

## TRANSMISSION PLANNING AND INVESTMENT REVIEW

### SUBMITTER DETAILS

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### Project Details

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**NAME OF RULE CHANGE:** Transmission Planning and Investment Review

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**PROJECT CODE:** EPR0087

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**PROPONENT:** AEMC

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### Preamble

For the first time in a generation, we need to materially reinvest in new transmission infrastructure.

Economic theories fashionable in the late 90s are no longer suited to the redesign of the system, we need additional holistic engineering principles to guide design, over and above the ISP.

The RIT is suited to withholding spending on incremental upgrades, a role in which it has been successful for a static system. However, it undervalues the benefits of transmission and is incapable of assessing future system needs. To be clear, there have never been any inefficient transmission investments and we are protecting too strongly against this potential outcome. The RIT has funded a small minority of network infrastructure suggesting it is not suited to assess major buildouts of strategic, interrelated assets.

Lastly, the RIT does not reassess past decisions to see if they were effective. This gives the impression that blocking projects is the right decision.

“You miss every shot you don’t take” is the appropriate cliché; we have already

squandered the opportunity to save consumers money yet don't assess it. In the past 6 years SA has spent around half a billion dollars on FCAS that they wouldn't have needed to pay with a second synchronous connection.

## Issues:

### Undervaluation

TUOS is wholly recovered from consumers, yet we measure market benefits not consumer benefits. The change in operating cost is not relevant to consumers who pay the marginal price multiplied by total consumption.

For the most part the RIT undervalues customer benefits by an order of magnitude by using the marginal volume of generation rather than the total consumption.

SRMC models exacerbate the issue on top of this.

Reliability and security are also not properly valued. System operation is assumed to be system normal – forecasted planned maintenance is not accounted for and neither are “non-credible” contingencies. These events are not unlikely or unusual, they are *certain* to occur. “Non-credible” contingencies are an annual occurrence with costs exceeding \$100m p.a. Examples include the Callide trip, Basslink outages, QNI trip, VNI bushfire, and a few SA separations.

RIT models assume homogeneous and infinitely deep resources for potential new-build generation. This puts zero value on new connection potential from transmission projects and is an overly optimistic approximation of reality. Congestion is rife in the NEM and good connections with good resource are becoming scarce.

The RIT:

- Underestimates volumes by using marginal volumes
- Overestimates price difference by not using marginal price (weak impact)
- Underestimates price difference by using SRMC and excluding extreme prices
- Sensitivity to generator outages is modelled on a planned basis (if at all), not unplanned.  
Combined with SRMC calculation this nullifies the impact of generator outages, especially surprises.
- No valuation of low frequency, high impact events (FCAS, Energy & USE)
- No valuation of planned maintenance constraints (FCAS, Energy, curtailment)
- No valuation of new supply potential
- Reduced period of valuation, often shorter than asset lifetime
- Only values the benefits to a single region or two regions, should value entire NEM impacts
- No valuation of the benefits of increased trade and increased competition, including defraying market power.

These items above are indeed less certain than the current methodology. For instance, the frequency of an uncommon event could easily be halved or doubled within a study period.

It is better to model as fully as possible and account for uncertainties by altering return expectations. For example, the RIT conservatively estimates value which means it results

in underinvestment and missed value. A new analysis method should fully account for value but expect higher net benefits to consumers to make up for uncertainty.

### Discounting cashflows (timing risk)

Currently market benefits are discounted at ~6% suggesting modest risk held by the customer and an anticipation for *return on investment*. Given the conservative valuation methodology in the RIT, the use of a discount rate above the base rate simply further increases the hurdle to invest. Furthermore, the AER has shown a reluctance to have negative cashflows or mismatch in market benefits over time, which is not consistent with the idea that consumers are “investing” in transmission and expecting a return above inflation.

It would be better to have a complete evaluation of the consumer benefits and apply a higher discount rate to account for uncertainty and mismatches in value over time. We should aim that in a downside consumers get their money back, but generally have significant benefits. When testing downsides, a 3% discount rate should be used reflecting that consumers at least want to get their money back in real terms.

When assessing low frequency, high impact events the timing of an event will substantially affect consumer value. For instance, something expected to occur once per decade will have completely different NPV if it occurs at the beginning of the decade vs the end. This is also a challenge when valuing the benefit of early transmission construction as a mitigant to surprise generator retirement.

### Capital sources

Consumer groups are simultaneously unwilling to pay for increased reliability or network upgrades, and upset with volatile energy prices.

This links back to the uncertainty of benefits – the costs are well known and borne by consumers, but they are not guaranteed to benefit. The undervaluation within the RIT methodology also frames the communication of benefits as to make them appear thinly positive and fragile to changes in assumptions.

Consumer groups and some within the economist fraternity would seek to shift some of the cost and risk onto generators. This necessarily increases net costs to consumers in several ways.

- Generator cost of capital is higher than TNSPs.
- Generator future revenues are uncertain and if required to take on new OPEX they can more easily become cashflow negative (leading to higher return expectations and/or lower debt).
- Generator lifetime is shorter than transmission projects. Amortisation will occur faster if capitalised, or if not, could be incompletely recovered if generation does not operate as long as expected.
- Imposing an additional cost on new generators increases the equilibrium wholesale price, resulting in windfall gains to grandfathered generators, with a large net negative impact on consumers.

The benefit of transmission to generators is access to customers. If they have to pay to access customers and customers do not guarantee them returns, there will be a risk

premium associated with the transaction. Generators are stuck in the market once invested, they cannot simply abscond to another market.

The last potential source of capital is the Commonwealth. Several of these issues could be overcome by having governments bear the risks associated with timing and value uncertainty by partly funding transmission projects. Once value is confirmed ex post, capital can be recouped by selling the transmission asset to the TNSP. This would free up capital to be recycled into the next transmission project.

## Engineering Principles

The first generation hubs built in the NEM have similar network characteristics. They all have three or more parallel, redundant, high-voltage lines linking generation to the capital city. This characteristic is to account for planned and unplanned transmission outages that could disrupt supply. There are of course diminishing reliability returns to redundancy. Additional lines do assist to reduce congestion with increasing flow though.

At a minimum we should be aiming to have three parallel lines from Gladstone to Adelaide via the capital cities and new generation zones. A second Baslink would also be necessary to protect TAS against drought combined with interconnector outage. This structure will be essential by 2040 so when considering infrastructure buildout, we will only be assessing option design and timing, not if the assets are needed. Luckily, much of the needed infrastructure is pre-existing and only a few links between established meshes are required. The ISP is a subset of the half-dozen needed lines and when AEMO says these are “least regret” it should be read as “necessary sometime soon”. Early construction of the necessary infrastructure looks bad in a cashflow analysis but would substantially reduce the impact of non-credible contingencies – which are guaranteed to occur. The blackouts in SA and QLD would have had significantly lower impact had those states already had redundant interstate links.

Revisiting the technical characteristics that make a good network, and what compromises need to be made to reduce costs should be explored early to give context to the transmission investment review.

In summary, Neoen anticipates underinvestment in transmission, and late construction of infrastructure that will soon be essential. As a generation business we could benefit from the volatility caused, but we are open about the issue because stability is our preferred investment environment.

## Introduction- Assessment criteria

<ul style="list-style-type: none"> <li>Do you agree with the Commission's proposed assessment framework for this Review?</li> </ul>	<p>We question the need to immediately jump to price signals. This seems like an excuse to shoehorn LMP into the process. LMP is not a leading indicator of anything. We must base structures on empirical data rather than economic theory. To the extent that pricing can be effectively developed that accurately represents physical outcomes we have no issue with that.</p> <p>Besides this the assessment framework is sound.</p>
<p>1. Are there any additional criteria the Commission should consider as a part of its assessment framework?</p>	<p>The wider economic and societal impact of effective transmission networks.</p>

## CHAPTER 3 – Issues in the regulatory framework and processes for planning of major transmission projects

<b>Implications of increased uncertainty for the ex-ante incentive-based regulatory framework</b>	
<ul style="list-style-type: none"> <li>Do you agree with that the identified factors contribute to an increase to the uncertainty surrounding major transmission projects, relative to BAU projects? Are there other factors that should be taken into account?</li> </ul>	<p>Yes agreed.</p> <p>Additional factors are listed in the preamble to this submission.</p> <p>Furthermore, the benefits of major transmission projects are altered by the timing and sequence of other major projects.</p>
<ul style="list-style-type: none"> <li>Do you consider that the current ex-ante incentive-based approach to regulation is appropriate for major transmission projects? Why? Are there opportunities to drive more efficient expenditure and operational outcomes?</li> </ul>	<p>Not completely. As mentioned, it encourages overestimation of cost to act as a buffer. Outside that the hurdle difficulty for TNSPs discourages proposing projects in the first place.</p> <p>The issue is less about <i>efficiency</i> and more about <i>robustness</i>. We need to be making decisions for a robust network even if it is slightly inefficient. The cost of overspending on transmission is linear, but the cost of underinvesting is cubic.</p>

<ul style="list-style-type: none"> <li>Do you agree that the Review should take forward this issue as a priority issue? If not, why?</li> </ul>	Yes.
<b>Economic assessment of major transmission projects</b>	
<ul style="list-style-type: none"> <li>Are there opportunities to streamline the economic assessments of ISP and non-ISP projects without compromising their rigour? If so, how could the framework be streamlined?</li> </ul>	<p>If the Commonwealth was initially a 50% investor in the project it could streamline the move to an investment decision without being derailed by variations in assumptions. Then as certainty grows over time more capital can be moved to the RAB and repay the transmission fund.</p>
<ul style="list-style-type: none"> <li>Do you agree that the RIT-T has a clearer value-add in relation to non-ISP projects? If not, why?</li> </ul>	<p>Only in identifying projects, and theoretically there are better ways to do this too. As previously mentioned, the RIT does not correctly measure benefits.</p>
<ul style="list-style-type: none"> <li>Do you agree that the Review should take forward this issue as a priority issue? If not, why?</li> </ul>	Yes.
<b>Benefits included in planning processes</b>	
<p>2. Are the benefits included in current planning processes sufficiently broad to capture the drivers of major transmission investment? Does the scale and pace of the NEM's energy transition necessitate inclusion of other classes of market benefits or wider economic benefits? If so, what kind of other classes of market benefits or wider economic benefits should be included?</p>	<p>As previously mentioned wider economic benefits should be considered. However, we agree with the commission that wider socioeconomic benefits should not justify an increase to the RAB that would eventually be recouped from consumers. That is; the consumer should never pay more than the consumer benefits. In fact, it may be preferred for taxpayers to shoulder more of the cost if it can maximise total economic benefits (e.g. stimulate productive demand). This practise is already present in road, rail, and communication sectors. A good example is the Japanese government's privatisation of high speed rail at a loss, in the knowledge that cheaper fares would facilitate widespread use which would increase benefits in housing and employment.</p>

	For energy intensive industry TUOS is a barrier to entry, and it incentivises inefficient investment in duplicate assets or generation as an avoidance strategy.
3. Are major transmission projects failing to satisfy economic assessments because certain benefits (market or non-market) are not permitted to be quantified?	Yes. A TNSP will not take a project to RIT without outsized benefits at the outset. A merely good project will not clear a RIT-T.
4. Are changes warranted to the manner in which carbon emissions inform transmission planning and regulatory processes?	Carbon emissions should inform marginal price outcomes for the consumer benefits. Given the future imposition of carbon border adjustments federal governments would be incentivised to collect carbon tax revenue themselves.  Emissions should also add to the wider social benefits.
5. Do you agree that the Review should take forward this issue as a priority issue? If not, why?	Yes.

#### Guidance on hard to monetise benefits

6. What classes of market benefits are hard to monetise? Is there a way that these benefits could be made easier to quantify?	Ancillary costs are hard to precisely estimate, much like other consumer benefits. The cost of low frequency, high impact events is significant but not realistically measured through a market benefit test. FCAS costs are often driven by shocks rather than median market conditions. Historical outcomes are an excellent source of information on <i>value</i> ; however they have a large range of uncertainty when applied to future scenarios. Competition is even harder to value because it relies on what-if analysis over an enormous range of potential conditions. Again, empirical evidence can inform a range of potential outcomes based on metrics such as price separation, price setter behaviour, and interregional trade volumes. Other jurisdictions use price separation as an indicator of too much market power, and this can trigger investment in transmission to quash the behaviour.
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7. Would guidance on hard to monetise benefits improve the timeliness at which projects proceed through the regulatory process?	Yes, but we must be comfortable with higher uncertainty or lower accuracy.
8. Do you agree that the Review should take forward this issue as a priority issue? If not, why?	Yes.
<b>Market versus consumer benefits test</b>	
9. Do you consider that there are certain changes that have occurred in the energy sector that warrant reconsidering the merits of a market versus consumer benefits test? If yes, what are these changes and why do they require revisiting this issue?	<p>No changes have occurred. The ACCC should not have moved to a market benefits test in the first place.</p> <p>It does not make sense for generator lost profits to be subtracted from a benefits test when consumers pay for the transmission.</p> <p>Put another way, the investment test should effectively allow consumers to band together to defray generator market power or access more efficient generation options in other geographies. Not to do so is protectionism for inefficient generators.</p>
10. Do you agree that the Review should take forward this issue as a priority issue? If not, why?	Yes. <b>This is the highest priority issue.</b>
<b>Treatment of non-network options</b>	
11. Do you agree that there are barriers for non-network options in economic assessments? If so, do you agree with the barriers identified? Are there any further barriers? How should these barriers be addressed?	Yes. Please contact us to discuss additional barriers.
12. Do you agree that the Review should take forward this issue as a priority issue? If not, why?	Yes.



**CHAPTER 4 – Issues in the regulatory framework and processes for transmission investment, financing, and delivery**

<b>Balancing TNSP's exclusive right to build and own transmission projects</b>	
13. Are there features of financing infrastructure projects used in other sectors that should be considered in the context of the efficient and timely delivery of major transmission projects?	We are not familiar enough with the financing process of transmission to provide advice. We suggest speaking to the CEFC and the PEC proponents.
14. Should the delivery of transmission projects be made contestable? If not, why?	Yes, including generator connections. TNSPs have no incentive to optimise the cost of generator connection assets and there are obvious differences between jurisdictions. The contestability of general transmission construction could improve final costs and increase competition. We have no comment on ownership.
15. What options, other than changes to the right of TNSPs to provide regulated transmission assets, could be considered to ensure timely investment and delivery of major transmission projects?	As previously mentioned, the establishment of a Commonwealth fund to facilitate transmission construction around the nation. Given the reduced risk profile for the eventual owner, their expected returns should be lower. The Commonwealth fund could discover the lowest cost of capital by organising an auction of the transmission asset. To the extent that operation is cut out of ownership this would effectively become an asset backed bond.
16. Do you agree that the Review should take forward this issue as a priority issue? If not, why?	Yes.
<b>Treatment of 'early works'</b>	
17. Do stakeholders seek further clarity on the meaning of preparatory activities and early works?	Yes.

<p>18. Should the Commission consider how the costs of early works can be recovered?</p>	<p>Yes, allowing for early work can speed up delivery and provide optionality in routes. However, we have concerns with governments backing early works as it makes it hard to change options, and creates a political reason to choose an option. Independence from politics is welcome. Alternatively, if TNSPs are given too much latitude to spend money on early works it could result in waste. Independence, transparency, optionality, and early realisation of consumer value should be the goals.</p>
<p>19. Do you agree that the Review should take forward this issue as a priority issue? If not, why?</p>	<p>Yes.</p>

**Processes for jurisdictional environmental and planning approval**

<p>20. Would additional clarity on cost recovery arrangements for preparatory activities or early work improve a TNSP's ability to meet jurisdictional requirements in a timely manner?</p>	<p>No comment.</p>
<p>21. Do jurisdictional planning and environmental requirement intersect with the national transmission planning and investment frameworks in ways that are not discussed above and may require further consideration?</p>	<p>No comment.</p>
<p>22. Do you agree that the Review should take forward this issue as a priority issue? If not, why?</p>	<p>No comment.</p>

**OTHER COMMENTS**

<ul style="list-style-type: none"> <li>Please provide any further comment relating to issues discussed in the chapters 1-4 of the consultation paper.</li> </ul>	No comment.
<ul style="list-style-type: none"> <li>Please discuss any further issues the Commission should take forward in this review in relation to topics covered in chapters 1-4 of the consultation paper.</li> </ul>	NA

### Template for Material change in network infrastructure project costs rule change request

#### CHAPTER 5 – Material change in network infrastructure project costs rule change request

Who should decide whether the RIT-T must be reapplied?	
23. Should this decision remain the responsibility of the proponent or should it be a matter for the AER? Why?	General comments at end.
24. If the decision remains with the proponent, should the AER have the right to test that opinion?	General comments at end.

## Cost thresholds

25. Should the NER include a requirement to reapply the RIT, or update analysis, when costs increase above specified thresholds? If so, do you have a view as to what those thresholds should be?	General comments at end.
26. Do you consider this requirement should apply to all RIT projects or only those above a particular cost threshold/s? If so, do you have a view as to what the threshold/s should be?	General comments at end.
27. Do you have any views regarding the suggested alternative “decision rule” approach?	General comments at end.
28. Should updated project cost data be provided to AEMO to help improve the accuracy of the ISP?	General comments at end.
29. Do you have any other suggestions regarding alternative ways to manage cost increases?	General comments at end.

## Requirements when reapplying the RIT

30. Should the requirement to reapply the RIT be more targeted?	General comments at end.
31. Should any additional analysis and modelling that is required to be undertaken be published and subject to public consultation?	General comments at end.

## Trigger to reapply the RIT

32. Do you have any views as to how the requirement to reapply the RIT should be given effect, including for contingent and non-contingent projects?	General comments at end.
33. Should there be a cut-off point (e.g. once the AER approves the CPA, or once construction commences) beyond which any requirement to update analysis cannot be triggered? If so, what would be an appropriate cut-off point?	General comments at end.
34. Should there be a limit on how many times RIT analysis must be updated?	General comments at end.
<b>Should RIT cost estimates be more rigorous?</b>	
35. Do you consider that the current level of rigour used for RIT cost estimates is suitable? If not, what level of rigour is appropriate? In particular, would it be appropriate to require an AACE 2 estimate (i.e. a detailed feasibility study) for each credible option?	General comments at end.
36. If more detailed cost estimates are required at the RIT stage, should this apply to all RIT projects, or only to larger projects? If so, which projects should be subject to this requirement?	General comments at end.
37. Do you have any other suggestions to address the issues raised in the rule change request?	General comments at end.
<b>OTHER COMMENTS</b>	
<ul style="list-style-type: none"> <li>Please provide any further comments on this chapter.</li> </ul>	In the context of PEC, the RIT-T started so long ago that steel prices have doubled in the meantime. Aluminium is about 60% more expensive.

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The RIT-T resulted in a squandered opportunity to build when optimal, i.e. when steel is cheap and power is expensive. Nevertheless, the project remains firmly in the public interest even with the higher construction costs.

Likewise, further delays to implementation simply extinguishes consumer savings. There is a consumer cost to a protracted economic test.

In other industries project cost can be pegged to commodity prices. If this is the reason for the change in price the AER should pre-emptively set a combined commodity price beyond which the project is cancelled.

We agree with the proponents that there is a perverse incentive for TNSPs to inflate construction costs. If there is transparency on how costs have changed, and the project is still valuable it should not be delayed. Redoing the RIT-T is simply a delay. Arbitrary thresholds on value are not the right metric.

The AER needs a different way to exercise discretion on stopping a project with minor net benefits that has an unexpected increase in costs.



If you would like to discuss these topics further, please contact us at [tom.geiser@neoen.com](mailto:tom.geiser@neoen.com)

Kind regards,

A handwritten signature in black ink, consisting of the letters 'TG' in a stylized, cursive font, positioned above a horizontal line.

Tom Geiser,  
Senior Market Manager  
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