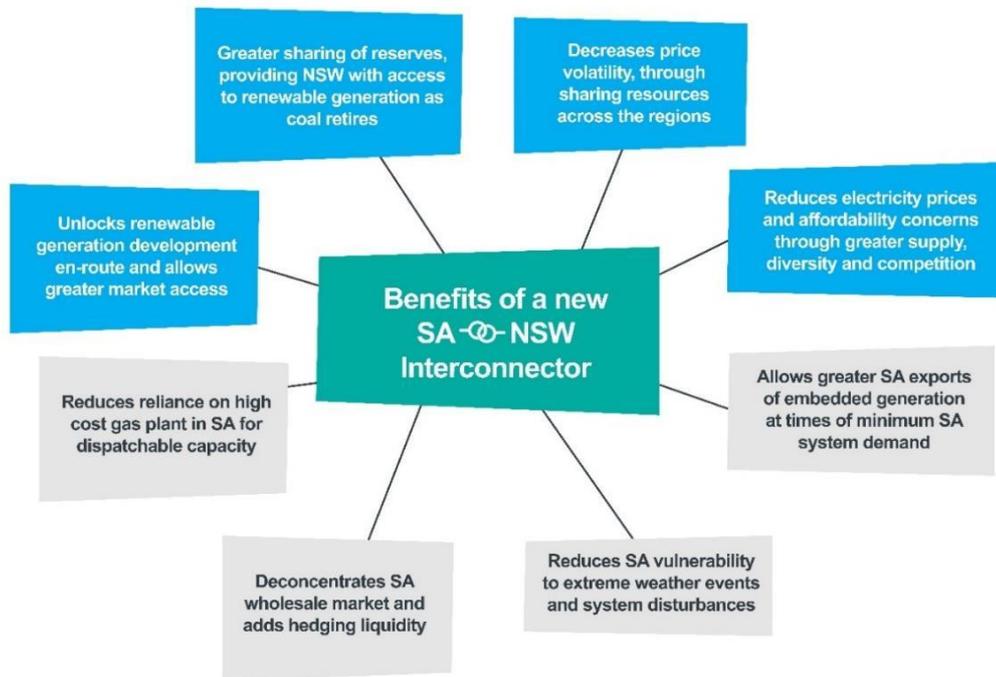
- For New South Wales customers, the interconnector improves diversity of supply and access to cheaper renewable energy sources as the coal fleet progressively retires, while also unlocking significant renewable energy development along the route.
- For South Australian customers, the interconnector provides access to additional capacity when needed to replace expensive gas generation, whilst also improving power system resilience and security.

The figure below provides an overview of the benefits that the project will deliver.

Project EnergyConnect is part of the integrated roadmap for the NEM, as reflected in the 2020 ISP. AEMO’s optimal development path identifies the actionable ISP projects, which include Project EnergyConnect, that are required as Australia’s energy supply transitions to a lower carbon emissions future. The purpose of the ISP is closely aligned with the NEO, being focused on the efficient development of the power system for the long-term benefit of customers:

“The purpose of the ISP is to establish a whole of system plan for the efficient development of the power system that achieves power system needs for a planning horizon of at least 20 years for the long-term interests of the consumers of electricity.”

Figure 2: Summary of benefits from Project EnergyConnect



In July 2020, significant changes were introduced to the national planning and regulatory arrangements to ensure that actionable ISP projects, such as Project EnergyConnect, proceed in a timely manner. An important element of the July 2020 ISP Rule change was an amendment to the contingent project provisions to ensure that TNSPs are able to obtain revenue recovery for actionable ISP projects in a timely manner.

As explained in the next chapter, whilst the ISP Rule change ensured that TNSPs could obtain revenue recovery for a particular project, the question of whether the current regulatory arrangements for revenue setting were appropriate for ISP projects was not specifically considered or addressed.

As highlighted in TransGrid’s Rule change proposal, it is evident that the size of ISP projects relative to the existing RAB, combined with their long asset lives, indicate that the current revenue setting arrangements need to be adjusted to ensure that ISP projects are able to be financed. In ElectraNet’s case, Project EnergyConnect is superimposed on two other large, committed transmission projects. The lead time involved in delivering major transmission projects emphasises the importance of addressing financeability risks before they give rise to project delays.

3. Nature and scope of the issues with the existing Rules

Key Messages

- In applying the revenue setting arrangements in Chapter 6A of the Rules, the AER sets a benchmark allowed rate of return that assumes that TNSPs maintain a BBB+/Baa1 credit rating.
- An investment grade credit rating is required in order to obtain project financing at a reasonable cost and to promote efficient investment.
- The application of Chapter 6A delays the recovery of revenue for a project by:
 - compensating the TNSP for inflation by indexing the RAB; and
 - only recognising capital expenditure for depreciation purposes when the project is commissioned.
- Whilst the current revenue setting approach is appropriate in cases where new projects are relatively small compared to the existing RAB, Project EnergyConnect does not satisfy these conditions.
- ElectraNet's analysis confirms TransGrid's view that Project EnergyConnect does not support the benchmark credit rating of BBB+ or even a baseline investment grade rating. This project combined with other significant committed transmission projects undermines ElectraNet's credit rating and the prospects for efficient investment, contrary to the NEO.

Chapter 6A of the Rules addresses the economic regulation of transmission services, including the regulation of revenues that may be earned by TNSPs from the provision of transmission services. In broad terms, these arrangements are designed to promote the NEO by ensuring that each TNSP is remunerated for efficient investment in and operation of its transmission network.

The revenue setting process in Chapter 6A includes an allowance to cover the costs TNSPs are expected to incur when financing capital investments in their networks. This 'allowed rate of return' is based on a benchmark, rather than the actual costs of each individual business. This approach ensures that each TNSP has an incentive to finance its business as efficiently as possible.

The relevant benchmark assumptions that currently apply to setting the allowed rate of return are:

- ABBB+/Baa1 credit rating; and
- A debt to equity ratio of 60:40, whereby it is assumed that the firm is financed with 60 per cent debt and 40 per cent equity.

As the TransGrid application noted, the AER's assumption that a benchmark efficient entity would gear to 60 per cent (debt-to-assets) is based firmly on the observed behaviour of relevant Australian regulated businesses, and is a benchmark assumption that has

endured since the earliest days of formal cost-based regulation in Australia. This observed behaviour and history has firmly anchored the expectations of investors as to the level of gearing that is able to be achieved in relation to these assets.

TNSPs therefore rely on a considerable amount of debt financing to assist in funding their investments. As explained by Incenta, it is prudent for TNSPs to achieve and maintain an investment grade credit rating, together with a safety margin against falling below this level:⁶

“The reason for targeting an investment grade credit rating (together with a buffer) is that access to the largest and most liquid of the pools of debt finance require such a rating, reflecting the constraints that exist for many institutional investors. Thus, if a regulated business’s credit rating was to slip below investment grade then, as well as experiencing a material increase to its cost of debt, additional risk over refinancing would be expected, which would require additional costs to be incurred to manage and potentially also create the risk that new investment could not be financed (or not financed in a timely manner).”

As part of the revenue setting framework, clauses 6A.5.2 and 6A.6.1 of the Rules require the AER to prepare and publish a post-tax revenue model (PTRM) and roll forward model (RFM) for TNSPs. The principal purpose of the PTRM is to calculate the maximum allowed revenue for each TNSP’s revenue determination⁷.

The AER uses the RFM to determine the closing RAB for a regulatory control period. The closing RAB value for a regulatory control period, as calculated by the RFM, becomes the opening RAB to be used in the PTRM for the purposes of making a revenue determination for the next regulatory control period.

The AER’s approach to revenue setting, which is reflected in the PTRM and RFM, has the effect of producing weak cashflows for new assets compared to existing assets. There are two notable aspects of the current revenue setting framework that contribute to this effect:

- The RAB is indexed for inflation, which means that compensation for inflation is capitalised and recovered over the remaining life of the assets; and
- Capital expenditure for depreciation purposes is only recognised when the project is commissioned, rather than as the expenditure is incurred⁸.

These aspects lead to the deferral of revenue in relation to new projects, particularly those involving long asset lives such as transmission lines. Such deferral of revenue does not raise any concerns if the TNSP is able to maintain its credit rating, consistent with the benchmark assumptions. For large new projects, however, such as Project EnergyConnect, the delay in revenue recovery may lead to a downgrading in a TNSP’s credit rating. As already discussed, a downgrade in credit rating increases the cost of debt and increases the possibility that the TNSP may be unable to obtain finance.

⁶ Incenta Economic Consulting, *Attracting capital for ISP Projects*, September 2020, page 6.

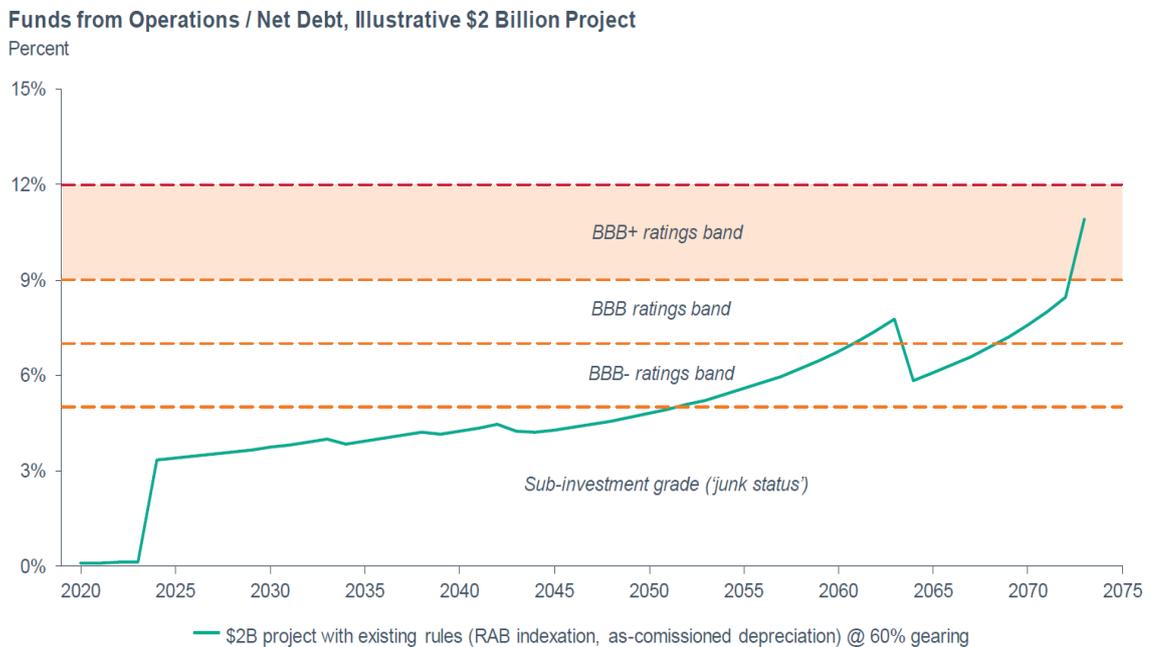
⁷ Clause 6A.5.1(b).

⁸ Capital expenditure is already recognised on an “as incurred” basis for return on capital purposes.

In the context of actionable ISP projects, it is in customers’ interests to ensure that the projects can be financed and delivered on time. As discussed in Chapter 2, the ISP Rule change was introduced in July 2020 with the express purpose of “converting the Integrated System Plan into action.”⁹ ElectraNet’s concern, which is also reflected in TransGrid’s Rule change proposal, is that the current revenue setting arrangements may inadvertently undermine this objective of the ISP Rule change if financeability is compromised.

TransGrid’s Rule change proposal shows the notional credit rating for a standalone \$2 billion project, being TransGrid’s approximate share of Project EnergyConnect, applying the current revenue setting arrangements. This analysis, which is reproduced in Figure 3 below, shows that the revenue is insufficient to achieve the benchmark credit rating of BBB+ at any point in the project’s life or even a baseline investment grade credit rating (BBB) for more than 20 years.

Figure 3: Implied credit rating for the standalone \$2 billion project



Whilst the above analysis demonstrates that the current revenue setting process cannot support the benchmark credit rating for a standalone project, new transmission projects are generally added to an existing asset base rather than being financed on a standalone basis. Nevertheless, the above analysis illustrates the pressure that may be put on a TNSP’s credit rating as a result of the project’s revenue profile.

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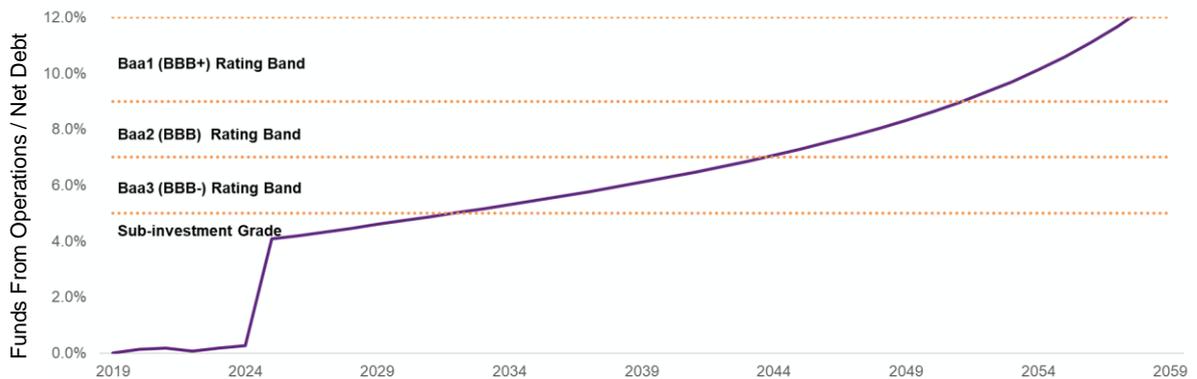
<http://www.coagenergycouncil.gov.au/publications/actionable-isp-final-rule-recommendation>.

As a practical matter, the concerns raised in relation to Project EnergyConnect relate to the size of this project compared to the existing RAB, and the cumulative impact of other major transmission projects. TransGrid makes this point in its Rule change proposal in commenting that the financeability issue is exacerbated where multiple major ISP projects are undertaken simultaneously, which is the situation TransGrid is likely to face over the next ten years.¹⁰

Whilst ElectraNet’s share of Project EnergyConnect is only 25% of TransGrid’s project costs, the project is significant given the relative size of ElectraNet’s RAB.¹¹ Furthermore, the total value of ElectraNet’s recent contingent projects is \$940 million¹², which will add over 34% to ElectraNet’s projected RAB as at 30 June 2023. This material increases in the value of new projects - each with long asset lives and delayed revenue recovery - creates the same financeability issues for ElectraNet as those raised by TransGrid.

ElectraNet has conducted analysis to show the notional credit rating for Project EnergyConnect on a standalone basis, assuming the current revenue setting arrangements apply. The figure below shows that the benchmark credit rating of BBB+ would not be achieved for over 30 years.

Figure 4: Notional credit rating for Project EnergyConnect as a \$500m standalone project



The above analysis reveals an inconsistency in the current revenue setting process which adopts a BBB+/Baa1 benchmark credit rating, but provides a revenue stream that is unable to sustain that rating.

¹⁰ TransGrid, Making ISP projects financeable - Participant Derogation, 30 September 2020, page 6.

¹¹ The AER’s 2018-23 revenue determinations for TransGrid and ElectraNet show their respective RABs to be \$7,098 million and \$2,743 million (\$nominal) as at 30 June 2023.

¹² Project EnergyConnect is \$474 million; the Eyre Peninsula Reinforcement is \$283 million; and the Main Grid System Strength project is \$183 million.

4. How would the proposed Rule change address the issues raised?

Key Messages

- ElectraNet is proposing a participant derogation, consistent with the approach proposed by TransGrid.
- The proposed Rule change directly addresses the elements of the current revenue setting process that lead to a delay in revenue recovery.
- The proposed Rule change is a targeted approach that rebalances the profile of ISP project revenue to address the financeability issue, but does not affect the total revenue for ISP projects in present value terms.
- ElectraNet's analysis shows that the proposed Rule change would address the financeability issues arising from Project EnergyConnect.

As explained in Chapter 0, the financeability issues arise from the profile of regulated revenue which delays cost recovery in two respects:

- The RAB is indexed for inflation, which means that the compensation for inflation is capitalised and recovered over the remaining life of the assets; and
- Capital expenditure for depreciation purposes is recognised only when the project is commissioned, rather than as the expenditure is incurred.

ElectraNet's proposed Rule change adopts a targeted approach by establishing an *annual building block revenue requirement* for actionable ISP projects that:

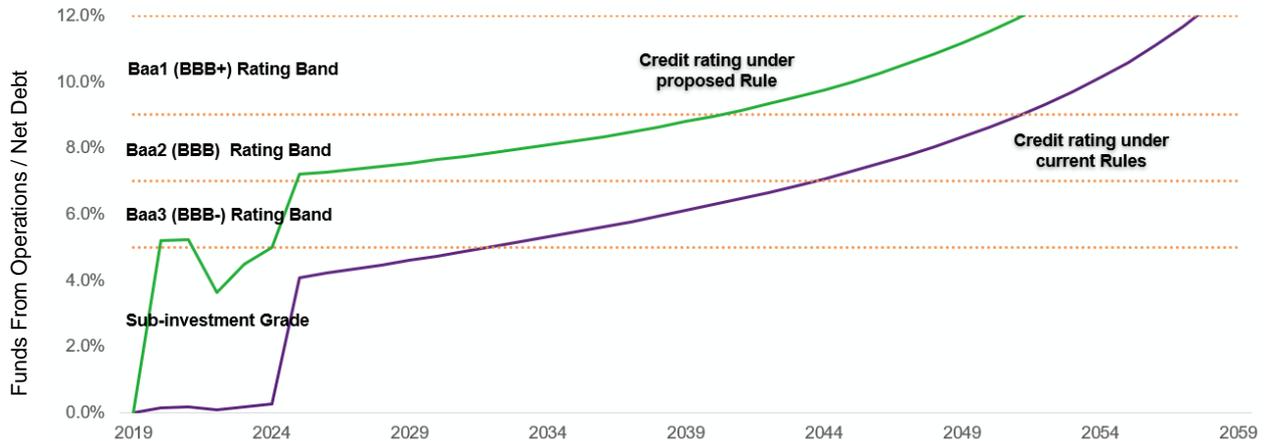
- Provides a nominal rate of return on an unindexed RAB for actionable ISP projects; and
- Remunerates capital expenditure for actionable ISP projects as it is incurred.

ElectraNet's proposed Rule change follows the approach proposed by TransGrid, which is a participant derogation that removes these features from the calculation of the revenues associated with actionable ISP projects only, starting with Project EnergyConnect. This change would yield a revenue profile that is neutral in present value terms, but enables the efficient financing of actionable ISP projects so that they can be delivered in accordance with the optimal development path that has been identified to maximise benefits to customers.

The proposed Rule change would require an 'actionable ISP' roll forward model and post-tax revenue model to be developed by the AER. The AER's revenue setting process would combine the current *annual building block revenue requirement* with a separately calculated revenue allowance in relation to actionable ISP projects.

The figure below shows how this Rule change would address ElectraNet’s financeability issues in relation to Project EnergyConnect. It shows an improved outcome in relation to the notional credit rating for Project EnergyConnect as a standalone project compared to the current Rules (as presented in Figure 4, in chapter 0). ElectraNet’s assessment is that this change will be sufficient to address the financeability issues arising from Project EnergyConnect.

Figure 5: Impact of proposed Rule on the notional credit rating for Project EnergyConnect



As a general observation, financeability issues will tend to arise where ISP projects are large relative to the TNSP’s RAB, and be exacerbated when there are other contemporaneous large projects.

5. Promoting the achievement of the National Electricity Objective

Key Messages

- ElectraNet's proposed Rule change will promote efficient and timely investment in transmission networks, consistent with the NEO.
- A consideration of the revenue and pricing principles in the National Electricity Law (NEL) also supports the Rule change.
- Efficient and timely investment is required to achieve the \$11 billion in net benefits identified in the 2020 ISP and will be promoted by addressing the current financeability issues.

Section 88 of the NEL states that the Commission may only make a Rule if it is satisfied that the Rule will or is likely to contribute to the achievement of the NEO. In addition, the Commission must also take into account the revenue and pricing principles in making a Rule for or with respect to any matter specified in items 15 to 24 and 25 to 26J of Schedule 1 to the NEL.

In relation to this Rule change proposal, the revenue and pricing principles in the NEL are relevant because items 15 and 20 of Schedule 1 address:

- The regulation of revenues earned or that may be earned by owners, controllers or operators of transmission systems from the provision by them of services that are the subject of a transmission determination.
- The economic framework, mechanisms or methodologies to be applied or determined by the AER for the purposes of items 15 and 16 including (without limitation) the economic framework, mechanisms or methodologies to be applied or determined by the AER for the derivation of the revenue (whether maximum allowable revenue or otherwise) or prices to be applied by the AER in making a transmission determination.

The purpose of this chapter, therefore, is to explain:

- How the proposed Rule change will promote the achievement of the NEO; and
- How this Rule change proposal supports the revenue and pricing principles in the NEL.

The NEO is:

“to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to:

- price, quality, safety and reliability and security of supply of electricity
- the reliability, safety and security of the national electricity system.”

The NEL defines *electricity services* as follows:

“**electricity services** means services that are necessary or incidental to the supply of electricity to consumers of electricity, including—

- (a) the generation of electricity
- (b) electricity network services
- (c) the sale of electricity.”

The financeability issues described in Chapter 0 of this Rule change proposal are directly relevant to the efficient investment in electricity network services. In particular, efficient investment can only occur if the TNSP is able to raise finance. Furthermore, the costs of obtaining finance will increase if a TNSP’s credit rating is downgraded (or at risk of a downgrade) as a result of the regulatory framework deferring revenue recovery. If the revenue setting process leads to higher costs of finance than necessary, it follows that it will not ‘promote efficient investment’, nor will it promote the long-term interests of consumers of electricity with respect to price.

ElectraNet’s proposed Rule change will address the financeability issue and put downward pressure on the costs of finance compared to the status quo. As such, the proposed Rule will contribute to the achievement of the NEO.

In relation to the revenue and pricing principles, the following NEL provisions are relevant to the proposed Rule change:

- A regulated network service provider should be provided with effective incentives in order to promote economic efficiency, including in relation to promoting efficient investment in a transmission system.¹³
- Regard should be had to the economic costs and risks of the potential for under and over investment by a regulated network service provider in [...] a transmission system with which the operator provides direct control network services.¹⁴

The first of these revenue and pricing principles has already been addressed in relation to the NEO. In particular, the proposed Rule change will promote efficient investment in the transmission system for the reasons already outlined.

In relation to the second principle, the Rule change will address the risk that actionable ISP projects may not proceed because finance is either unavailable or too expensive. AEMO’s 2020 ISP explains the significant value that actionable ISP projects will provide to the NEM, providing that they are delivered in a timely manner:¹⁵

¹³ National Electricity Law, subsection 7A(3).

¹⁴ National Electricity Law, subsection 7A(6).

¹⁵ AEMO, 2020 Integrated System Plan, July 2020, page 8.

“Provided that the transmission investments are timely and kept at an efficient level, the combined supply and network investments proposed in the ISP are expected to deliver \$11 billion in net benefits to the National Electricity Market (NEM). As regulated network investments typically have long lead times, the ISP provides clear signposts for decision making as the future unfolds.”

The 2020 ISP also classifies Project EnergyConnect as an ‘actionable ISP project’ which will deliver net market benefits and support energy market transition through:¹⁶

- Lowering dispatch costs, initially in South Australia, through increasing access to supply options across regions;
- Facilitating the transition to a lower carbon emissions future and the adoption of new technologies, through improving access to high quality renewable resources across regions; and
- Enhancing security of electricity supply in South Australia.

AEMO finds that Project EnergyConnect is required immediately in all scenarios it has considered in the ISP.

The cost impact of an actionable ISP project not proceeding is significant, as these projects are expected to deliver substantial net benefits to the NEM, as described above. In considering this Rule change proposal, therefore, ElectraNet asks the Commission to consider the downside risk of actionable ISP projects not proceeding and the consequential costs for customers, which would be contrary to their long-term interests.

¹⁶ AEMO, [2020 Integrated System Plan](#), July 2020, p.86.

6. Impact of the proposed Rule change

Key Messages

- Customers will face higher costs in the early years of Project EnergyConnect as a result of this Rule change. However, the magnitude of this increase is modest and it will continue to be more than offset by the expected total price savings for customers.
- The AER will need to develop a new RFM and PTRM to apply to actionable ISP projects, but these changes are not complex and can be introduced easily.
- The benefit of the Rule change will substantially outweigh the implementation costs and the short-term impact on customers' network charges.

The purpose of this chapter is to explain the expected costs and benefits and potential impacts of the proposed change to the Rules on those likely to be affected.

ElectraNet's primary focus is on our customers. While transmission accounts for only a small share of a typical residential customer bill (less than 7%), timely transmission investment has a significant impact on the delivery of secure, least cost supply to customers,

As explained in the previous Chapter, the Rule change will deliver significant benefits to customers by ensuring that actionable ISP projects are able to be delivered in a timely manner in accordance with AEMO's optimal development path. In relation to Project EnergyConnect, as discussed in Chapter 2, the new interconnector is expected to deliver substantial benefits as soon as it is built.

The proposed Rule change does not increase the total revenue in present value terms that ElectraNet will earn from Project EnergyConnect, it only changes the profile of revenue in order to address the financeability issues. As such, customers will not pay more as a result of the proposed Rule change, although they will pay more in the early years of the project (and less in later years).

Our analysis indicates that the proposed Rule change is expected to increase average customer transmission prices in South Australia by approximately 2% or approximately \$4 per annum in the current regulatory period based on the average residential customer bill.

However, this increase will continue to be more than outweighed by the expected price reduction benefits of Project EnergyConnect to South Australian customers when balanced against expected average annual reductions of \$100 per residential customer, and proportionately higher savings for business customers¹⁷.

¹⁷ ACIL Allen Consulting, *Project EnergyConnect: Updated Analysis of Potential Impact on Electricity Prices in South Australia*, 24 September 2020. The impact of the Rule change can be expected to reduce the projected annual savings from \$100 to \$96 per residential customer.

The Rule change would require the AER will to develop a roll forward model and post-tax revenue model that removes the RAB indexation and allows for capital expenditure for depreciation purposes to be recognised on an as incurred basis. ElectraNet expects that the administrative costs of making these changes are likely to be minimal and are unlikely to raise any significant challenges or complexities.

7. Urgency of the proposed Rule change

Key Messages

- The NEL provides for an expedited process for an urgent Rule change.
- ElectraNet submits that the Rule change is urgent because:
 - a timely investment decision regarding Project EnergyConnect is required; and
 - Project EnergyConnect will contribute to the security and reliability of the national electricity system, as part of the ISP's optimal development path. As advised by AEMO, it is a critical element to system security in South Australia.

Section 96 of the NEL provides for an expedited Rule change in circumstances where the proposed change is urgent. The NEL defines an urgent Rule as follows:

urgent Rule means a Rule relating to any matter or thing that, if not made as a matter of urgency, will result in that matter or thing imminently prejudicing or threatening —

- (a) the effective operation or administration of the wholesale exchange operated and administered by AEMO; or
- (b) the safety, security or reliability of the national electricity system.

As explained in TransGrid's Rule change proposal, the urgency arises because finance needs to be established in a timely manner to enable the project to proceed to delivery.

Any delays or inability to secure finance in a timely manner will impact on the range of remaining procurement activities, approvals processes and associated project works that must proceed on schedule in the coming months in order to achieve project delivery timelines. The Commission's standard Rule change process, which is typically six months, is not consistent with these timeframes.

In relation to the definition of an urgent Rule, described above, AEMO has demonstrated that Project EnergyConnect is urgently required in relation to the security and reliability of the national electricity system, and in particular in South Australia.

This view is supported by AEMO's recent advice to the South Australian Government and the inclusion of Project EnergyConnect in the optimal development path, which the 2020 ISP explains is required to meet the national electricity system's security and reliability needs:¹⁸

¹⁸ AEMO, [2020 Integrated System Plan](#), July 2020, paragraphs E and F, p.9.

“The ISP sets out the optimal development path needed for Australia’s energy system, with decision signposts to deliver the affordability, security, reliability and emissions outcome for consumers through the energy transition.

When implemented, these investments will create a modern and efficient energy system that delivers \$11 billion in net market benefits, and meets the system’s reliability and security needs through its transition, while also satisfying existing competition, affordability and emission policies.”

ElectraNet therefore supports TransGrid’s submission that the proposed Rule change is urgent.



APPENDICES

Appendix: Rule change proposal

Part 16 Derogations granted to ElectraNet

8A.16 Derogations from Chapter 6A for the current regulatory control period and subsequent regulatory control periods

8A.16.1 Definitions

In this *participant derogation*, rule 8A.16:

commencement date means *[to be inserted]*.

current regulatory control period means the period of five *regulatory years* that commenced on 1 July 2018 and ends on 30 June 2023.

ElectraNet means ElectraNet Pty Ltd ACN 094 482 416 trading as ElectraNet.

ElectraNet's determination means the *transmission determination* made by the *AER* for ElectraNet for the current regulatory control period.

ElectraNet ISP project post-tax revenue model has the meaning given in clause 8A.16.5(b).

ElectraNet ISP project roll forward model has the meaning given in clause 8A.16.6(c).

Existing ISP project has the meaning given in clause 11.126.1.

ISP project means:

- (a) all existing actionable ISP projects that are deemed to be *actionable ISP projects* under clause 11.126.3; and
- (b) all *actionable ISP projects* specified in an Integrated System Plan published by AEMO under clause 5.22.

ISP project regulatory asset base means the value of those assets that are:

- (a) associated with ISP projects; and
- (b) owned, controlled or operated by ElectraNet,

but only to the extent that those assets provide *prescribed transmission services*.

Regular regulatory asset base means the value of all assets that:

- (a) satisfy clause 6A.6.1(a);
- (b) are owned, controlled or operated by ElectraNet; and
- (c) do not form part of the ISP project regulatory asset base.

Revenue recovery principle, in respect of ElectraNet, means the principle that ElectraNet must be given the ability to recover the same, but no more, revenue (in net present value equivalent terms) as it would have recovered if this *participant derogation* had applied from the commencement of the current regulatory control period.

transitional ISP Projects means ISP projects in respect of which ElectraNet makes an application to the *AER* under clause 6A.8.2 after 1 September 2020 but before the commencement date.

Variation amount, in respect of ElectraNet, means an amount equal to:

- (a) the sum of all *maximum allowed revenue* for each *regulatory year* of the current regulatory control period calculated as if this clause 8A.16 had been in force at the time of each of the *AER's* determinations under clause 6A.8.2 in respect of the transitional ISP projects; minus
- (b) the sum of all *maximum allowed revenue* for each *regulatory year* of the current regulatory control period including any amounts included in ElectraNet's determination following a determination by the *AER* under clause 6A.8.2 in respect of the transitional ISP projects.

Variation amount determination means a determination of the variation amount by the *AER* under clause 8A.16.8(b).

8A.16.1A Application

The *AER* must apply this *participant derogation* whenever the *Rules* require the *AER* to determine the *maximum allowed revenue* for ElectraNet.

8A.16.2 Expiry date

This *participant derogation* expires on the expiry of the *South Australian Transmission Lease* as defined in clause 9.25.2 (b).

8A.16.3 Application of Rule 8A.16

This *participant derogation* prevails to the extent of any inconsistency with:

- (a) any other provision of the *Rules*;
- (b) ElectraNet's determination; and
- (c) any change made to ElectraNet's determination by the *AER* under clause 6A.8.2 that relates to an ISP project.

8A.16.4 Contents of revenue determination for ElectraNet

- (a) For the purposes of clause 6A.4.2(a)(3A), a revenue determination for ElectraNet must specify two regulatory asset bases:
 - (1) the regular regulatory asset base; and
 - (2) the ISP project regulatory asset base.
- (b) Despite clause 6A.4.2(a)(4), a *revenue determination* for ElectraNet must specify that indexation does not apply to the ISP project regulatory asset base.

8A.16.5 Building blocks approach for ElectraNet

- (a) For the purposes of clause 6A.5.4(a)(1):
 - (1) the ISP project regulatory asset base will not be indexed; and
 - (2) depreciation of the ISP project regulatory asset base will be calculated on the basis of capital expenditure as incurred.
- (b) The *AER* must publish a *post-tax revenue model* for ElectraNet (**ElectraNet ISP project post-tax revenue model**) that:
 - (1) does not index the ISP project regulatory asset base; and
 - (2) provides for depreciation of the ISP project regulatory asset base to be calculated on the basis of capital expenditure as incurred.

- (c) The *AER* must publish the ElectraNet ISP project post-tax revenue model as soon as reasonably practicable following the commencement date and no later than **[5 February 2021]**.
- (d) The *AER* may consult on the ElectraNet ISP project post-tax revenue model, but is not required to follow the *transmission consultation procedures*.
- (e) A reference to the *post-tax revenue model* in the *Rules* is deemed to be a reference to each of the ElectraNet ISP project post-tax revenue model and the *post-tax revenue model* published by the *AER* under clause 6A.5.2 separately.
- (f) For the avoidance of doubt, clause 6A.5 and the *post-tax revenue model* developed under it apply to the regular regulatory asset base without amendment.

8A.16.6 Regulatory asset bases for ElectraNet

- (a) For the purposes of clause 6A.6.1:
 - (1) the ISP project regulatory asset base will not be indexed; and
 - (2) depreciation of the ISP project regulatory asset base will be calculated on the basis of capital expenditure as incurred.
- (b) The *AER* must publish the model for the roll forward of the ISP project regulatory asset base that:
 - (1) does not adjust the ISP project regulatory asset base for outturn inflation; and
 - (2) provides for depreciation of the ISP project regulatory asset base to be calculated on the basis of capital expenditure as incurred.
- (c) The *AER* must publish the model for the roll forward of the ISP project regulatory base (**ElectraNet ISP project roll forward model**) as soon as reasonably practicable following the commencement date and no later than **[5 February 2021]**.
- (d) The *AER* may consult on the ElectraNet ISP project roll forward model, but is not required to follow the *transmission consultation procedures*.
- (e) A reference to:
 - (1) the regulatory asset base in the *Rules* is deemed to be a reference to each of the ISP project regulatory asset base and the regular regulatory asset base separately; and
 - (2) the *roll forward model* is deemed to be a reference to each of the ElectraNet ISP project roll forward model and the *roll forward model* published by the *AER* under clause 6A.6.1 separately.
- (f) For the avoidance of doubt, clause 6A.6.1 and the *roll forward model* developed under it apply to the regular regulatory asset base without amendment.

8A.16.7 Roll forward of regulatory asset base within the same regulatory control period

For the purposes of clause S6A.2.4, the ISP project regulatory asset base will not be increased by an amount necessary to maintain the real value of the ISP regulatory asset base as at the beginning of a later year.

8A.16.8 Recovery of revenue for ISP projects for which the AER has made a determination under clause 6A.8.2 prior to the commencement of this participant derogation

Variation amount determination

- (a) The *AER* must determine the variation amount for ElectraNet.
- (b) The *AER* must publish a variation amount determination as soon as reasonably practicable following the later of the commencement date and the date on which the *AER* has made a determination under clause 6A.8.2 in respect of all transitional ISP projects.
- (c) The *AER* may consult on the determination of the variation amount, but is not required to follow the *transmission consultation procedures*.

Recovery in the current regulatory control period

- (d) For the purposes of clause 6A.22.1, the *aggregate annual revenue requirement (AARR)* for ElectraNet for each of the *regulatory years* of the current regulatory control period following the date of the variation amount determination is to be:
 - (1) the amounts specified in clause 6A.22.1; plus
 - (2) a proportion of the variation amount approved by the *AER*.
- (e) The proportion of the variation amount to be included in the AARR under clause 8A.16.8(d)(2) for each of the *regulatory years* of the current regulatory control period following the date of the variation amount determination must satisfy the revenue recovery principle.

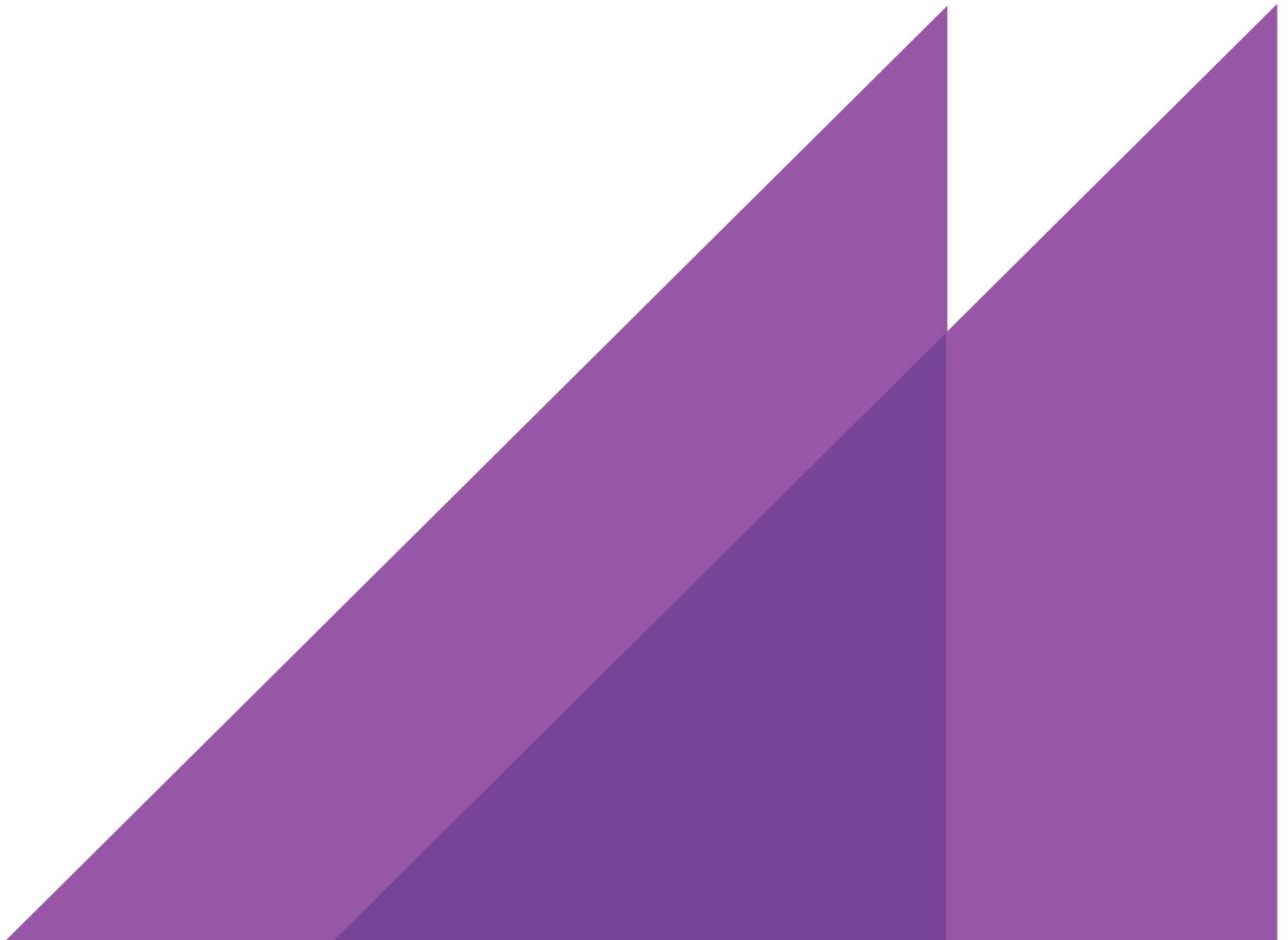
REPORT TO
ELECTRANET
24 SEPTEMBER 2020

PROJECT ENERGYCONNECT



UPDATED ANALYSIS OF POTENTIAL
IMPACT ON ELECTRICITY PRICES IN
SOUTH AUSTRALIA

FINAL REPORT





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EXECUTIVE SUMMARY

ACIL Allen Consulting was engaged by ElectraNet to update earlier estimates of the impact that *Project EnergyConnect*, a new interconnector between New South Wales and South Australia, would have on wholesale electricity prices and, therefore, on retail electricity bills for residential and business customers in South Australia.

We have analysed the same question for ElectraNet in a report published in February 2019 and another published before that. This update differs from the earlier analysis *only* in respect of the input assumptions. These were updated to reflect changes in the market and relevant outlook since the previous work was completed.

The most substantial changes relate to including projects identified through the Australian Energy Market Operator's (AEMO) 2020 Integrated System Plan (ISP). There are also updates in the estimated cost customers would pay for the interconnector itself, i.e. broadly the assumed transmission use of system charges, which have increased slightly since our report into the same topic of February 2019. These costs were provided by ElectraNet.

The modelling was conducted using *PowerMark*, ACIL Allen's proprietary model of the National Electricity Market's wholesale spot market and was based on updated assumptions relative to prior analysis of the same question.

Project EnergyConnect was assumed to have bi-directional transfer capacity of 800 MW between New South Wales and South Australia with an aggregate transfer limit of 1,400 MW across *Project EnergyConnect* and the existing Heywood interconnector.¹

It was also assumed that an additional line is built between Buronga in New South Wales and Red Cliffs in Victoria, which will increase the bi-directional transfer capacity between New South Wales and Victoria by 400 MW.²

Project EnergyConnect was assumed to be physically in place from 1 January 2024, although we understand that it is expected to operate at reduced capacity for the first six months to allow for network testing. Therefore the additional transfer capacity was introduced in stages from 1 January and 1 July 2024.

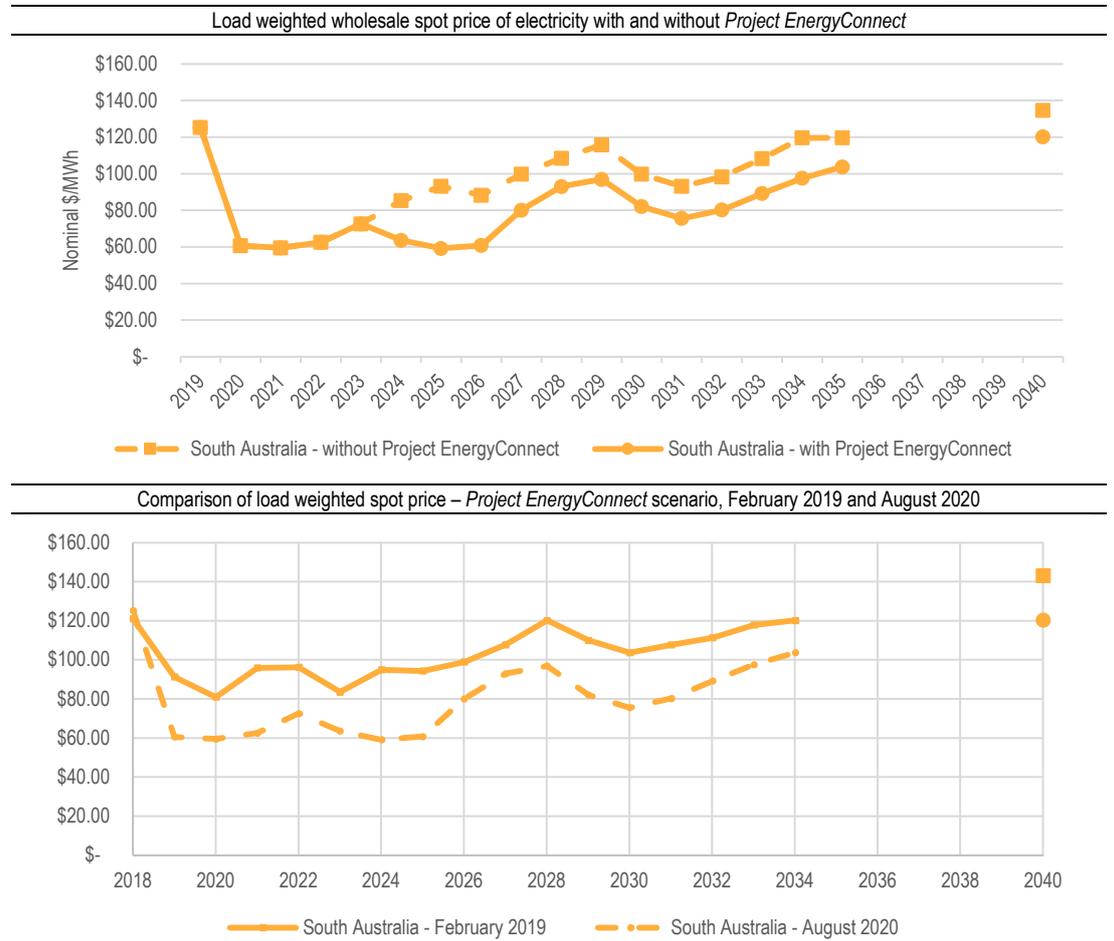
As with the earlier analysis, the current modelling indicates that *Project EnergyConnect* is projected to place downward pressure on the wholesale spot price of electricity in South Australia, though the extent of the impact has changed due to the different input assumptions. This is illustrated in **Figure ES 1**, which shows:

¹ We note that these capacity assumptions approximate ElectraNet's current expectations, which are that the Heywood Interconnector would be able to transfer up to 750 MW and that the joint capacity cannot exceed 1,300 MW. The differences were necessary to account for interdependencies between the two interconnectors that are not reflected in our model, but do not materially impact on the outcomes of the analysis.

² As per information provided to ACIL Allen by ElectraNet.

- in the upper pane, our current projection of the load weighted wholesale spot price of electricity in South Australia both 'without' (dashed) and 'with' (solid) *Project EnergyConnect*
- in the lower pane, a comparison between our current projection of the load weighted wholesale spot price of electricity 'with' *Project EnergyConnect* as we reported it in February 2019 and as we now project it to be.

FIGURE ES 1 SUMMARY OF *PROJECT ENERGYCONNECT* PROJECTED IMPACT ON LOAD WEIGHTED PRICE OF ELECTRICITY – SOUTH AUSTRALIA

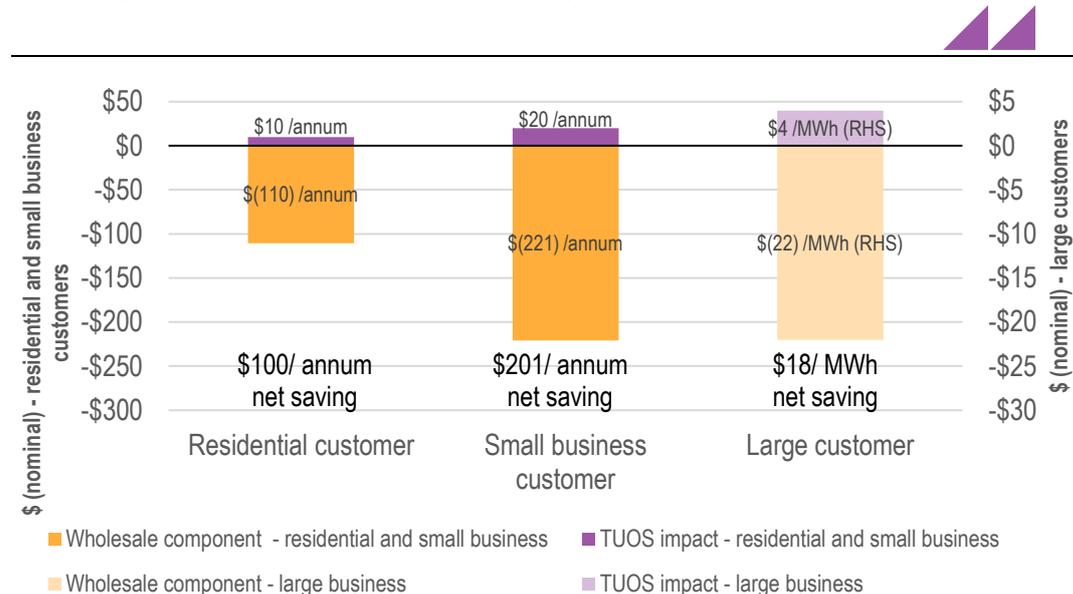


SOURCE: ACIL ALLEN CONSULTING

Impact on retail electricity bills

The projected impact of *Project EnergyConnect* on customers' electricity bills³ is summarised in Figure ES 2 and Table ES 1.

FIGURE ES 2 PROJECTED RETAIL BILL IMPACT –SA CUSTOMERS



SOURCE: ACIL ALLEN CONSULTING

TABLE ES 1 PROJECTED RETAIL BILL IMPACT – REPRESENTATIVE CUSTOMERS

	Residential customer	Small business customer	Large customer
Transmission network cost impact	\$10 / annum	\$20 / annum	\$4 / MWh
Average saving in wholesale component of bill	\$(110) / annum	\$(221) / annum	\$(22) / MWh
Net bill saving	\$(100) / annum	\$(201) / annum	\$18/MWh
Annual consumption (kWh/annum)	5,000	10,000	varied

SOURCE: ACIL ALLEN CONSULTING

As the figure and table show, we project that, on average in nominal terms from 2024 to 2030, the:

- retail bill of a representative household (residential customer) would reduce by \$100 per annum
- retail bill of a representative small business customer would reduce by \$201 per annum, more than for residential customers because businesses use more electricity and, hence, have more to save
- bill of a large business customer would reduce by approximately \$18 for each MWh of electricity used with the total impact varying substantially depending on the particular business in question.

In all cases the projected impact on electricity bills is net of the cost of the interconnector itself.

³ ACIL Allen has assumed that *Project EnergyConnect* will impact on the energy cost and network cost components of a customer's electricity bill. *Project EnergyConnect* is assumed to have no impact on retail operating costs and margin, and the costs associated with environmental schemes.

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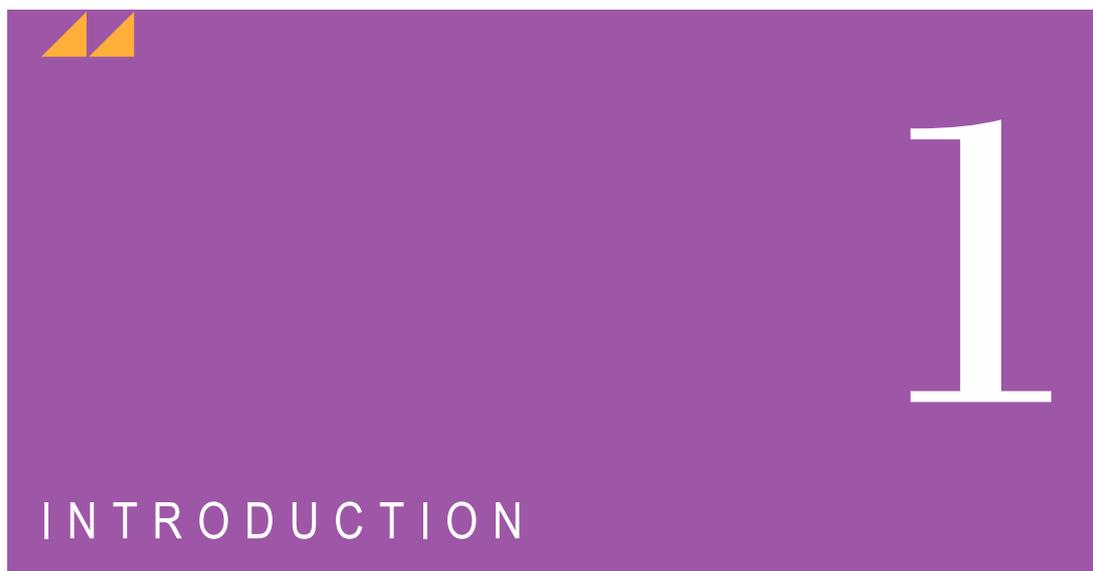
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ElectraNet is the electricity Transmission Network Service Provider (TNSP) in South Australia.

ACIL Allen Consulting (ACIL Allen) was engaged by ElectraNet to provide updates to earlier modelling of the potential impact of a proposed new interconnector between South Australia and New South Wales (*Project EnergyConnect*). Specifically, ACIL Allen was engaged to update modelling we reported in February 2019 in which we projected the impact *Project EnergyConnect* would have on wholesale electricity spot prices and, therefore, on customers' electricity bills in South Australia.⁴

This report provides summary results of our analysis.⁵ Dollar values are presented in nominal terms unless noted otherwise. The projections cover the calendar years 2020 to 2035, and spot year 2040.

The rest of this report is structured as follows:

- Chapter 2 describes the methodology we used to model the potential impact of *Project EnergyConnect* on electricity prices, both wholesale and retail, which centred around *PowerMark*, our proprietary model of the National Electricity Market (NEM) wholesale electricity market
- Chapter 3 provides the results from our electricity market modelling

⁴ This was, in turn, an update on modelling conducted in July 2018.

⁵ In our previous report we were also asked to estimate the broader impact *Project EnergyConnect* would have on the economies of South Australia, New South Wales and the parts of those two States that will 'host' *Project EnergyConnect*. This aspect of our work was not updated on this occasion.



We have modelled the impact of *Project EnergyConnect* on customers' electricity bills in South Australia by considering the net impact it will have on :

- wholesale electricity spot prices in South Australia
- the transmission network costs associated with *Project EnergyConnect*.

The methodology for modelling the wholesale electricity market is discussed in section 2.1. The transmission network cost estimates were provided by ElectraNet.

The way these were brought together to produce estimates of bill impacts is discussed in section 2.2

2.1 Modelling the wholesale electricity market

The impact of *Project EnergyConnect* on wholesale electricity spot prices was assessed using *PowerMark*, ACIL Allen's proprietary model of the NEM's wholesale electricity market.

At its core, *PowerMark* is a simulator that emulates the settlements mechanism of the NEM. *PowerMark* uses a linear program to settle the market, as does AEMO's NEM Dispatch Engine in its real time settlement process. *PowerMark* is part of an integrated suite of models, including models of the market for Renewable Energy Certificates and the wholesale gas market.

A distinctive feature of *PowerMark* is its iteration of generator bidding. *PowerMark* constructs an authentic set of initial offer curves for each unit of generating plant prior to matching demand and determining dispatch through the market clearing rules. Unlike many other models, *PowerMark* encompasses re-bids to allow each major thermal generation portfolio in turn to seek to improve its position — normally to maximise uncontracted revenue, given the specified demand and supply balance for the hourly period in question.

PowerMark has been developed over the past 18 years in parallel with the development of the NEM, NEMS (Singapore) and WESM (Philippines). We use the model extensively in simulations and sensitivity analyses conducted on behalf of industry and Government clients.

PowerMark routinely operates at *hourly* price resolution, unlike the NEM spot market which is settled on a half hourly basis. Half hourly modelling is possible, but our experience is that hourly modelling has very little impact on the outcomes, but simplifies the model run time and analytical task substantially.

PowerMark relies on a range of assumptions, which are set out in section 2.1.1.

The scenarios modelled are discussed in section 2.1.2.

2.1.1 Assumptions

PowerMark is based on a large number of detailed input assumptions. For the most part these are drawn from our understanding of the physical and other properties of generators in the NEM and other relevant sources. ACIL Allen's standard June 2020 reference case assumption set was used for this report. This assumption set was developed using the same approach as those underpinning previous reports for ElectraNet, though the detailed inputs are different to reflect changes over time. Further, the current set is broadly consistent with the 2020 ISP as published by AEMO, though demand remains reflective of the 2019 ESOO.

Wholesale spot price impacts are presented annually to 2035, and for spot year 2040. Beyond this period, modelling results become limited by the veracity of the assumptions that underpin them. The further into the future assumptions are made, the greater the risk that they are in error.

The key assumptions upon which the modelling is based are set out in Table 2.1.

TABLE 2.1 KEY ASSUMPTIONS

Item	Summary of assumption
Macro-economic variables	Exchange rate of AUD to USD converging to 0.75 AUD/USD Inflation of 2.5 per cent p.a.
Market design/operational developments	No changes to current market design or operation
Federal greenhouse gas emission policies	Retention of the LRET in its current form Between 26 and 28 percent reduction in GHG emissions below 2005 levels by 2030 No emissions scheme required over the period 2021 to 2030. Implementation of an Emissions Intensity Scheme (EIS) from 1 July 2030 to the end of the projection period in 2050.
State based schemes	
<i>Queensland</i>	CleanCo's portfolio of 500 MW ⁶ of wind (part of MacIntyre wind farm) and 320 MW of solar (part of Western Downs Green Power Hub) capacity in Queensland Assumed deployment of an additional 100MW of battery storage by 2022 to complement CleanCo's renewable capacity, bringing its portfolio to an aggregate capacity of about 1,000 MW
<i>Victoria</i>	Committed plant under the first stage of the VRET auction, which enables Victoria to reach (and over-achieve) its 25 per cent renewable energy target by 2020 Assumed deployment of additional new entrant renewable plant such that Victoria meets its 40 per cent target by 2025 and 50 per cent by 2030
<i>ACT</i>	Inclusion of the Australian Capital Territory's latest renewable generation auction, which opened to bids in November 2019 (200 MW wind and 20 MW/40MWh battery storage).
Electricity demand	AEMO August 2019 ESOO forecast with adjustments for ACIL Allen's view of smelter closures: Tomago in July 2027 Boyne Island in July 2029 Portland in July 2030 ESOO forecast adjusted for ACIL Allen's projections for behind-the-meter solar PV, battery storage uptake as well as electric vehicle uptake Incorporates ACIL Allen's projected impact of COVID-19 on underlying demand and rooftop PV uptake

⁶ Of which 400 MW is understood to result from the Queensland government's 400 Renewables initiative

Item	Summary of assumption												
Supply side													
<i>Committed projects</i>	<p>Named new entrant projects are included in the modelling where there is a high degree of certainty that these will go ahead (i.e. project has reached FID)</p> <p>Incorporates assumed delays of commissioning of new projects in the short-term due to impacts of COVID-19</p> <p>Includes the Federal Government's Snowy 2.0, and two announced UNGI projects (APA Group's 220 MW reciprocating gas engines in Victoria and Quinbrook's 132 MW aeroderivative gas turbines in Queensland)</p>												
<i>Assumed new entry and retirements</i>	<p>400 MW of "corporate PPA" across New South Wales and Victoria entering from mid-2021 to reflect market developments</p> <p>Committed or likely committed generator retirements included where the retirement has been announced by the participant (i.e. Liddell)</p>												
<i>Projected new entry and retirements</i>	<p>Beyond the above committed and assumed projects, only generic new entrants which are commercial are introduced</p> <p>Retirements of other existing generators where the generator is projected to be unprofitable over an extended period of time</p>												
New entrant capital costs	<table> <tbody> <tr> <td>Wind</td> <td>Battery storage (four hours)</td> </tr> <tr> <td>\$2,050/kW in 2020</td> <td>\$1,730/kW in 2020</td> </tr> <tr> <td>\$1,730/kW in 2030</td> <td>\$1,010/kW in 2030</td> </tr> <tr> <td>Solar (Single Axis Tracking)</td> <td>Battery storage (one hour)</td> </tr> <tr> <td>\$1,420/kW in 2020</td> <td>\$620/kW in 2020</td> </tr> <tr> <td>\$1,110/kW in 2030</td> <td>\$360/kW in 2030</td> </tr> </tbody> </table>	Wind	Battery storage (four hours)	\$2,050/kW in 2020	\$1,730/kW in 2020	\$1,730/kW in 2030	\$1,010/kW in 2030	Solar (Single Axis Tracking)	Battery storage (one hour)	\$1,420/kW in 2020	\$620/kW in 2020	\$1,110/kW in 2030	\$360/kW in 2030
Wind	Battery storage (four hours)												
\$2,050/kW in 2020	\$1,730/kW in 2020												
\$1,730/kW in 2030	\$1,010/kW in 2030												
Solar (Single Axis Tracking)	Battery storage (one hour)												
\$1,420/kW in 2020	\$620/kW in 2020												
\$1,110/kW in 2030	\$360/kW in 2030												
Gas prices	<p>Gas market is modelled in ACIL Allen's GasMark Australia model</p> <p>Gas prices for power generation are projected to rise from \$5.6-\$7/GJ to \$10-\$11/GJ by 2030. By 2035 gas prices reach LNG netback, equating to about \$11-\$12/GJ.</p>												
Coal prices	<p>The marginal price of coal for electricity generation is assessed in consideration of the specific circumstances for each generator considering:</p> <ul style="list-style-type: none"> Short term supply issues in New South Wales Suitability of coal for export and the assumed international thermal coal price Location of power station in relation to the mine and export terminals Mining costs Existing contractual arrangements <p>International thermal coal prices are assumed to converge to US\$61.50/t in the long term</p>												
Representation of bidding behaviour	<p>Contracted capacity:</p> <ul style="list-style-type: none"> Minimum generation levels are offered at negative or zero price Remaining contracted capacity offered at short run marginal cost <p>Remaining capacity:</p> <ul style="list-style-type: none"> Maximisation of dispatch for price takers Maximisation of net uncontracted revenue for price makers 												

Item	Summary of assumption
Interconnectors	Existing interconnection included ISP Group One projects included: QNI minor (Sep 2022) <i>Project EnergyConnect</i> (Jan 2024) VNI Minor (Sep 2022) VNI West (Jul 2026) Victoria's tendered System Integrity Protection Scheme (SIPS) service included as a 250 MW/125 MWh battery from 1 Jan 2021
Marginal loss factors	ACIL Allen's projections of average annual marginal loss factors (MLF) by generator DUID, developed using commercial power flow software ⁷

Note: All dollar values in this table are presented in real 2020 AUD unless stated otherwise.

2.1.2 Scenarios analysed

The analysis presented in this report comprises two scenarios:

- a *reference case* based on assumptions described above, with the exception that, for this exercise we 'removed' *Project EnergyConnect* project from ACIL Allen's internal reference case⁸
- a *Project EnergyConnect* scenario.

The *Project EnergyConnect* scenario is the same as the reference case with the exception that *Project EnergyConnect* is introduced to the model from 1 January 2024 along with a small line that would connect Buronga in New South Wales with Red Cliffs in Victoria.

For the purposes of this analysis, *Project EnergyConnect* was assumed to have the following properties:

- transfer capacity of 800 MW in either direction
- Heywood interconnector limited to thermal capacity of 600 MW when *Project EnergyConnect* is in place
- aggregate transfer limit of 1,400 MW across *Project EnergyConnect* and the existing Heywood interconnector
- The Buronga to Red Cliffs line was assumed to increase transfer capacity between New South Wales and Victoria by 400 MW.⁹

Project EnergyConnect was assumed to be in place on 1 January 2024, although we understand that it is expected to operate at reduced capacity for the first six months to allow for network testing. Therefore these assumptions were introduced in a series of steps between 1 January and 1 July 2024. The steps were as shown in Table 2.1.

TABLE 2.2 PROJECT ENERGYCONNECT IMPLEMENTATION SCHEDULE

Date	Heywood import	Heywood export	PEC import	PEC export	Combined import	Combined export
	MW	MW	MW	MW	MW	MW
Pre-Jan 2024	-500	460	NA	NA	-500	460
1-Jan-24	-500	460	-600	600	-1100	1060
1-Apr-24	-500	460	-600	600	-1100	1060
1-Jul-24	-600	560	-800	800	-1400	1360

⁷ Detailed analysis of MLF projections and trends for all generators in the NEM is available in ACIL Allen's quarterly MLF projections report.

⁸ Note that we now include *Project EnergyConnect* in our internal reference case, whereas we did not when the earlier work was done. Therefore, on previous occasions we 'added' *Project EnergyConnect* to our internal reference case to obtain the *Project EnergyConnect* scenario (previously referred to as the 'new interconnector scenario'). In contrast, on this occasion we 'removed' *Project EnergyConnect* from our internal reference case. For consistency with previous reports, we refer to the scenario without *Project EnergyConnect* as the 'reference case'.

⁹ As per information provided to ACIL Allen by ElectraNet.

The modelling is based on the assumption that electrical losses on *Project EnergyConnect* will be the same as those on the Heywood interconnector, relative to the different capacity of the interconnectors.

2.2 Modelling the impact on customers' electricity bills

We have modelled the impact of *Project EnergyConnect* on residential, small business and large business customers in South Australia.

We have assumed a representative residential customer consumes 5,000 kWh per annum in South Australia, consistent with assumptions made by the Australian Energy Market Commission in its 2019 electricity residential price trends report.

We have assumed a representative small business customer consumes 10,000 kWh per annum in South Australia, which is consistent with the approach the Essential Services Commission of South Australia takes in its annual Energy Retail Offers Comparison Report.¹⁰

We also show the impact on large business customers, although these customers are especially diverse in the amount of electricity they use. Therefore, rather than make a single assumption to convert the modelled impacts to annual bill impacts, those results are presented in terms of the impact per MWh used. They can be scaled to suit a given business.

The impact of *Project EnergyConnect* on customers' electricity bills was assessed by considering the "building blocks" of retail electricity bills, namely:

- energy costs
- network costs
- retail operating costs and margin
- costs associated with environmental schemes

We have assumed that *Project EnergyConnect* will impact on the:

- energy costs building block through the impact on the wholesale electricity market
- the network cost building block through ElectraNet's recovery of the costs for building and operating *Project EnergyConnect*.

Project EnergyConnect is assumed to have no impact on the other building blocks, that is, the movement in the other costs will be the same under the reference case and with *Project EnergyConnect*.

We note that changes in retail tariff structures and/ or the way customers use energy are quite possible over the timeframe. The former can be expected to flow from ongoing changes to the way distribution network services charge for the service they provide. Further changes in energy use at the residential level which may flow from improvements in energy efficiency, ongoing uptake of solar technology and the use of batteries could be expected. While we acknowledge that these changes might occur, we have not sought to incorporate them into the analysis, in part to allow comparison between our analysis and other presentations of retail bills, such as those in ESCOSA's Energy Retail Offers Comparison Report.

The methodology for assessing the impact of *Project EnergyConnect* on the wholesale electricity market was discussed in section 2.1.

ElectraNet provided estimates to us of the transmission network costs of building and operating *Project EnergyConnect*.¹¹ Those estimates were revised for this report compared to previous analyses. The assumptions are shown in Table 3.1 below.

This report presents the change in the customers' electricity bills rather than the level of the customers' electricity bills.

¹⁰ The 2018/19 edition of this report is available from ESCOSA's website at: <https://www.escosa.sa.gov.au/ArticleDocuments/540/20190830-Energy-RetailPriceOffersComparisonReport2018-19.pdf.aspx?Embed=Y>. The 2020 edition was not available at the time of writing, but we do not expect a change to this element of it.

¹¹ At this stage we have assumed that there will be no change in distribution network costs.

The impact on customer bills, other than for large business customers, is presented as the average of the annual projected savings from 2024 to 2030 and is therefore consistent with previous presentations in our earlier reports. Note, though, that the annual projections are now available to 2035, as well as spot year 2040.



The results from the modelling are presented in this chapter. The results from the modelling of the wholesale electricity market are presented in section 3.1 and the projected changes in customers' electricity bills are presented in section 3.2.

All financial results in this section are in nominal terms (i.e. not adjusted for inflation).

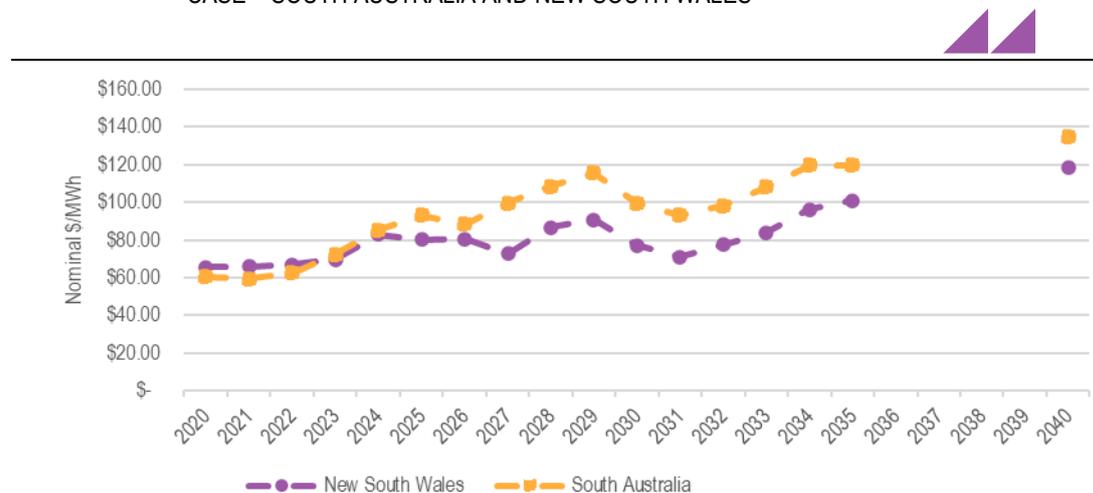
3.1 Wholesale spot price

The results from the reference case are presented in section 3.1.1 and the results from the *Project EnergyConnect* scenario are presented in section 3.1.2. As discussed below, *Project EnergyConnect* has the effect of increasing South Australia's exposure to the New South Wales wholesale electricity price, so our projection of this is shown as well.

3.1.1 Reference case

The projected annual average load weighted price of electricity¹² in South Australia and New South Wales, under the reference case (without *Project EnergyConnect*), is summarised in Figure 3.1.

FIGURE 3.1 SUMMARY OF PROJECTED WHOLESALE SPOT PRICE OF ELECTRICITY, NOMINAL, CALENDAR YEARS – ANNUAL LOAD WEIGHTED AVERAGE, 2020 TO 2040, REFERENCE CASE – SOUTH AUSTRALIA AND NEW SOUTH WALES



SOURCE: ACIL ALLEN MODELLING

Since the beginning of 2019 wholesale electricity spot market prices have been declining, driven by the entry of large amounts of renewable generation into the NEM coupled with no exiting capacity, a fall in energy requirements to be supplied by scheduled and semi-scheduled generation, and lower gas prices. The reduction in domestic gas prices is due to a slightly better global supply outlook, which has meant LNG exporters have made more supply available to the domestic market due to depressed international price.

In real, time-weighted terms (not shown here), prices are projected to continue to decline for the remainder of calendar year 2020 to reach levels of around \$40-\$55. They are then projected to remain at similarly low levels during the period from 2021 to 2026, largely driven by:

- additional new committed supply of renewable generation and battery storage capacity, mainly in response to state government incentives
- projected continuation of low gas prices
- projected slight decline in energy requirements from the grid, in part response to the assumed impact of COVID-19 on economic growth in 2020 and 2021, and a relatively high proportion of underlying demand being satisfied by distributed generation (rooftop solar PV).
- significant NEM-wide interconnector expansion projects
- entry of Snowy 2.0.

The *nominal* load weighted prices shown in Figure 3.1 are at higher levels than their time weighted counterparts due partly to load profiles, which are weighted to higher price periods, and partly to inflation, which is assumed to be 2.5 per cent for the projection period.

In the absence of *Project EnergyConnect*, we project that wholesale electricity prices would change in nominal terms from 2022 at the rates shown in the lower pane of Figure 3.2. This coincides roughly with the announced closure of the Torrens Island power station in (A station in 2022 and B station in 2024), which is reflected in the input assumptions. There is some possibility that these closures might be deferred if *Project EnergyConnect* were not to proceed, but this is not reflected in the modelling.

¹² Wholesale electricity price weighted by demand at the regional reference node

FIGURE 3.2 REFERENCE CASE – PROJECTED GROWTH IN WHOLESALE SPOT PRICE OF ELECTRICITY



SOURCE: ACIL ALLEN CONSULTING

Reference case - Comparison with February 2019 modelling

As noted above, the modelling presented here is an update to the modelling that accompanied ElectraNet’s Project Assessment Conclusions Report, which was presented in our report of 11 February 2019.

A number of changes were made to the input assumptions used in this report as compared to those used in the previous report. For the most part those changes were made to account for changes in the NEM over the past 18 months.

The electricity demand projection was updated using AEMO’s August 2019 ESOO demand forecast,¹³ though we made some short-term adjustments to reflect the impact of COVID-19 on energy consumption and peak demand. Compared to our February 2019 report, which utilised AEMO’s 2018 ESOO demand forecast, the projected electricity demand is lower in most regions, particularly in New South Wales and Victoria, driven by changes in AEMO’s forecast of energy efficiency measures in these regions.

In addition, there are differences in the assumptions made with regards to the long-term continued operation of aluminium smelters in the NEM between this and our earlier report, which contribute to

¹³ The 2020 ESOO had not been published at the time the modelling was prepared.

the lower demand projection in New South Wales, Victoria as well as Queensland. The modelling presented in this report is based on ACIL Allen's internal outlook on the market, in which we evaluate each smelter operation to determine whether they would remain globally competitive at the conclusion of their legacy power purchase agreements, based on prevailing wholesale pool prices. Based on ACIL Allen's understanding of the world aluminium smelting cost curve, Tomago and Boyne Island smelters are assumed to exit the market in July 2027 and July 2029, respectively. The Portland smelter is assumed to remain in operation until July 2030.

Since the completion of the modelling presented in our February 2019 report, there have been a large number of additional generation projects committed to enter the market in the near- to medium-term, mostly in New South Wales and Queensland. It is important to note that many of these new generation projects are experiencing difficulties connecting to the grid. This is also reflected in our modelling by incorporating delays in market entry.

Two key changes in supply-side assumptions, in contrast to our earlier projections, are:

- The inclusion of different state-based schemes such as the 2030 Victorian Renewable Energy Target, Queensland's CleanCo and the ACT Renewable Energy Reverse Auction.
- the 2,000 MW pumped hydro storage system Snowy 2.0 assumed to be committed and to enter the market in July 2026, along with a new interconnector corridor between NSW and Victoria (VNI West)

Finally, interconnector upgrades from the ISP 2020 are included when there is a high likelihood these ISP projects will proceed. These include:¹⁴

- QNI minor (Sep 2022)
- VNI Minor (Sep 2022)
- VNI West (Jul 2026)

This means a slight change from the February 2019 report where the second stage of the QNI upgrade was also included and the transfer capacity of the Snowylink (now VNI West) was slightly different.

Victoria's tendered System Integrity Protection Scheme (SIPS) service is included as a 250 MW/125 MWh battery from 1 Jan 2021. In our report of 11 February 2019, we used Marginal Loss Factors as provided by AEMO. This report includes our own projections of average annual marginal loss factors (MLF) by generator DUID, developed in-house using commercial power flow software.

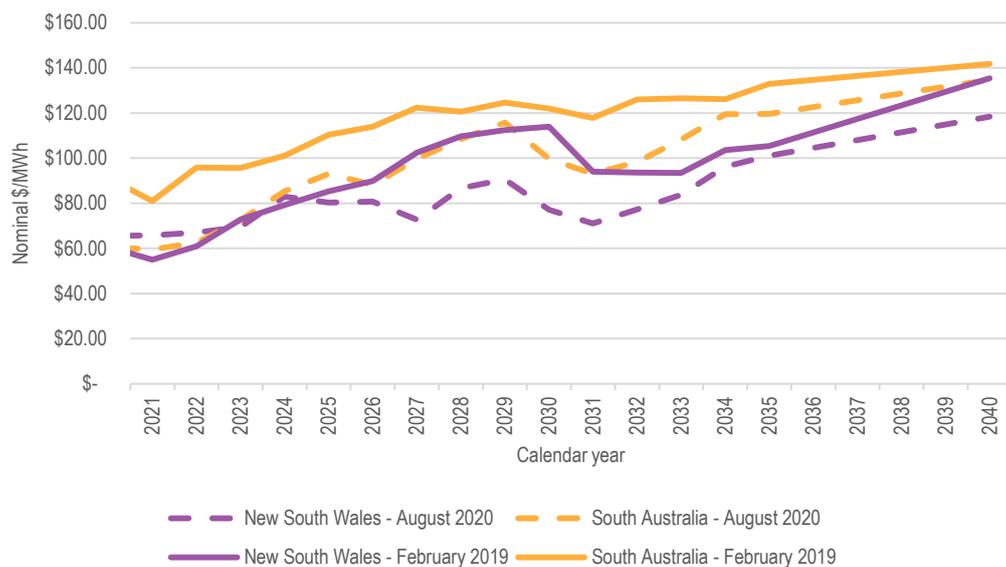
In relation to gas prices, this report includes updated assumptions regarding future gas prices, drawn from our modelling of the Eastern Australian gas market. Compared to our earlier report, gas prices have come down to about \$5.6-\$7 per GJ over the next two years. This is due to improved supply from CSG fields in Queensland and reduced international LNG export prices, as well as suppressed oil and LNG demand as a result of Covid-19. Long-term gas price projections have also come down slightly as long-term gas supply has improved marginally. Future gas prices are now expected to be between \$11-\$12/GJ by 2035, a \$1-\$1.5 price difference from previous gas price projections.

Figure 3.3 shows the impact these changes in input assumptions have on the projection of the South Australian load-weighted electricity price in the reference case.

As discussed above the figure shows that our current projection is that spot prices will be lower in both New South Wales and South Australia.

¹⁴ Obviously, we also include *Project EnergyConnect*.

FIGURE 3.3 COMPARING WHOLESALE SPOT PRICE PROJECTIONS – REFERENCE CASE BETWEEN FEBRUARY 2019 AND AUGUST 2020 MODELLING



SOURCE: ACIL ALLEN CONSULTING

3.1.2 Project EnergyConnect scenario

The projected wholesale price of electricity in South Australia under the *Project EnergyConnect* scenario is shown in Figure 3.4. This also shows the projected wholesale prices of electricity under the reference case scenario to highlight the difference between the two projections.

FIGURE 3.4 SUMMARY OF PROJECTED WHOLESALE SPOT PRICE OF ELECTRICITY, NOMINAL, CALENDAR YEARS – ANNUAL LOAD WEIGHTED AVERAGE, 2020 TO 2040, REFERENCE CASE AND PROJECT ENERGYCONNECT SCENARIO – SOUTH AUSTRALIA



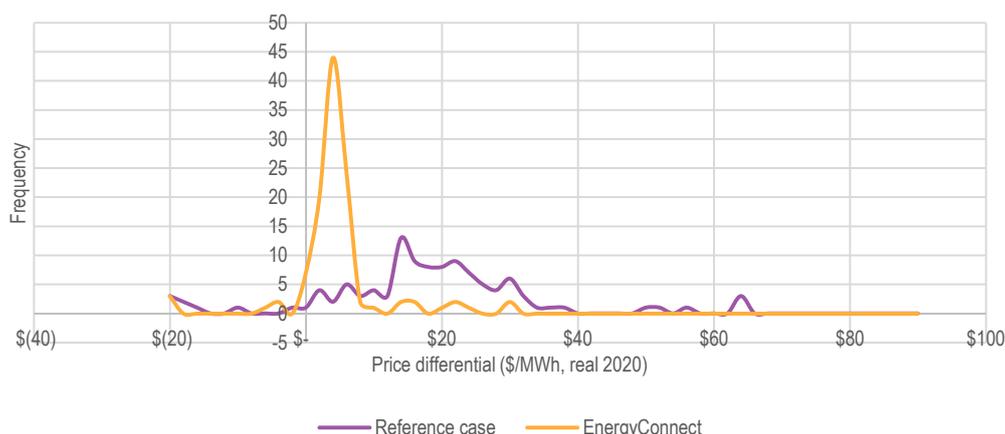
SOURCE: ACIL ALLEN MODELLING

The analysis indicates that, without *Project EnergyConnect*, the wholesale spot price of electricity in the South Australian is projected to be higher than in New South Wales (Figure 3.1). *Project EnergyConnect* causes projected South Australian prices to converge on the New South Wales level. Reductions in the spot price are evident from *Project EnergyConnect*'s first year of full operation (2024). In the first few years the reduction is projected to be quite substantial, peaking at just less than \$34 per MWh in 2025.

From there, the projected price reduction remains fairly constant, with price levels increasing gradually over time.

The dominant impact of *Project EnergyConnect* from a wholesale pricing perspective is to 'bring together' prices in New South Wales and South Australia. The modelling shows that *Project EnergyConnect* would tend to 'smooth' the price differential between those two regions. This is illustrated in Figure 3.5, which shows density curves of the differences in projected monthly average prices from 1 July 2023 to 2040. It shows a much higher 'peak' of price differences at near zero levels in the interconnector than the reference case – in other words, the difference between New South Wales and South Australian prices is projected to be 'small' much more frequently with *Project EnergyConnect* in place than without it..

FIGURE 3.5 DENSITY PLOT OF MONTHLY LOAD WEIGHTED PRICE DIFFERENCES IN REFERENCE AND INTERCONNECTOR CASES - (\$/MWh REAL 2019) – 2023 TO 2040



SOURCE: ACIL ALLEN MODELLING

In terms of volatility, it is well known that spot prices in the NEM are capable of 'spiking' to very high levels, which creates price risk for retailers and other customers buying electricity from the wholesale market. That risk can be managed in numerous ways including using exchange traded cap contracts, which can be used to limit exposure to prices greater than \$300/MWh, which has come to be accepted as the line distinguishing 'high' and 'low' prices.

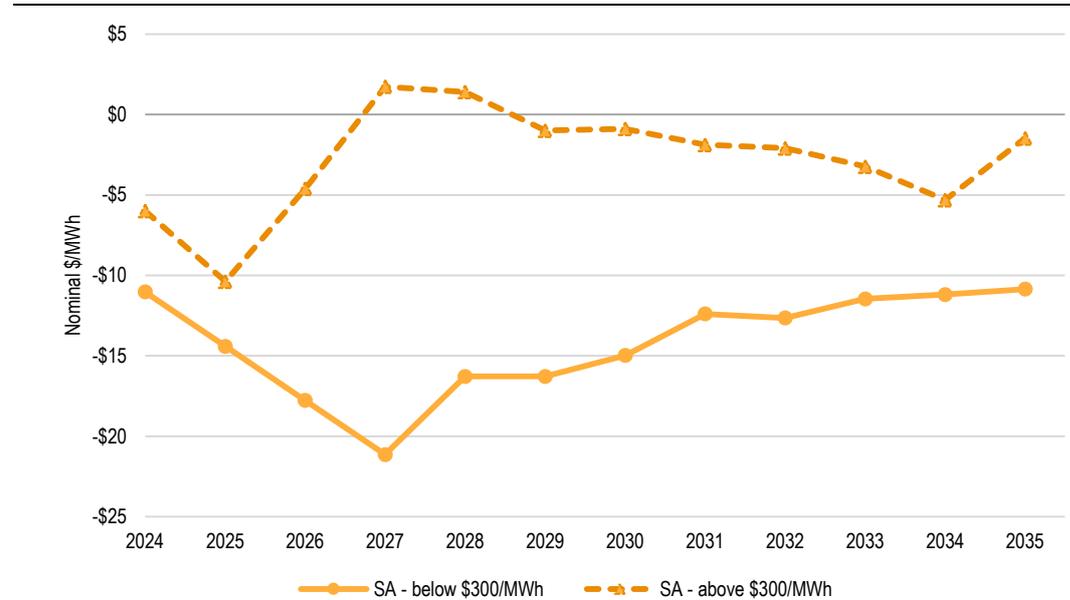
To analyse differences in volatility, we routinely separate projected prices in to 'high' (above \$300/MWh) and 'low' (below \$300/MWh) price outcomes and report these separately. For ease of comparison we subtract \$300 from the 'high' prices so that they appear on the same chart as the 'low' prices.

The result of this process is shown in Figure 3.6. It shows that *Project EnergyConnect* is projected to put downward pressure on 'high' and 'low' prices. For example, in the period from 2024 to 2026 we project that 'high' prices will be lower the average difference in the first three years in South Australia is about \$7.00 per MWh.

After 2026 the 'height' of high prices converges on the same level it is projected to be without *Project EnergyConnect*. For the period from 2024 to 2035, the average impact on 'high' prices is a reduction of about \$2.80/ MWh.

'Low' prices are projected to fall substantially. The projected difference between the two scenarios increases (even lower) every year from 2024 to 2027, when the reduction peaks at about -\$21.00/MWh. The reduction then deteriorates somewhat, returning to around -\$12.00 per MWh for the second half of the period to 2035. On average, we project that *Project EnergyConnect* will cause an approximately \$14.00/ MWh reduction in low prices in South Australia between 2024 and 2035 compared to the levels they would be at without *Project EnergyConnect*.

FIGURE 3.6 IMPACT ON 'HIGH' AND 'LOW' TIME WEIGHTED PRICES

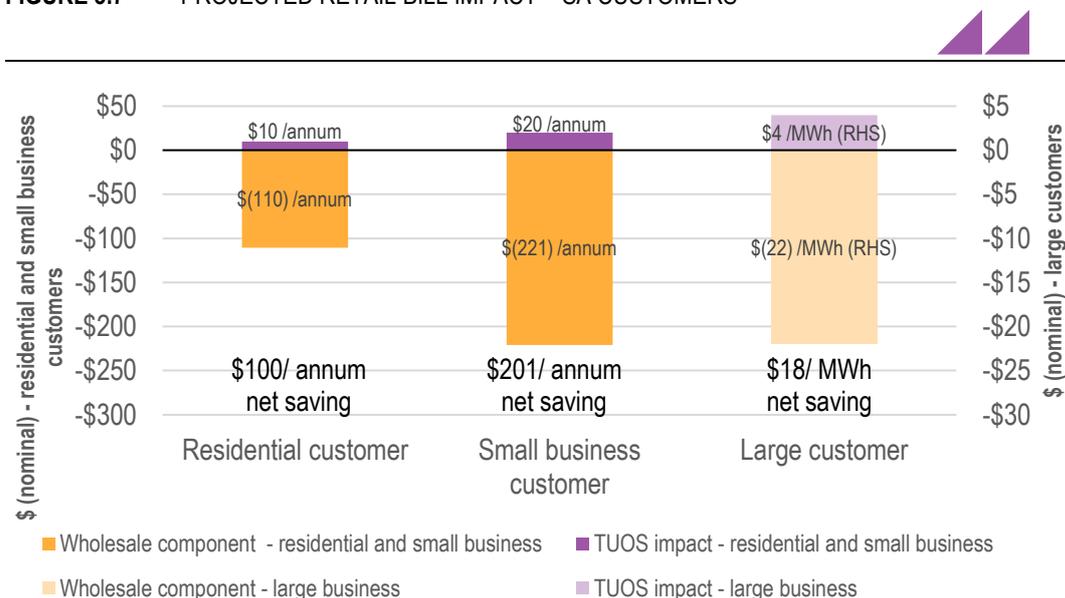


SOURCE: ACIL ALLEN MODELLING

3.2 Projected customer bill impacts

The projected impact of the new interconnector on customers' electricity bills is consistent with the projected change in wholesale spot prices. It is summarised in Figure 3.7 and Table 3.1.

FIGURE 3.7 PROJECTED RETAIL BILL IMPACT – SA CUSTOMERS



SOURCE: ACIL ALLEN CONSULTING

TABLE 3.1 PROJECTED RETAIL BILL IMPACT

	Residential customer	Small business customer	Large customer
Transmission network cost impact	\$10 / annum	\$20 / annum	\$4 / MWh
Average saving in wholesale component of bill	\$(110) / annum	\$(221) / annum	\$(22) / MWh
Net bill saving	\$(100) / annum	\$(201) / annum	\$18 / MWh
Annual consumption (kWh/annum)	5,000	10,000	varied

SOURCE: ACIL ALLEN CONSULTING

The figure shows two impacts on retail bills separately. The first, shown in purple, is the annual cost to each customer of the interconnector, which was provided by ElectraNet. The second component, shown in gold, is the projected impact on the wholesale energy component of each annual bill, in nominal terms, averaged over the period from 2024 to 2030.

In nominal terms, over the period to 2030, the modelling indicates that the annual representative residential customer bill would reduce on average by \$100 in South Australia, with a corresponding reduction of \$201 for small businesses. Larger customers are projected to save approximately \$18 per MWh over the time period in net terms, with their total bill impacts varying depending on their usage.

As the figure shows, the saving attributable to projected reductions in the wholesale spot electricity price outweighs the assumed impact the interconnector would have on network use of system charges. The modelling indicates that the saving in energy costs for residential and small business customers in South Australia is projected to be around ten times the additional transmission network

cost on an annual basis in the period to 2030. Larger customers are projected to receive savings in the order of five times the additional transmission network cost.

3.3 Comparison with previous modelling

When we compare our current modelling with that from February 2019, we observe a larger reduction in retail bills now than before.

Figure 3.8 shows our projections of wholesale electricity spot price as they would be without *Project EnergyConnect* from the current modelling and as we projected them in February 2019. The reason that we now project a larger reduction in retail prices with the introduction of *Project EnergyConnect* is illustrated by the increased vertical distance between:

- the yellow curves representing projected wholesale price in South Australia,
- the other curves, representing projected wholesale prices in other NEM regions.

The figure clearly shows that the difference between projected South Australian wholesale prices and those in other jurisdictions has increased. In very broad terms, *Project EnergyConnect* ‘opens up’ South Australia to the other NEM regions and gives it increased access to interstate prices. Since the gap between South Australian and interstate prices is now projected to be larger than it was in February 2019, so too is the projected impact *Project EnergyConnect* will have on retail bills.

FIGURE 3.8 LOAD WEIGHTED PRICES (\$/MWH, REAL 2020) WITHOUT *PROJECT ENERGYCONNECT*



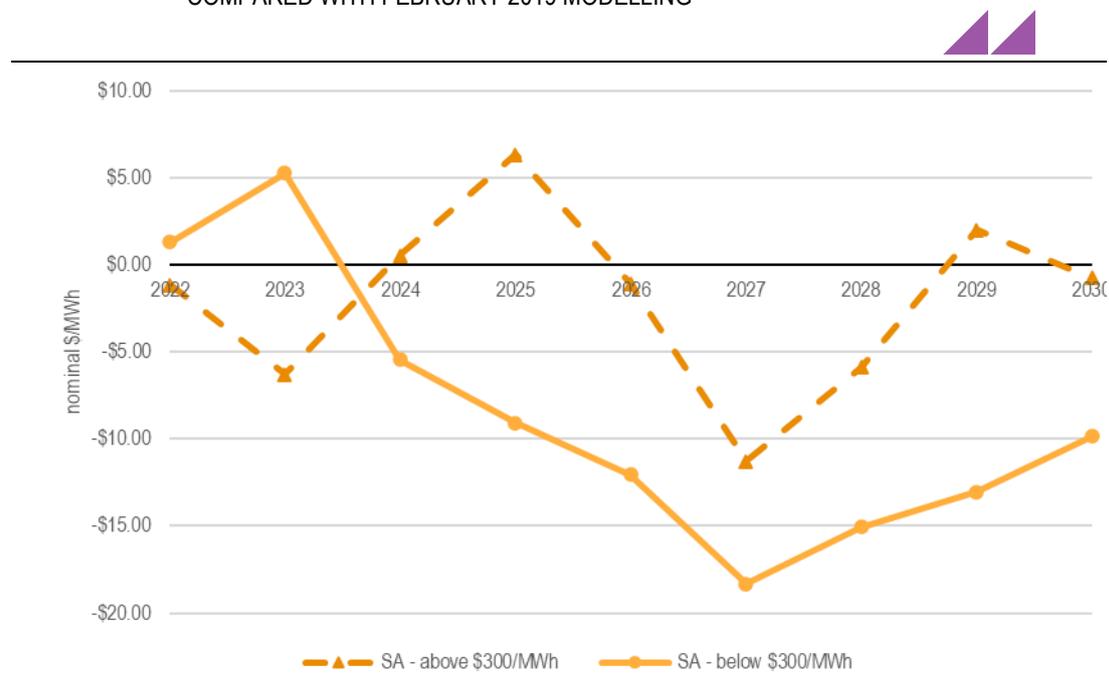
SOURCE: ACIL ALLEN CONSULTING

The key reasons that wholesale prices are now projected to be lower outside South Australia than they were in February 2019 include that

- Projected energy demand is significantly lower in Victoria and New South Wales in the mid-2020s, due to AEMO's lower demand forecast in the 2019 vs the 2018 Electricity Statement of Opportunities
- The projected energy demand is also lower in Victoria, New South Wales and Queensland from 2027 onwards due to assumed closures of the Tomago, Boyne Island and Portland smelters in our current modelling.
- There is greater generation supply across the NEM with an increase in renewable capacity commitments, including different state based schemes like the now-legislated VRET 2030 target⁽¹⁾, the ACT Reverse Auction and CleanCo capacity, as well as the commissioning of Snowy 2.0 in 2026
- The inclusion of the QNI minor and VNI minor upgrades, the VNI West interconnector, as well as SnowyLink in 2026 allows for greater resource sharing between the neighbouring regions, which has a dampening impact on prices

Figure 3.9 goes further into the impact of these changes, showing the difference in the projected impact of *Project EnergyConnect* on 'high' (above \$300/MWh) and 'low' (below \$300/MWh) electricity prices between the current modelling and that conducted in February 2019. This shows our projection that there is a more substantial reduction in the 'low' prices compared to our earlier modelling.

FIGURE 3.9 IMPACT OF ENERGY CONNECT ON 'HIGH' AND 'LOW' TIME WEIGHTED PRICES COMPARED WITH FEBRUARY 2019 MODELLING



SOURCE: ACIL ALLEN CONSULTING

⁽¹⁾ With the entry of *Project EnergyConnect*, it is assumed in the modelling that the transfer constraints on the Heywood interconnector will be relaxed. It is assumed that this equates to approximately 100 MW of additional transfer based on AEMO's 2018 ISP (p.87). This enables greater resource sharing between South Australia and Victoria, and has a downward impact on the South Australian spot price.

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