# Review of the Regulatory Investment Test for Transmission

## Consultation paper

Energy Project Team

30 September 2016

COAG
Energy Council

Submissions are invited on this consultation paper by close of business AEST Thursday, 20 October 2016. Electronic submissions are preferred and can be sent to the COAG Energy Council Secretariat at energycouncil@environment.gov.au.

If you wish to provide a hard copy submission please address it to:

COAG Energy Council Secretariat

GPO Box 9839

Canberra ACT 2601

All submissions will be published on the Council website (www.coagenergycouncil.gov.au) unless it is clearly indicated that the submission should remain confidential, either in whole or in part.

The Regulatory Investment Test for Transmission (RIT-T) Review working group consists of Commonwealth and state governments and energy bodies. It operates under the COAG Energy Council framework.

For further information about the RIT-T Review please contact the COAG Energy Council Secretariat via email at energycouncil@environment.gov.au.

## Contents

## Introduction

On 19 August 2016 the Council of Australian Governments (COAG) Energy Council noted the important role that interconnectors play in a transitioning energy sector and tasked officials to undertake a review of the regulatory test that applies to investments in new electricity transmission assets in the National Electricity Market (NEM)—the 'RIT-T'—to ensure it is effective in the current market environment. Officials are required to report back to Ministers before the end of the year.

The RIT-T in its current form was introduced in 2009, following a decade long process of refinement from its origins in a consumer benefits test under the National Electricity Code in the late 1990s. Its objective is to ensure that investments in major electricity transmission assets in the NEM are economically efficient, so minimising the risk of inefficient costs being passed on to consumers. The RIT-T is designed to be technology neutral, requiring consideration of all credible network and non-network options available to address an identified investment.

Australia's energy markets are currently undergoing rapid change as the sector transitions to a lower carbon footprint and technological developments continue to unfold. This transformation is already underway, with renewable energy making up an increasing proportion of the national energy mix—in South Australia, wind and rooftop solar PV currently make up over 45 per cent of installed capacity, while penetration is rapidly increasing in other jurisdictions. Meeting the nation's COP21 commitments to reduce carbon emissions by 26-28 per cent below 2005 levels by 2030 is likely to require the replacement of much of Australia's existing electricity generation fleet with lower emission alternatives. The rate and level of generator replacement is likely to vary between regions.

The national energy frameworks were designed to support a centralised supply model in which electricity needs were serviced primarily by synchronous and controllable power systems. While this remains the prevailing operating model for the NEM, the changing generation mix and a shift to more distributed supply sources, including solar PV and battery storage, present new challenges. Operational rules and regulations need to adapt to a system characterised by more intermittent and non-synchronous capacity.

Interconnection between NEM regions might potentially play an even greater role in addressing these challenges in future. For example, interconnectors provide a range of power system security benefits by allowing frequency control and other ancillary services to be sourced from across the interconnected system, rather than solely within individual jurisdictions. They can also support increased wholesale electricity market competition through inter-regional trade.

These benefits however do not come without cost. Any expenditure on regulated network assets will be recovered from consumers. It is important that a rigorous and transparent framework is in place to assess such proposals against viable alternatives, while being sufficiently flexible to facilitate timely investment decisions.

The key questions which will be considered as part of the Review are whether the RIT-T is, in its design and application, working effectively to deliver optimal NEM investment outcomes in all circumstances. This paper seeks feedback on these issues, with a particular focus on the test's application to interconnectors, in light of their distributed benefits and importance to all regions of the NEM.

## Scope of the Review

The Review will examine whether:

- There is scope to make the RIT-T process more efficient and timely

- The design of the current RIT-T remains appropriate to current and future needs, with particular regard to whether:
  - the RIT-T remains the appropriate mechanism for the assessment of strategic interconnection investment for the development of a truly national, efficient, interconnected NEM and
  - the parties responsible for assessing and making decisions on strategic interconnection investment are appropriate in the context of the development of a truly national, efficient, interconnected NEM.

In doing so, it will take into account the National Electricity Law (NEL), the National Electricity Rules (NER), applicable jurisdictional regulatory frameworks and relevant industry structures.

Any proposals included in the final report to COAG Energy Council will be consistent with:

- the retention of:
  - a cost-benefit assessment framework to ensure protection of the long-term interests of consumers and
  - a decision criterion based on the maximisation of net market benefits to those who produce, consume and transport electricity in the NEM, and
- the fundamental principle of competitive neutrality between network investment and other options.

## Review process

The Review is being conducted, under the oversight of the COAG Energy Council Energy Project Team, by a working group consisting of representatives from:

- Commonwealth (Chair) and state and territory governments
- Australian Energy Regulator (AER)
- Australian Energy Market Operator (AEMO)
- Australian Energy Market Commission (AEMC).

The working group will prepare a report to energy ministers for consideration at the December 2016 COAG Energy Council meeting. The report will be informed by stakeholder feedback on this consultation paper.

The report will include, but not be limited to:

- an overview of the current RIT-T and its application and effectiveness under the NER and relevant guidelines
- key issues or deficiencies identified in the current RIT-T process, including whether the current process presents barriers to the continued development of a truly national, efficient, interconnected NEM and
- any proposals to amend the framework for carrying out the RIT-T, together with a timetable and process for implementation.

The Terms of Reference for the Review are provided in full at **Appendix I**.

### Timeline

| Date | Process |
|---|---|
| **30 September 2016** | Release of consultation paper |
| **20 October 2016** | Consultation submissions close |
| **December 2016** | Provide report to COAG Energy Council |

## The Regulatory Investment Test for Transmission (RIT-T)

### Overview of the RIT-T

The network regulation process involves the AER setting the revenues that network businesses are allowed to recover from customers for providing reliable network services, generally for a five year regulatory period.

One of the key parts of this process involves setting an overall capital expenditure allowance for a network business's efficient investment requirements. Some large projects that are complex (which would tend to include interconnector upgrades) can be subject to separate assessment and revenue approvals.

Underpinning this is a range of network planning obligations designed to ensure the efficiency of the network planning process. The obligation to undertake a RIT-T assessment of proposed network augmentations, including interconnectors, is a key element of this network planning framework.

The RIT-T only applies to investments that are funded by network businesses through regulated revenues; that is, revenues recovered from electricity consumers. It does not apply to investments that are funded from other sources, for example funded augmentations that are paid for by generators or investments that are funded by governments.

The test is a cost-benefit assessment to identify the investment option which maximises the net economic benefit to all those who produce, consume and transport electricity in the NEM. It is designed to objectively evaluate proposed transmission infrastructure investment against other credible network or non-network alternatives. This recognises that the option which would maximise net market benefits could be the network investment proposed by a network business, a different network option, or a non-network option (such as local generation, storage or demand management and other new emerging technologies which arise).

The RIT-T process is conducted by transmission network businesses in accordance with provisions set out in the NER, the RIT-T published by the AER and the RIT-T application guidelines published by the AER. These provisions require the businesses to undertake a RIT-T when they propose to augment the transmission network and the estimated capital cost of the investment exceeds $6 million, subject to certain exceptions. Such network investment requirements (for example, action to alleviate constraints in the network) and associated investment proposals are identified on an ongoing basis in network planning reports which the businesses are required to publish annually. Replacement expenditure is not currently captured by the test, however this limitation is currently being considered by the AEMC as part of the rule change process; a key concern being that network expenditure has shifted from augmentation to replacement in recent years and that 'like for like' investments may not be the most efficient and economic option for addressing needs[1].

[1] The AER has submitted a rule change request to the AEMC proposing a change to the NER to extend the RIT-T to replacement expenditure: see http://www.aemc.gov.au/Rule-Changes/Replacement-Expenditure-Planning-Arrangements. The AEMC expects to commence consultation on this request in October 2016.

While the AER may be asked to determine whether a preferred option satisfies the RIT-T where the project is not linked to a reliability corrective action, its role is limited largely to assessing compliance with requirements. It also has a role in resolving any disputes raised by interested parties to the requirements and is responsible for regularly revising the cost thresholds for application of the test.

A list of projects that have applied the RIT-T is at **Appendix II**.

### Purpose of the RIT-T

The overarching role of the RIT-T is to avoid inefficient regulated investment in the NEM. It recognises that network projects which are included in a network business's regulated asset base are paid for by energy consumers over the life of the asset—generally up to 30 to 50 years. Therefore, the RIT-T has a key role in ensuring that consumers only pay for investments that are economically efficient.

The application of the RIT-T aims to ensure that all credible options are considered. The RIT-T is designed to ensure the relative merits of network and non-network options are considered on an equal footing. In some circumstances, network options and non-network options can meet the same need. For example, a supply shortage could potentially be met by increased interconnection or through a local generation or demand reduction option.

More broadly, the RIT-T is designed to be a consultative and transparent process for transmission planning. The test allows for public consultation and comment whilst strengthening the transparency and rigour of transmission planning and investment decisions.

Finally, the RIT-T provides information which can assist in the AER's decision making process for the periodic determination of a network business's revenue requirements.

### Features of the RIT-T

As set out in the NER, the RIT-T measures the economic impacts for 'parties who produce, consume and transport electricity in the NEM'. Costs and market benefits which are captured in the NEM are included in the RIT-T assessment.

Consistent with the principles of a cost-benefit analysis, the focus of the RIT-T is on economic costs and benefits (rather than price outcomes). This reflects the difficulties of basing a test on price outcomes. However, the RIT-T does allow consideration of projects that may lead to fewer price spikes. For example, a project may deliver a reduction in price spikes due to fuel cost savings associated with the dispatch of lower fuel cost plant. While the reduction in price spikes will generally not be included in the RIT-T assessment, the fuel cost saving associated with this project is a valid market benefit that will be included in the assessment.

The test also recognises that a preferred option may satisfy the test despite incurring a net economic cost, where it is the most efficient solution to address an identified need for reliability corrective action. For example, ElectraNet issued a Project Assessment Conclusions Report in November 2013 for a proposed upgrade to the Dalrymple substation. Two credible options to take reliability corrective action were identified in order to meet an increased reliability standard. Both options had a negative net market benefit and the least negative option was taken as preferred.

Although classes of market benefits are defined in the RIT-T, the NER also allow for new categories of market benefit to be considered. Network businesses are required to obtain approval from the AER prior to considering such benefits as part of the RIT-T. To date, this has not occurred.

## Overview of the RIT-T consultation process

The NER set out four main stages in the RIT-T consultation process, which vary depending on the size of the project. As illustrated following and in **Figure 1**, the process tends to be more detailed and lengthy for higher value projects with multiple proponents and stakeholders, such as interconnectors.

***Stage one: Project Assessment Consultation Report***

The network business publishes a consultation report, setting out the:

1. need for investment, and assumptions used in identifying this need
2. potential options identified
3. classes of market benefits which it considers to be material for the RIT-T assessment
4. technical requirements that a non-network option would need to meet to address the investment need.

The consultation report must be provided to all registered participants, AEMO and interested parties on the credible options and issues addressed. A summary of the report must be provided to AEMO for publication on its website. The network business must provide at least 12 weeks for submissions from the date AEMO publishes the summary.

***Stage two: Project Assessment Draft Report***

Within twelve months of consultation report submissions closing, the network business must publish a draft report summarising the results of the RIT-T assessment.

In preparing the draft report, the network business must consider submissions to determine which investment options are credible and what classes of market benefits will be considered. The network business must also undertake a RIT-T assessment comparing the various credible options to find the preferred option, that being the option which maximises net economic benefits. A copy of the draft report must be made available to registered participants, AEMO and interested parties. A summary of the draft report must be provided to AEMO for publication on its website. The network business must provide at least 6 weeks for submissions (from the date AEMO publishes a summary on its website).

A network business is exempt from this draft report stage where the preferred option entails costs of less than $41 million and the only material market benefits are reliability benefits.

***Stage three: Project Assessment Conclusions Report***

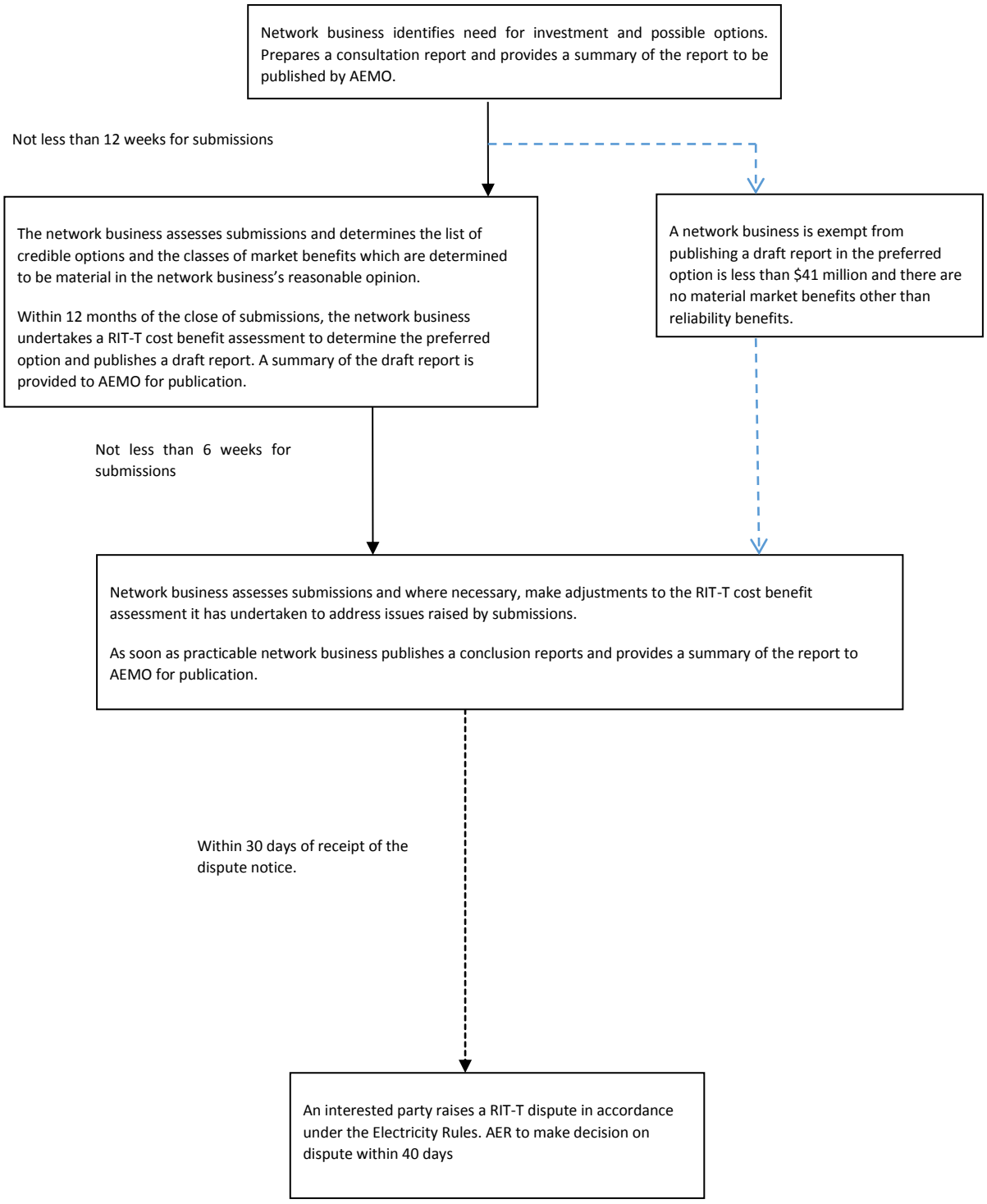
The network business must consider the submissions received, making adjustments to the RIT-T assessments if required. As soon as practicable, the network business must publish a conclusions report summarising the RIT-T assessment, and its response to submissions received and a summary of the conclusions report must be provided to AEMO for publication on its website.

***Stage four: Dispute resolution***

Within 30 days of publishing the conclusions report an eligible party may dispute conclusions made in the report to the AER. Within 40 days of the receipt of the notice, the AER must make a determination either rejecting the dispute or publishing a determination setting out whether the network business will be required to amend the conclusions report. The timeframe for the AER to consider a dispute can be extended by an additional period of up to 60 days.

The AER has to date not been required to resolve a RIT-T dispute.

**Figure 1 RIT-T assessment and consultation process**



## The RIT-T and interconnector investments

In a planning sense there is no such physical asset as an "interconnector". Instead, network planning responsibilities have overlaid arbitrary boundaries across meshed networks. It is thus not always a straightforward task to draw a clear demarcation between "interconnection" projects from others—there is not necessarily a difference in scale and all projects have impacts, to varying degrees, on all parts of the network. For example, TransGrid unilaterally undertook the 500kV ring project in the late 2000s at a cost of $337 million, which had large impacts on flow paths in and around New South Wales.

The key distinguishing features between interconnector projects and other projects are that the former involve transmission lines that cross regional boundaries and more than one network planner, thereby introducing coordination requirements.

Under the NER, interconnectors can be either a regulated interconnector or a merchant interconnector (referred to as a Market Network Service Provider). Investment in a regulated interconnector is subject to a RIT-T and the costs are recovered through regulated revenues (from customers in the two interconnected regions). Investment in a merchant interconnector, in contrast, is not subject to a RIT-T and costs are recovered by trading in the spot market[2]. Benefits in both cases are typically diverse and broadly distributed; for example, reduced need for capacity reserves to meet reliability requirements, increased wholesale and retail market competition resulting from an increased number of generators having access to interconnected markets, and the ability to source ancillary services needed to maintain system security from other regions.

The RIT-T has only been applied to two interconnector projects since it was introduced in its current form in 2009—development of the Queensland-New South Wales interconnector and the recent upgrade to the Heywood interconnector between South Australia and Victoria.

The majority of interconnector projects in Australia predate the RIT-T, with decisions to construct or not construct not necessarily determined only on economic grounds.

Prior to the 1990s, there were only two relatively small interconnectors between the states; the Snowy interconnector between New South Wales (NSW) and Victoria was built in 1961 and the Heywood interconnector between Victoria and South Australia was built in 1989. The governments of a number of states, became interested in new interconnectors in the early 90s for different reasons, including strengthening energy security, promotion of greater competition among generators, and (in the case of Tasmania) developing a linkage with mainland Australia.

In 1996, NSW and South Australia governments signed a Memorandum of Understanding for a feasibility report of the benefits on an interconnector. In 1997, the report found that there would be benefits. The National Electricity Code commenced in 1998 and introduced a new customer benefits test to ensure that network investment would only be undertaken if customers benefited from that investment. The proposed interconnector between NSW to South Australia was found to not be justified under this test, however, problems with the test were identified and a review of the test commenced. In 1999 the customer benefits test became a regulatory test based on net public benefits or market benefits. A revised proposal was submitted and in December 2001 it was confirmed that an interconnector between NSW and South Australia satisfied the regulatory test.

The interconnector between NSW and South Australia was, however, never constructed. In 1999 TransEnergie proposed a merchant interconnector, Murraylink, between Victoria and South

[2] Basslink is the only interconnector in the NEM that currently operates on this basis.

Australia. It entered commercial operation in 2002. TransEnergie did not agree with the assessment of the interconnector between NSW and South Australia and applied for a review of this decision to the National Electricity Tribunal and subsequently the Supreme Court. Concurrently, TransEnergie applied for Murraylink to be converted to a regulated network service, which was approved in 2003.

In 1997, the NSW and Queensland governments approved QNI, which was constructed and went into initial operation in 2001. In parallel, TransEnergie proposed a merchant interconnector, DirectLink, which began operation in 2000. In 2004 an application to convert DirectLink to a regulated network service was submitted, and was subsequently approved in 2006.

Also in 1997, the Tasmanian Government committed to participating in the NEM via an interconnector with Victoria. Development of Basslink, as a merchant interconnector, commenced in 2000, with commercial operation commencing in 2006.

The above illustrates how investment in interconnectors in the NEM has historically been, and is presently, assessed. As highlighted, the conditions which have preceded interconnection investments have varied considerably in the past, with only two projects to date having been subject to the RIT-T in its current form.

Question:

1. Are there specific aspects of interconnector projects that present particular challenges to the application of the RIT-T?

### Interaction of the RIT-T with other aspects of the regulatory frameworks

As noted previously, the RIT-T is one element of a wider planning framework established under the NEL and NER to promote efficient investment in transmission infrastructure. This framework includes, among other elements, obligations on each network business to publish a transmission annual planning report (TAPR), NEM-wide planning and reporting functions and responsibilities of the energy market bodies such as the annual National Transmission Network Development Plan (NTNDP) and various forecasting reports prepared by AEMO, along with 'last resort' planning powers conferred on the AEMC. In Victoria, AEMO performs most of the planning functions carried out by transmission network businesses in other jurisdictions, including producing the annual planning report for Victoria, undertaking RIT-Ts and undertaking procurement for transmission augmentations.

The purpose of the TAPR is to assess the adequacy of the transmission network to meet future reliability and security needs over the next 10 years. The report identifies emerging limitations driven by peak demand and planned asset renewals and reports on outcomes of joint planning between interconnected transmission network businesses. Where appropriate, a TAPR could also identify development opportunities that may deliver net market benefits.

The TAPRs identify project needs prior to the RIT-T process and well in advance of actual investments, which means that in the TAPR there is greater uncertainty about whether projected investments will actually be required. However, they are an important mechanism for proponents of non-network options to identify potential opportunities within a timeframe that allows them to do the groundwork to allow their option to be considered as part of the RIT-T process[3]. Assessment in

[3] This issue was raised by stakeholders during the AEMC demand management incentive scheme and local generation network credits rule changes with respect to the RIT-D and RIT-T.

the RIT-T would otherwise prove challenging, given the level of detailed analysis required to support cost benefit comparison of options.

The NTNDP, which is prepared annually by AEMO, was designed to provide an independent, strategic view of the efficient development of the NEM transmission grid and assesses the need for transmission development under a range of credible scenarios over a 20-year period, in consultation with industry. The NTNDP accounts for all committed and proposed projects included in TAPRs published by transmission network businesses.

The AEMC's last resort planning power allows it to direct one or more network businesses to apply the RIT-T to augmentation projects that are likely to relieve a forecast constraint on a national transmission flow path. The purpose of the power is to ensure timely and efficient inter-regional transmission investment for the long term interests of consumers of electricity when other mechanisms to provide for the planning of this investment appear to have failed, for example where AEMO has identified a material constraint in the NTNDP but the relevant transmission network business has not addressed that constraint in its TAPR. The AEMC must exercise its power in accordance with requirements in the NER and the last resort planning power guidelines. To date, there have been no circumstances in which the AEMC has identified a need to so invoke this power.

The NER also contain a Regulatory Investment Test for Distribution (RIT-D), which applies to distribution network businesses. The RIT-D and RIT-T are very similar, but not identical. The scope of this review is limited to the RIT-T, but if any changes are recommended to the RIT-T then, depending on the nature of those changes, there may be a case for making similar changes to the RIT-D at the same time so that they remain consistent to the extent warranted.

Question:

2. Do existing transmission planning processes/incentives support the timely initiation of a RIT-T to assess options to relieve existing or emerging transmission constraints?

## Role of the RIT-T in a changing energy market environment

In reviewing the RIT-T, it is important to consider the key changes that have occurred in the NEM since this test was introduced and the dynamic backdrop against which it can be expected to be applied in the future.

### Flattening electricity demand

When the RIT-T was introduced in its current form in 2009, the NEM had experienced a lengthy period of steadily increasing demand requiring significant transmission infrastructure investment. This situation has now changed, with demand declining across the NEM from 2009 onwards and the 2016 National Electricity Forecasting Report forecasting flat NEM-wide electricity consumption over the next 20 years. While future infrastructure investments may continue to be required to meet growth in specific areas, overall energy use has levelled off compared to historical trends, and a greater proportion of investment instead may need to be directed to replacement expenditure and managing challenges raised by increasing intermittent generation across the NEM. While peak demand varies across regions, in most regions it is expected to remain flatter than historical levels.

### Rapidly changing technology outlook

The flattening of demand across the NEM is part of a wider transformation underway in energy markets, driven by improvements in energy efficiency and new energy technologies which provide a greater range of options to service customers and manage the electricity grid.

Even greater numbers of customers are likely to install solar PV and storage over the next 10-20 years as the economics become more favourable. In the next 10 years, battery storage costs are expected to fall by around 60 per cent and solar panel costs by around 35 per cent[4]. The net result of these developments is likely to be greater numbers of consumers accessing their electricity from alternative sources and a more decentralised electricity network.

In some locations such as Kangaroo Island and areas of rural Victoria, networks are already assessing whether standalone generation systems will be more efficient in servicing some communities than building or replacing grid infrastructure. Analysis funded by ARENA suggests that by 2025, microgrid alternatives could be the most efficient form of energy infrastructure to service outback towns in Queensland.

### Renewable energy and climate policy

Australia's COP21 commitment to reduce emissions by 26 to 28 per cent below 2005 levels by 2030 has significant ramifications for the future operation of the NEM.

Meeting this commitment among other factors will lead to the replacement of some of Australia's emissions intensive generation fleet with lower emission alternatives. In many cases, these alternatives do not provide the same system services delivered by coal or gas-fired power stations which presents challenges to AEMO's ability to maintain power system security. For example, displacement of traditional generation assets that provided power system security services— such as frequency and voltage control services—by non-synchronous and non-controllable generation such as solar photovoltaic (PV) and wind is already requiring AEMO and the AEMC to review frameworks and processes designed to stabilise the grid.

Intermittency is also likely to become a major issue for NEM regions sourcing a significant proportion of their electricity from wind and solar. This is already apparent in South Australia where more than 45 per cent of installed capacity is currently made up by these technologies – wind energy production can range from less than 1 per cent of the state's consumption at any point in a day to over 100 per cent while on average addressing 30 per cent of consumption needs.

### Increasing role for interconnectors

Interconnectors form a fundamental element of transmission network infrastructure, with six interconnectors (five regulated and one merchant) linking major generation and demand centres across the NEM. They provide a range of benefits which are particularly important in facilitating the integration of renewable energy generation in the NEM. Benefits include, but are not limited to:

- Economic dispatch—enabling the lowest cost generation in the NEM to reach more consumers, lowering the overall cost of electricity for consumers.
- Sharing of network support services—for example, enabling transfer of services which support frequency stability between regions.
- Managing variability of generators and demand—mitigating the risk of supply shortfall in a region through the ability to raise capacity quickly through imports from other regions.

These benefits are subject to the technical limitations of individual interconnectors. As renewable energy generation penetration increases across Australia, the NEM's ability to balance load and generation in and across jurisdictions will require heightened attention. Within jurisdictions, the replacement of synchronous generation with non-synchronous renewable energy generation can

[4] Energy Networks Association (2015) Key findings from the Electricity Network Transformation Roadmap – Interim Program Report http://www.ena.asn.au/sites/default/files/key_finding_snapshot_03122015.pdf.

result in power system security, wholesale energy market competition and risk management challenges. While the current level of interconnection has been sufficient to service needs in the past, it may be insufficient in the future. Additional interconnectors may be beneficial in addressing import/export constraints on existing assets and providing redundancy in the event that an interconnector is non-operational due to planned maintenance or failure. They may also increase power system security for edge of grid jurisdictions, contribute to wholesale market competition and provide greater opportunity for inter-regional trade.

Any potential benefits of increased interconnection however, need to be balanced against the fact that interconnectors are expensive, long life assets. Given the industry is in a period of rapid technological development the value of new interconnectors can be expected to depend heavily on the geographical and technological diversity of new generation assets across the NEM, that is; more diversity could lessen the requirement for further interconnection, in some circumstances

Further, there are a range of alternative options that could contribute to reliability and system security services in a cost effective manner. Technological advancements with respect to controllable demand and (eventually) storage mean that there may be a broader range of potential solutions than previously was the case. Each option has different technical, cost and timing implications that require careful assessment.

There may also be cases where more than one transmission network business is capable of providing a network solution to meet an identified need.

Question:

3. Do the RIT-T process and related planning frameworks adequately take in to account the evolving technology and policy environment? If not, how should they be included as part of the RIT-T process to support assessments/decisions about economically efficient options?

## RIT-T Performance

As outlined in the introductory section to this paper, a key question for the Review is whether the RIT-T's design and application are working effectively to deliver optimal NEM investment outcomes in all circumstances. The RIT-T working group is particularly interested in feedback on whether the RIT-T design and process in their current form:

- remain appropriate to all types of transmission network investment
- strike the right balance between rigorous exploration of options and speed/flexibility
- adequately capture and provide sufficient weight to key classes of costs and benefits and
- involve a sufficient level of oversight and accountability for investment decisions.

These issues are expanded on in the sections below.

### Application of the RIT-T to interconnector investments

The application of the RIT-T has proved challenging in the past for interconnection projects and multiple attempts have been made to improve it (covered in previous sections), such as providing competition benefits and option values as part of the assessment, as well as empowering the AEMC with the last resort planning power.

One of the areas of concern raised by some stakeholders is the ability of an assessment which is inherently dependent on analysis conducted by proponents possessing imperfect information and inadequate incentives to effectively capture and assess distributed, system-wide impacts; for

example, the implications of additional non-synchronous generation connecting to the network on inter-regional electricity flow and system security. There may be merits in AEMO playing an enhanced role in providing advice as part of the RIT-T process in the future where these impacts are likely to be significant – for example, new interconnector proposals.

A further area of concern is that current limitations or uncertainty as to how environmental policies can be captured in the test may be impeding investments in infrastructure, such as additional or upgraded interconnector assets, needed to support the integration of renewable energy into the grid. The AER's RIT-T application guidelines currently explain how the costs of complying with environmental policies such as the Renewable Energy Target can be taken into account in determining market benefits.

Other concerns expressed by stakeholders include that the current framework does not adequately provide for competition in the development of new interconnectors and may inhibit innovative commercial and financing approaches for the development of new interconnectors.

Question:

4. Does the RIT-T process adequately assess all benefits interconnectors provide, including the contribution to efficiently achieve national carbon reduction goals, wholesale market competition and power system security and stability?

5. Is the RIT-T, as currently framed, appropriate to the assessment of interconnection investments? If not, what changes and/or alternative mechanisms should be considered?

### Timeliness and efficiency of the RIT-T process

The minimum consultation procedures and timeframes for the RIT-T, as specified in the NER (5.16.4), were designed to improve the identification of market benefits of proposed investments, along with alternative options. The NER also differentiates requirements for RIT-Ts proportionate to the likely impacts of investments, with a more expedient process for projects falling below a cost threshold (currently $41 million) versus a lengthier and more transparent process for larger projects with wider market implications. For example, investment in a major upgrade to or new interconnector, for which costs would be recovered from consumers over several decades, is subject of a more rigorous process than a lower cost project to alleviate constraints impacting on, say, local reliability to a specific suburb[5].

The NER (5.16.3) also exempt various types of projects from the RIT-T process, including projects that are required to meet an urgent and unforeseen reliability or security of supply issue.

In a rapidly evolving energy market, some stakeholders have expressed concerns that the timeframes involved in conducting the test act as a barrier to necessary and time-critical investments. This has been identified as a particular issue for investments in additional or enhanced interconnection, which may make the entry of renewable energy generation in a particular region more attractive, in line with government policies and targets, and/or critical to meeting demand and security requirements.

For example, the South Australian transmission business, Electranet, and AEMO noted significant effort and costs associated with the RIT-T conducted for the recently completed upgrade to the Heywood interconnector, driven by the complexity of modelling associated with all credible options

[5] Note the NSW 500kV ring was justified in N-1 reliability to 75 per cent of NSW load, but at the same time it had huge effects on the ability to transport energy between NSW and other states.

and scenarios identified - from identification of the investment need, the project took 2.5 years to complete. At the same time, given that electricity consumers ultimately bear the cost of regulated interconnector investment, it is appropriate that interconnector investment is assessed through a robust process. For example, the Heywood upgrade was, when assessed in 2013, expected to cost electricity consumers over $100 million.

These concerns are counterbalanced by the fact that the RIT-T is only part of the overall network planning framework and different complexities may require different levels of investigation including consideration of an expanded portfolio of options available to address identified investment needs. For example, energy storage technology advancements present the prospect, over the lifetime envisaged for major transmission investments such as interconnectors, to be viable alternatives to new generation and interregional transfer capacity to address intermittency issues. Some stakeholders, particularly proponents of non-network options, have expressed concerns that the current timeframes for the RIT-T process are too short and that RIT-T processes often occur too close to the date that the investment is needed, making it difficult for non-network options to be adopted[6].

Questions:

6. Are there any particular barriers to the timely and effective conduct of the RIT-T?
7. Does the current RIT-T process strike the right balance between speed and efficiency versus a comprehensive and consultative process?
8. Are compliance costs associated with applying the test commensurate with benefits consistent with the guidelines? If not, how could a better balance be achieved?
9. What has been your experience of the RIT-Ts carried out to date?
    a. Do you consider that they have delivered timely and effective investment outcomes?
    b. Do you consider the process has particular issues, problems or limitations?
10. Should the RIT-T process be streamlined for certain types of investment? If yes, by whom and on what grounds should those investment types be determined?

### Design features

The RIT-T was designed to replicate investment outcomes in a competitive market environment by transparently identifying the costs and benefits associated with a new project, along with any alternatives. The NER (5.16.1) outlines costs and benefits considered to be relevant to this objective, including costs of construction of or providing options, operating and maintenance costs, costs of complying with laws and regulation (including the impact of environmental policies such the Renewable Energy Target on the costs and benefits of different options), reductions in generation dispatch costs, reductions in voluntary and involuntary load curtailment/shedding requirements, reductions in transmission losses, deferral of new plant requirements and competition benefits (capturing for example, the efficiency benefits of increased competition between generators), among others. The NER also allow new classes of benefits to be considered, subject to the AER's approval.

Price outcomes or wealth transfers between different groups (resulting from price separation in the NEM due to constraints which impact on interconnector flows for example) were deliberately

[6] Raised by stakeholders during the AEMC demand management incentive scheme and local generation network credits rule changes with respect to the RIT-D and RIT-T.

excluded from the test as inconsistent with the principle of cost/benefit analysis. Similarly, wider economic impacts such as increases/decreases in industry costs, labour market outcomes and the like were excluded from consideration, reflective of the focused role of the test in promoting economic efficiency within the NEM and the long term interests of electricity consumers (noting that the costs of investments that are subject to the RIT-T will be paid for by electricity consumers) and the significant additional regulatory burden more expansive modelling would impose.

Since the introduction of the RIT-T, concerns have been raised by some stakeholders that it does not adequately capture certain classes of benefits which are increasingly important in the transitioning energy market; in particular, system security benefits delivered by ancillary services.

However, in principle, these types of benefits can already be included in a RIT-T assessment. For example, under certain conditions (for example, low synchronous generation in South Australia), AEMO may decide to derate a network element such as the Heywood interconnector to maintain security. If the frequency and duration of these actions can be estimated in advance, they will lead to forecasts of reduced interconnector limits in the 'base case' of a RIT-T assessment. Therefore, if an option (for example, building another interconnector) can avoid the need for AEMO to periodically derate the original interconnector, the market benefit associated with this outcome (for example, lower ancillary services cost or a change in involuntary load shedding) will be attributed to the proposed new interconnector.

AEMO has considered the cost of procuring ancillary services in its review of whether consumer benefits related to system security can be captured within the existing RIT-T framework and has to date consulted on this with all regional government jurisdictions, the Australian Energy Regulator (AER), transmission network businesses and consumer groups. As an outcome of this work, AEMO proposes to develop necessary tools and processes to consider frequency and voltage control ancillary services in its own future RIT-T studies. Based on AEMO's review to date, these improvements can be made within the current RIT-T framework.

Questions:

11. Do transmission investment decisions made using the RIT-T take into account the full value of the options considered to those who produce, consume and transport electricity in the NEM?
12. Is the current range of allowed costs and benefits appropriate? If not, what other costs or benefits should be captured in the test?
13. Is greater clarity required in the NER or guidelines on how implemented government policies should be accounted for in assessing investment options? Are there other aspects of the NER or guidelines, such as option value assessments, which could be clarified or improved?

### Conduct and oversight arrangements

A RIT-T is undertaken by a proponent, generally the transmission network business, and may be reviewed by the AER as part of its general enforcement and compliance functions. The RIT-T informs the AER about the merits of proposed capital expenditure projects and the efficiency of the proposed capital expenditure. However, the AER, or other energy bodies, do not have regulatory oversight in determining if the most efficient option is chosen. The AER's role is limited largely to assessing compliance with requirements.

In its 2013 Inquiry Report, *Electricity Network Regulatory Frameworks*, the Productivity Commission highlighted a number of concerns with respect to the application of the RIT-T. One of the key issues raised was the presence of information asymmetries, that is, the inability of third parties to provide

a meaningful level of scrutiny of network planning reports and RIT-T analysis which counterbalances the incentives of network businesses to favour those investments which maximise their financial returns (that is, through inclusion in the regulatory asset base). In the absence of a robust and independent enforcement mechanism, its core concern was that tests would be conducted inadequately or not carried out at all, resulting in inefficient investment outcomes.

Questions:

14. Are the transmission businesses best placed to undertake the assessment of interconnection investments in the changing energy market? If not, who should be involved and who should be the final decision maker?

15. Is the level of oversight afforded to the test sufficient to ensure rigorous consideration of all credible options?

## Appendix I – Review Terms of Reference

On 19 August 2016 the Council of Australian Governments (COAG) Energy Council noted the important role interconnectors play in a transitioning energy sector and tasked officials to undertake a review of the regulatory test that applies to investments in new electricity transmission assets in the National Electricity Market (NEM) – the 'RIT-T' – to ensure it is effective in the current market environment. Officials are required to report back to Ministers before the end of the year.

The RIT-T is a cost-benefit assessment to identify the investment option to address an identified need which maximises net economic benefit to all those who produce, consume and transport electricity in the NEM. The overarching role of the RIT-T is to ensure that consumers only pay for those investments that are economically efficient.

In considering the RIT-T in its broader context it is important to recognise that the test is used to inform investment decisions. When applied, it should allow timely identification and implementation of the most beneficial means of addressing emerging network constraints in the setting of the broader policy framework in which the market operates.

This is particularly important in a dynamic and changing energy environment where new technologies and services are being developed at a rapid pace and becoming increasingly available. Investment decisions made by network businesses should consider a range of solutions and take into account net economic benefits in the long term interests of consumers. For example, in some locations, network businesses are already assessing whether distributed generation is more efficient than building or replacing grid infrastructure. Similarly, in some cases, interconnectors may offer an efficient means for maintaining power system security across the interconnected system, as well as assisting in reducing wholesale and retail market costs through inter-regional trade and risk management.

The Review will examine whether:

- there is scope to make the RIT-T process more efficient and timely and
- the design of the current RIT-T remains appropriate to current and future needs, with particular regard to whether:
    - the RIT-T remains the appropriate mechanism for the assessment of strategic interconnection investment for the development of a truly national, efficient, interconnected NEM and
    - the parties responsible for assessing and making decisions on strategic interconnection investment are appropriate in the context of the development of a truly national, efficient, interconnected NEM.

In doing so, it will take into account the National Electricity Law (NEL), the National Electricity Rules (NER), applicable jurisdictional regulatory frameworks and relevant industry structures along with national and jurisdictional policies to reduce carbon emissions through increasing the proportion of renewable energy in the national energy mix.

The Review will be oversighted by the COAG Energy Council Energy Project Team and undertaken by a working group consisting of representatives from:

- Commonwealth (Chair) and state governments
- Australian Energy Regulator (AER)
- Australian Energy Market Operator (AEMO)
- Australian Energy Market Commission (AEMC).

The working group will prepare a report to energy ministers for consideration at the December 2016 COAG Energy Council meeting, which will include, but not be limited to:

- an overview of the current RIT-T and its application and effectiveness under the current NER and guidelines
- key issues or deficiencies identified in the current RIT-T process, including whether the current process presents any particular barriers to the continued development of a truly national, efficient, interconnected NEM and
- any proposals to amend the framework for carrying out the RIT-T together with a timetable and process for implementation.

Any proposals need to be consistent with:

- the retention of:
  - a cost-benefit assessment framework to ensure protection of the long-term interests of consumers and
  - a decision criterion based on the maximisation of net market benefits to those who produce, consume and transport electricity in the NEM and
- the fundamental principle of competitive neutrality between network investment and other options.

In developing the report, the working group will give consideration to the role of the RIT-T in a future characterised by reduced growth in demand forecasts, greater reliance on renewable sources of energy and rapid technological change. In this context they will consider:

- Do transmission investment decisions made using the RIT-T take into account the full value – given implemented government policies - of the options considered to those who produce, consume and transport electricity in the NEM?
- Could the NER provide clearer guidance as to how the future policy and economic context should be accounted for in assessing investment options under the RIT-T?
- Could further clarification be included in the NER on how the RIT-T should be conducted?
- Could the AER RIT-T application guideline be clarified and improved?
- Does the process in the NER for the RIT-T strike the right balance between speed and efficiency versus a comprehensive and consultative process?
- How well does the RIT-T interact with other aspects of the regulatory frameworks which are designed to deliver optimal NEM-wide investment solutions (for example, the incentives flowing from the economic regulation of transmission network businesses as well as planning functions of energy market bodies)?
- What has been the experience of the RIT-Ts carried out to date? What can we learn from international experiences?

Stakeholder views on these and other matters will be sought through a consultation paper in September/October 2016.

## Appendix II – RIT-T Projects

| Proponent | Project | Stage (Published) | Estimated Project Cost ($m)** | Consultation timeframe* | Notes |
|---|---|---|---|---|---|
| **ElectraNet Pty Ltd** | Northern South Australia Region Voltage Control | Project Specification Consultation Report (August 2016) | 30 - 100 | 3 August 2016 – ongoing | |
| **ElectraNet Pty Ltd** | Baroota substation upgrade | Project Assessment Draft Report (June 2015) | 6 | 15 May 2014 – 31 July 2015 | RIT-T cancelled following a downward revision of the reliability standard for Baroota negating the need for the project |
| **ElectraNet Pty Ltd** | Dalrymple substation upgrade | Project Assessment Conclusions Report (November 2013) | 23.6 - 32 | 12 March 2013 – November 2013 | |
| **ElectraNet Pty Ltd** | Managing voltage limitations in the mid-north of South Australia | Project Specification Consultation Report (August 2012) | 4.9 - 9.4 | 14 August 2012 – 7 November 2012 | RIT-T cancelled due to lower demand forecasts deferring the need for the project |
| **AEMO** | Regional Victoria Reactive Support | Project Specification Consultation Report (January 2012) | 5 - 10 | 30 January 2012 – 23 April 2012 | RIT-T cancelled due to lower demand forecasts and installation of two new transformers at Bendigo, deferring the need for the project |
| **Powerlink Queensland, Transgrid** | Development of the Queensland – NSW interconnector | Project Assessment Conclusions Report (November 2014) | 3 - 2,300 | 22 June 2012 – November 2014 | |
| **Powerlink Queensland** | Maintaining a reliable electricity supply to the Bowen Basin coal mining area | Project Assessment Conclusions Report (July 2013) | 12.3 - 178.4 | 26 April 2012 – 5 July 2013 | |
| **AEMO** | Regional Victoria Thermal Capacity – Ballarat and Bendigo Supply | Project Assessment Conclusions Report (October 2013) | 27 - 120 | 18 April 2012 – 10 October 2013 | Following the RIT-T consultation, AEMO cancelled the implementation of the last stage of the project following an updated review finding that at present the project would not likely deliver net economic benefits. |

| | | | | | |
|---|---|---|---|---|---|
| **ElectraNet Pty Ltd** | Lower Eyre Peninsula Reinforcement | Project Assessment Draft Report (January 2013) | 635 - 910 | 23 February 2012 – 1 March 2013 | RIT-T process on hold pending confirmation of anticipated load coming on |
| **AEMO** | Victorian Reliability Support | Project Assessment Conclusions Report (May 2012) | 5 - 7.24 | 19 December 2011 – 3 May 2012 | RIT-T cancelled due to lower demand forecasts deferring the need for the project |
| **AEMO** | Eastern Metropolitan Melbourne Reactive Support | Project Specification Consultation Report (November 2011) | 8.1 - 9.1 | 22 November 2011 – February 2012 | RIT-T cancelled due to lower demand forecasts deferring the need for the project |
| **AEMO** | Eastern Metropolitan Melbourne thermal capacity upgrade | Project Assessment Draft Report (March 2013) | 40 - 182 | 22 November 2011 – 19 April 2013 | RIT-T cancelled due to lower demand forecasts deferring the need for the project |
| **AEMO, ElectraNet Pty Ltd** | Heywood Interconnector | Project Assessment Conclusions Report (January 2013) | 60 - 530 | 31 October 2011 – 9 January 2013 | |
| **Transend Networks Pty Ltd** | Electricity Supply Augmentation for the Kingston Area | Project Specification Consultation Report (September 2011) | 19 | 28 September 2011 – 28 December 2011 | RIT-T cancelled as draft report was not published within a year of the close of submissions to the consultation report. |
| **Essential Energy, Transgrid** | Development of Electricity Supply to the Gunnedah / Narrabri / Moree Area | Project Specification Consultation Report (March 2011) | 36 | 1 March 2011 – 3 June 2011 | RIT-T cancelled as draft report was not published within a year of the close of submissions to the consultation report. |

## Appendix III - Review consultation questions

Submissions are invited to respond to the following questions in the context of the important role interconnectors play in a transitioning energy sector and making sure the RIT-T is effective in the current market environment. The effects on the wider NEM operating environment should also be considered.

1. Are there specific aspects of interconnector projects that present particular challenges to the application of the RIT-T?

2. Do existing transmission planning processes/incentives support the timely initiation of a RIT-T to assess options to relieve existing or emerging transmission constraints?

3. Do the RIT-T process and related planning frameworks adequately take in to account the evolving technology and policy environment? If not, how should they be included as part of the RIT-T process to support assessments/decisions about economically efficient options?

4. Does the RIT-T process adequately assess all benefits interconnectors provide, including the contribution to efficiently achieve national carbon reduction goals, wholesale market competition and power system security and stability?

5. Is the RIT-T, as currently framed, appropriate to the assessment of interconnection investments? If not, what changes and/or alternative mechanisms should be considered?

6. Are there any particular barriers to the timely and effective conduct of the RIT-T?

7. Does the current RIT-T process strike the right balance between speed and efficiency versus a comprehensive and consultative process?

8. Are compliance costs associated with applying the test commensurate with benefits consistent with the guidelines? If not, how could a better balance be achieved?

9. What has been your experience of the RIT-Ts carried out to date?
    c. Do you consider that they have delivered timely and effective investment outcomes?
    d. Do you consider the process has particular issues, problems or limitations?

10. Should the RIT-T process be streamlined for certain types of investment? If yes, by whom and on what grounds should those investment types be determined?

11. Do transmission investment decisions made using the RIT-T take into account the full value of the options considered to those who produce, consume and transport electricity in the NEM?

12. Is the current range of allowed costs and benefits appropriate? If not, what other costs or benefits should be captured in the test?

13. Is greater clarity required in the NER or guidelines on how implemented government policies should be accounted for in assessing investment options? Are there other aspects of the NER or guidelines, such as option value assessments, which could be clarified or improved?

14. Are the transmission businesses best placed to undertake the assessment of interconnection investments in the changing energy market? If not, who should be involved and who should be the final decision maker?

15. Is the level of oversight afforded to the test sufficient to ensure rigorous consideration of all credible options?