19 Identifying future transmission investment

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| Key points |
| * Beyond incentive regulation and reliability standards, there are two principal regulatory influences on transmission investment — the transmission planning process and the Regulatory Investment Test for Transmission (RIT-T). * Despite interconnection between regions in the NEM, transmission planning is currently conducted at a jurisdictional level. * More inter-jurisdictional coordination in transmission planning is needed. The potential bias against interconnection between regions was one factor influencing the Commission’s recommendation in regard to a NEM-wide planner. * The RIT-T is a cost benefit test that is performed before major new transmission projects are commenced. While a useful tool, it has some shortcomings. * There is inevitably scope for those conducting the RIT-T, or any cost‑benefit test, to influence the outcome of the test. Currently, the party that performs the test can have financial incentives to achieve a particular outcome. There is no independent approval of the RIT‑T. * An independent planner should perform the test in a transparent manner. * The test only allows consideration of costs and benefits that accrue to those who produce, consume or transport electricity. * However, there are both theoretical and pragmatic reasons for not expanding the framework to include costs and benefits to other parties. * The current RIT-T is less demanding for projects justified on reliability grounds than for those done for market benefit reasons. Interconnectors do not have reliability standards, so this differential treatment can create a bias away from interconnector investment. * The differential treatment for reliability-based investment in the RIT-T should be removed, with reliability instead considered as a component of overall benefits. * Due to computational difficulties, it is unlikely that the current RIT-T process will fully capture competition benefits accruing from a new investment. Given interconnectors foster inter-regional competition, this is another potential source of bias away from such investment. * The current RIT-T framework has the ability to adequately capture future scenarios. |
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While incentive regulation of the Transmission Network Service Providers (TNSPs) (chapter 5) and the reliability standards with which they must comply (chapter 15) are major drivers of their investment decisions, two other regulatory processes can have a significant influence on the choice of transmission projects. First is the broad planning process, conducted at both a national and jurisdiction level for forward investment plans. Second is the Regulatory Investment Test for Transmission (RIT‑T), which is a cost‑benefit test applied to specific major transmission projects.

In concert, the goal of these two processes is to identify the most beneficial options for future transmission investment. While such a succinct aspirational statement may seem simple, it belies several complexities. Beneficial to whom? Which benefits can be counted, and how? As the subsequent discussion illustrates, such considerations are highly relevant in assessing the contribution that planning and the RIT-T can make to achieving efficient levels of transmission and interconnector investment in the National Electricity Market (NEM).

## 19.1 Transmission planning in context

As noted above, transmission planning and the RIT-T are not the only influences on transmission investment decisions — they exist within a complex regulatory system, which brings a range of incentives to bear on TNSP decisions. Other parts of the regulatory system with substantial effects on network investment outcomes include the incentive regulation (chapter 5), the ownership and governance of TNSPs (chapter 7) and reliability standards (chapters 14 and 15).

While reliability standards ‘set the goalposts’ for transmission planning, and governance structures are a constant in the background, the interaction between planning (including the RIT-T) and economic regulation is less straightforward. Figure 19.1 below represents this interaction (for jurisdictions other than Victoria).

The economic regulation is centred on the revenue determination process, calculated using the building block methodology. The outcome of the determination is an overall estimate of the efficient cost of operating a network over the upcoming regulatory period. It sets a ‘pool’ of allowed revenue for the TNSP, but does not require that any particular project is built.

As shown in the figure, information from the planning processes (which include Annual Planning Reports and the Regulatory Investment Test For Transmission) feed in to the revenue determination process, but this is only used to inform the process, and is not used in a way that ‘locks in’ any particular investment. In the example below, information from the RIT‑T for project A (which is due to be built in the regulatory period) is available to be used as an input for the revenue determination. It is not possible to use information from RIT-T (B) as it has not been prepared at the time of the determination. Instead, the Annual Planning Report would identify a network need, and an estimate of an efficient manner of addressing the need would be included as part of the overall figure set by the revenue determination. This estimate does not have to match the option that is eventually built, or indeed any of the options considered as part of the RIT‑T. At the end of the regulatory period, it is the actual spending — rather than that predicted by the RIT‑T or the planning report — that is entered into the regulatory asset base for the next revenue determination. Indeed, neither the RIT‑T, nor the planning process, directly determine the funds allocated to a TNSP.

Figure 19.1 Parallel processes — economic regulation and planning

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| This diagram depicts two separate timelines, one for the economic regulation of transmission, and another for the transmission planning process.   At the start of the transmission planning process, some of the information from it can be used to 'feed into' the revenue determination, but the two processes are otherwise separate. |

a Based on AER (pers. comm., 20 September 2012).

## 19.2 Transmission planning

Transmission planning is a forward-looking process that identifies the investments required to: address (emerging) constraints; meet reliability standards; and provide net market benefits. As discussed in chapter 17, constraints within a region in the NEM can have a significant inter-regional effect. It follows that planning of intra-regional transmission can be just as important to the overall level of interconnection as the planning of interconnectors themselves. Further, given the presence of ‘network effects’ (chapter 15) between regions, at least some level of coordination is required to ensure that the NEM is planned efficiently.

Electricity markets originated as a state responsibility and hence transmission planning and reliability standards have developed on a jurisdictional basis (chapter 15). A degree of coordination has been progressively introduced.

### Current transmission planning

#### Jurisdictional transmission planning

The planning on transmission networks in each region of the NEM is undertaken by the local transmission network business, with the exception of Victoria, where AEMO performs this role instead of the TNSP.

The planners are required to publish Annual Planning Reports (APRs) which contain detailed analysis of the planned transmission network over a five year horizon.

The APRs are not developed in isolation, and are required to take into account the National Transmission Network Development Plan (NTNDP), prepared annually by AEMO. Specifically, the National Electricity Rules (NER)[[1]](#footnote-1) stipulate that APRs must ‘set out’:

... the manner in which the proposed augmentations relate to the most recent NTNDP and the development strategies for current or potential national transmission flow paths that are specified in that NTNDP.

Strictly, this only requires that the TNSPs publicly describe the extent of any deviation from the NTNDP, bringing (a degree of) transparency to the interaction between jurisdictional and NEM-wide planning.

In preparing the plans, each TNSP is required to conduct an annual planning review with distribution companies connected to their network. This review must ‘take into account’ the NTNDP (failure to do so incurs a financial penalty).[[2]](#footnote-2) Importantly, while TNSPs are obliged to consider the NTNDP, the final decision for planning matters rests with each individual network service provider.[[3]](#footnote-3)

#### National transmission planning

As noted, in its role as the National Transmission Planner, AEMO annually publishes the NTNDP (AEMO 2011d). In contrast to the detailed, local planning, of the APRs, the NTNDP is intended to provide a ‘strategic’ and national outlook, over a 20 year horizon.

Mirroring the requirements on TNSPs, in preparing the NTNDP, AEMO must ‘have regard to’, among others things, the most recent APRs, as well as the revenue determinations for the TNSPs.[[4]](#footnote-4) This repeated cross-referencing of the APRs and the NTNDP is intended to provide a transparent ‘feedback loop’ which should, in theory, iterate towards alignment between the levels of planning.

However, the NTNDP is not determinative. AEMO cannot direct a TNSP (except in Victoria) to undertake a given investment detailed in the plan. Instead, its role is to bring an alternative (long-term) focus and inform the market about potential development options, at best influencing investment outcomes (outside Victoria).

These arrangements are new. The first interim national statement (a precursor to the NTNDP) was published by AEMO at the end of 2009, and the first comprehensive NTNDP was published at the end of 2010. Consequently, the APRs published in mid‑2011 were the first to set out the degree of difference or alignment with the NTNDP.

As the AEMC noted in its First Interim Report for its Transmission Frameworks Review (‘TFR’), differences in the formatting of reporting outcomes in the APRs between TSNPs have made it difficult to assess whether all issues in the NTNDP have been adequately considered by TNSPs (AEMC 2011f). In its Second Interim Report, the AEMC (2012j) noted that review participants had supported improved coordination of the APRs, and that it therefore expected this issue to progress without the need for formal requirements.

### Is planning coordination effective?

The current planning arrangements described above have evolved over time, and represent an improvement in the degree of coordination between jurisdictions in the NEM. But have they gone far enough?

Previously, the Energy Reform Implementation Group (ERIG) identified that, due to reliability-driven planning at a jurisdictional level:

… investment decision making is biased toward investment within each state rather than, where it is efficient to do so, having a true national character. (2007, p. 12)

Not every sphere of regulation needs to be managed at a national level. Indeed, the principle of subsidiarity requires decisions to be taken by the lowest level of government capable of considering, and acting on, all the costs and benefits relevant to making the decision (PC 2012c). For example, planning and zoning requirements only affect parties within a limited area, and as such should be handled at local levels. However, where actions have an impact that extends beyond one jurisdiction, the efficient level of decision making tends towards increased coordination, or harmonisation, at a higher (that is, national or, where relevant, international) level. This allows the decision maker to properly consider all of the effects of a decision, rather than just those occurring in one affected jurisdiction.

In the context of electricity, the ‘network effects’ (chapters 15 and 17) present in the NEM suggest that, at the very least, strong coordination is necessary to properly account for inter-regional effects, and plan adequate levels of interconnection. Further, as interconnection increases over time, so too will the extent of the network effects, and thus the necessity for planning that adequately takes account of NEM‑wide effects:

In an interconnected alternating current AC electricity grid, additions and subtractions of generation or network capacity at any point within the system affect conditions in other parts of the network. As a result, it is not possible to plan and develop subsections of the system in isolation. Efficient system wide development requires planning to be co-ordinated across generation, transmission and load. The increased level of interconnection in the NEM has elevated the need for NEM wide coordination for the efficient development of the entire transmission system and energy market. (ERIG 2007, p. 168)

The arrangements described above were implemented after the ERIG report. Grid Australia contends that the reforms have addressed the concerns raised by ERIG, achieved an optimal level of coordination and that the current approach ‘captures the strategic national perspective of AEMO with the detailed on-the-ground knowledge of the regional TNSPs’ (sub. 22, p. 17). But AEMO disagreed, and submitted that:

There are many examples of the state-by-state approach to transmission planning which inhibits the development of a national grid. … Redundancy [reliability] driven investments … are traditionally treated by the local network planner as a problem that must be solved solely from within the state. (sub. 32, p. 31)

Based on the relative consequences of inaction under the existing arrangements,[[5]](#footnote-5) TNSPs have more of an incentive to invest for reliability in their own jurisdiction than to address inter-regional issues. More practically, historical considerations and organisational culture could mean that TNSPs’ focus tends towards solutions in their own jurisdictions, where they are familiar with requirements (such as planning and zoning and environmental approvals), have greater experience with the range of other parties (such as construction firms) involved, and where the decisions of other TNSPs have less effect on outcomes (and their timing).[[6]](#footnote-6)

In examining the issue of planning as part of the TFR, the AEMC acknowledged this issue although it noted that the extent of the problem is unclear and that there is ‘no indication of a lack of inter-regional capacity’. Nevertheless it concluded that there is:

… scope to increase the national coordination of planning. While it is not clear that the current framework is delivering manifestly inefficient outcomes, there are some gaps. For example, a TNSP may not give full consideration to investment in other regions that could more efficiently meet reliability standards in its own region(“cross-regional” investment). (AEMC 2012j, p. 59)

The AEMC went on to recommend increased coordination in planning, largely based on the current South Australian model (chapter 15).

There are several other policies that could potentially help to address the coordination issue. For example, introducing some form of inter-regional transmission charging, a matter currently being considered by the AEMC (2011b). The AEMC’s ‘optional firm access’ package (chapter 18) could also assist, as where generators (or in the case of interconnectors, retailers) requested and paid for firm access paths that had inter‑regional aspects, TNSPs would be obliged to invest accordingly.

For several reasons, including the need to better account for network effects, the Commission has recommended that AEMO become the national transmission planner (chapter 15). This has particular implications for the degree of interconnection in the NEM. A national planner would be able to consider the need for network investment on a NEM-wide basis. This would mean that a given transmission investment was judged solely on its (net) effect on the NEM as a whole, not on the jurisdiction in which the investment would be physically located.[[7]](#footnote-7) Under this national planning approach, interconnectors would cease to be a special case, and would be treated as ‘just another’ transmission line.

The Commission considers that the current interaction between TNSPs and AEMO is a valuable feature of the planning process, and should continue. However, under the Commission’s proposed approach, the relationship would be inverted, with AEMO holding decision making power in regard to the specification of what should be built, when and where, with the TNSPs performing the role of informing, advising and publicly challenging the national planner through the APR and NTNDP processes. This interaction would function as a transparent check on AEMO’s performance of its planning role (as noted below, a similar role is envisaged in the context of the RIT-T).[[8]](#footnote-8)

As noted in chapter 15, if the Commission’s recommendation for national planning were not to be accepted, an adapted form of the South Australian hybrid model (as recommended by the AEMC) is a second best alternative. It would increase coordination between jurisdictions relative to the status quo, but would not fully vest decision making power in a NEM-wide body. As explained in chapter 15, the Commission believes that this approach, whilst better than the status quo, at least as currently specified, has some disadvantages.

## 19.3 The Regulatory Investment Test for Transmission

The RIT-T is a cost benefit process that is done before all major new transmission projects, including interconnectors, are undertaken.[[9]](#footnote-9) It is not required if a transmission asset is being replaced, rather than augmented.

In attempting to replicate investment outcomes that would arise in a competitive market environment, the RIT-T aims to quantify the costs and benefits that accrue to those who consume, transport or generate electricity as the result of a new project; and to ensure that only projects with the highest net present value proceed. In doing so, it includes several categories of costs and benefits (box 19.1).

The RIT-T gives equal consideration to the interests of those who consume, produce and transport electricity. In effect, this is an efficiency test, and will give no weight to any redistributive outcome of an investment. To a large degree, decisions made under this rule will align with the overarching National Electricity Objective (NEO) as they will generally direct investment in the *long term* interests of consumers. (As noted in chapter 3, the NEO can also be seen as fundamentally an efficiency objective.)

The primary goal of the RIT-T is to identify both the most efficient transmission projects, and any more efficient (non-network) options, such as demand management, where they exist. However, the RIT-T is part of a broader regulatory process in which the building block process, incentive regulation and the longer term planning processes all play a role in promoting efficient investment decisions.

It is therefore important to consider the design of the RIT-T as part of the overall regulatory process. If other parts of the regulatory system are working well and providing appropriate incentives to provide a reliable, low cost network, the RIT-T would be less important. But if the regulatory system is providing weak incentives, the RIT-T will play a more important role in directing efficient investment.

Where reliability standards are set deterministically, a profit motivated TNSP has incentives to achieve these standards at least cost (regardless of whether a RIT-T is undertaken or not). At best, the reassuringly named ‘regulatory investment test’ may substantiate that the TNSP has achieved the least cost solution given the deterministic constraints, but it cannot alter the inefficiency of those constraints.

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| Box 19.1 The costs and benefits in a RIT-T |
| The RIT-T process is relatively simple, at least in principle. For any proposed new investment, the party performing the test compiles a list of options. These options can be network options, or they could be alternatives such as demand management or a new generator. At this stage of the process, interested parties are allowed to raise alternatives that must be considered or a rationale given for their exclusion. 10  Once a list of options is finalised, the expected benefit of each project is calculated using the costs and benefit categories described in the RIT-T documentation.  The costs that can be included are:   * the costs of construction or providing the options * operating and maintenance costs * cost of complying with laws and regulations * any other reasonable costs that are agreed to by the AER.   The benefits considered under the RIT-T include:   * decreased fuel dispatch * reductions in voluntary load curtailment (when electricity users will reduce consumption for a price) * reductions in involuntary load shedding (when electricity supply is cut off to parts of the network to maintain system security) * changes in cost to other parties, such as the deferral of a new plant * differences in the timing of other transmission projects * changes in network losses or in ancillary services costs * competition benefits * option value (the benefit from retaining flexibility by taking a sunk action, such as reserving property rights, whose value could change in the future) * adjustments for helping to meet the Renewable Energy Target   These costs and benefits are calculated in a number of forecast scenarios, and assigned a weight for the probability that each state will occur. The project with the highest, probability weighted, net present value is chosen by the TNSP for development.11 Throughout the application of the RIT-T, the regulator only plays a role in monitoring issues of process, such as not following the consultation guidelines, and plays no active role in approving the RIT‑T outcomes. Indeed, despite the name, this is not a test is involved in ‘marking’. In reality, it is ‘due diligence’ by the TNSP, undertaken prior to an investment and carried out with some public involvement and transparency. |
| *Source*: AER (2010e) |
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Aside from the main goal of identifying the most efficient new investments, the RIT-T also performs several secondary, but still valuable roles. These include a (mandatory) consultation process to allow parties with relevant information for a particular investment to come forward. For example, if a generator announced that it was planning to commission a new plant in an area, it could make a network augmentation unnecessary.

The RIT-T also provides a platform for public debate around a particular transmission investment and provides transparency around the calculations used in coming to investment decisions. Importantly, the RIT-T does not involve the regulator approving (or vetoing) particular investment options.

It is important to recognise that the RIT-T is just the most recent form of regulatory test applied to transmission (box 19.2) Moreover, the test is a cost benefit analysis, and like all calculations of its type it will require assumptions, simplifications and in some cases, decisions about whether to include entire classes of benefits. Analysis is costly, and the goal of the RIT‑T is to find the best project, not to produce the perfect estimate of the net benefit of any particular option.

Even so, it has been suggested that elements of the current RIT‑T design are biased away from interconnector investment and that changes are required.

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| Box 19.2 A brief history of regulatory tests |
| The RIT-T is a relatively new process, and has only applied to transmission assessments initiated since 1 August 2010. A full RIT-T process is yet to be completed. Prima facie, its recent introduction might militate against reforms to the test at this juncture.  However, the RIT-T is in fact the result of an evolving process for the assessment of new transmission projects that began with the consumer benefits test included in the National Electricity Code prior to 1999 (AER 2009f, p. 3). As the name suggests, this test was based on whether the project represented a net gain for consumers of electricity.  As it transpired, application of this test proved to be problematic, especially if a project offered the prospect of a gain for consumers but imposed more than offsetting costs on other parties. After the rejection of a proposed South Australia – NSW interconnector, the National energy Market Management Company Limited (‘NEMMCO’) found that the customer benefits test was ‘highly volatile’ (ACCC 1999).[[10]](#footnote-10)  The first regulatory test was introduced in 1999 by the ACCC and required the test to examine a net market benefit as the RIT-T does now. Versions 2 (AER 2004) and 3 (AER 2007b) expanded on the cost benefit framework and clarified some areas of uncertainty in its implementation.  The main changes to the process introduced with the RIT-T in 2010 were the requirement to do a cost‑benefit test for projects performed for reliability reasons, rather than providing them at lowest cost, and the introduction of new consultation requirements. The RIT-T also provides more prescription in how to calculate costs and benefits (AER 2010f, p. 2). |
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### The RIT-T framework

#### Who should perform the RIT-T

Despite its name, the RIT-T is not performed by a regulator. Instead, it is undertaken by the entity with responsibility for transmission planning in each jurisdiction.

Consequently, in NSW, South Australia, Tasmania and Queensland, the relevant transmission companies perform the test, with the limited oversight provided by the AER focused only on matters of process, rather than scrutinising the TNSPs’ analysis. The TNSP is also responsible for arranging the construction of a new asset if the RIT-T finds it to be efficient to do so, and receives revenue based on both past and planned future investments through the regulatory determination process (section 19.1). There is no independent approval of the RIT‑T.[[11]](#footnote-11)

In Victoria, the RIT-T is performed by AEMO as part of its planning function and the favoured option is constructed and ultimately owned by either the incumbent TNSP or a different party. For small projects, or projects that are unable to be separated from the network, these projects are provided by SP Ausnet for a negotiated fee. For larger projects that can be separated from the network, a tendering process is employed, and the incumbent TNSP as well as others can bid for the right to construct and own the augmentation. While the structure of the RIT‑T itself is no different in Victoria, having an independent party responsible for performing it changes the nature of the test.

In chapter 15, the Commission recommends that the AEMO become the NEM-wide planner, responsible for the identification of all transmission augmentations. In line with the situation in Victoria, this change would see responsibility for performing the RIT-T shift from TNSPs to AEMO.[[12]](#footnote-12)

There would be a number of advantages in having AEMO as an independent party perform all RIT‑Ts, albeit in close cooperation with the TNSP whose local knowledge would be very important in testing the realism of assumptions used in the analysis. Cost benefit analysis of any complex future action is never an exact science. In estimating the costs and benefits of a new project it is necessary to make a number of assumptions, and, while some of these are specified in the RIT-T framework, others are necessarily left to the discretion of the party performing the test. Some important assumptions that affect the viability of future projects include:

* demand forecasts
* cost estimates of future projects
* the weighting and detailed application of future scenarios[[13]](#footnote-13)
* estimates of when a new project may be viable
* the extent to which other projects (including generation assets) will be delayed if a particular option is chosen
* the value of improved reliability to customers
* the costs and benefits of alternative options (including those posed by third parties).

Under the current framework, TNSPs undertaking the analysis can have a financial incentive to favour a particular outcome. In certain circumstances, a firm may wish, for commercial reasons, to delay or bring forward expenditure. It may also wish to select network options over non-network options, or favour an intrastate option to an interstate option. Such incentives may, consciously or unconsciously, reduce the impartiality of consideration of all options and thus diminished the capacity of the RIT-T to effectively perform its intended role.

On the other hand, it is worth noting that consultation on this topic has suggested that this type of commercial influence on RIT-Ts may be muted in practice as RIT‑Ts are often performed in a separate part of the organisation, and can be outsourced to external parties. In these circumstances, it is conceivable that the detailed application of the test could occur in more of an arms-length fashion than might appear to be the case.

However, it seems unlikely that outsourcing or ring fencing of the conduct of the RIT-T will completely remove the scope for the financial incentives of a TNSP to influence outcomes. And whatever the ‘incentive impacts’ in particular circumstances, shifting responsibility for the conduct of the test to the AEMO (with the TNSP being able to actively participate during the process) would, in the Commission’s view, improve the general perception of the neutrality and objectivity of the test. Ensuring that this process is completely transparent would also serve to enhance the disciplines on AEMO to undertake its planning functions effectively.

Under the independent planner model proposed by the Commission, TNSPs would still play a major role in the RIT-T process and would work closely with the AEMO by providing information, contesting assumptions and putting forward alternative projects. This would result in an active engagement between the TNSP and AEMO, but in an environment where the AEMO could bring an independent and broader perspective to bear, in contrast to its current advisory, and relatively passive, role.

*The $5 million threshold*

The RIT-T currently only applies to network augmentations where the cost of any option considered is over $5 million.[[14]](#footnote-14) This excludes smaller projects as well as the replacement of existing assets. The $5 million threshold for the RIT–T appears to be a low value, particularly as it applies to any option that could be contemplated However, a low threshold helps minimise the risk of a company dividing a larger project into several smaller projects to avoid having to conduct a RIT-T.

The low threshold could be seen as imposing a significant compliance burden on relatively low-value projects. This would be the case if the costs of all the analysis required for a RIT-T could be attributed to the test process. But, in fact, much of the analysis that is required for a RIT-T would be done by a prudent business in any case, to ensure that the capital proposal was justified, even if the results were not published. Further, given that RIT-Ts are usually done well in advance of a project (as they are supposed to examine investments from the early options stage), it is unlikely that the process would delay the construction of a new asset.

Such considerations suggest that the current threshold is not unreasonable. However, under the Rules, the threshold is to be reviewed periodically by the AER. The first review is currently underway. The draft determination, issued in September 2012, concluded that the $5 million threshold should be maintained, but that the consultation threshold of $35 million be increased to $38 million (AER 2012j). At this stage, the Commission agrees that a relatively low threshold seems appropriate.

*Performing the RIT-T for replacements*

The RIT-T is currently only applied for new projects. As such, when an existing asset needs to be replaced, it can be done without performing a cost‑benefit test. This would be appropriate, if in most cases, the best investment option would be to replace the existing asset.

However, over time, many of the factors that influenced the original investment decision may have changed, and technological developments may offer alternatives. While TNSPs will have incentives to look at the relative efficiency of alternative options before deciding to replicate an existing asset, if they choose the replication option, any such assessment will remain internal to the provider and therefore not open to public scrutiny (outside of a overall, forward looking estimate included in the revenue determination process). Indeed, there is the possibility that the exemption from having to conduct a RIT‑T for replacement projects may have the perverse effect of motivating a TNSP to choose a simple replacement rather than another alternative, simply to avoid having to go through the RIT‑T process.

#### Improving the transparency of the RIT-T

One of the main functions of the RIT-T is to provide a degree of transparency to the transmission investment process. It is therefore important that the RIT-T is itself a transparent process.

The second interim report of the Transmission Frameworks Review (AEMC 2012j) includes a number of suggestions for improving the transparency of the RIT-T process, including public reporting of the parties that stand to ‘win’ and ‘lose’ from a new project (even though such transfers are netted out during the calculation of the overall net present value). The review found that these changes ‘were almost universally supported’(p. 6). However, as the AEMC noted (p. 74), increases in transparency should only be pursued up to the point at which the additional benefits are equal to the additional compliance costs entailed.

The Commission definitely agrees with this principle. However, as noted before, absent the public consultation, most aspects of the RIT-T process would be conducted by a prudent business before making a major investment, regardless of regulatory requirements. Making such analysis transparent, unless it would substantially risk damage due to disclosing confidential material, would involve little additional compliance cost.[[15]](#footnote-15) Indeed, as Hogan (2011, p. 25) noted in the context of cost allocation of transmission projects, the information that must be produced as part of the evaluation of investments can provide a basis for identifying project beneficiaries in a cost-benefit analysis.

Where possible, and as appropriate, such information could therefore be used to augment or inform existing modelling work. Moreover, while wealth transfers might not have an effect on short-term efficiency, in some cases they can have implications for long-term efficiency (chapter 17). In particular, where a wealth transfer is expected and repeated, it takes on characteristics of a long-term investment incentive.

#### The future role of the RIT‑T?

As discussed above, currently the RIT-T plays a limited role in the process of encouraging, determining and funding efficient transmission investment. It sits parallel to the regulatory determination process (and does not determine funding), the only involvement of the regulator is an assessment of procedural compliance (not approval of investments), and it only applies to certain transmission augmentations (not to replacements).

Of course, the current role of the RIT‑T has evolved over time with the application, and review, of previous regulatory tests. As such, there may be sound (and efficient) reasons for what may appear to be, prima facie, deficiencies in the role of the RIT‑T in the broader regulatory process.

In this light, the Commission is seeking comment on potential changes to the RIT‑T. Participants should consider how these options would work in the current regulatory system, and also in the context of recommended future changes to transmission planning (chapter 15).

The Commission seeks participants’ opinions as to whether the:

* Regulatory Investment Test for Transmission should be applied to the replacement of existing assets
* Australian Energy Regulator could have an expanded role in the assessment of the Regulatory Investment Test for Transmission
* Regulatory Investment Test for Transmission could be used more formally in the Australian Energy Regulator’s determinations.

### Calculating the benefits

#### Should the RIT-T include effects in other markets?

The RIT-T only allows benefits and costs to be counted where they apply to those who consume, produce or transport electricity. Some have suggested that allowing the impacts of an investment to be considered more generally may improve the RIT‑T process.[[16]](#footnote-16) For instance, Grid Australia contended:

… major transmission upgrades may bestow wider economic benefits, which would not be ‘counted’ in a RIT-T assessment. … However, any mechanism for capturing wider benefits should not unduly complicate what is a relatively complex (but feasible) assessment process. (sub. 22, p. 14)

Similarly, in the 2011 National Transmission Network Development Plan, AEMO argued that:

Changes to the national regulatory and transmission frameworks are needed to enable wider economic benefits beyond the electricity market to be considered, to maximise the value of these investments to Australia. (2011d, p.xxi)

However, as elaborated on in appendix D, the Commission considers that there are both conceptual and pragmatic reasons for not moving in this direction.

On conceptual grounds, including such effects would allow the transmission industry to count benefits that are not accessible for other industries (and nor would they be included in consideration in such industries). This might bias investment away from other sectors of the economy towards transmission projects. It would also require modellers to make difficult judgements about the relevance of potential market distortions in secondary markets to a particular investment project. TNSPs are not well-suited for such a role. Indeed, the Commission considers that the role of the RIT‑T should be to try to produce investment decisions that (overall) mimic the investment outcomes that might eventuate in a competitive market. Accordingly, the focus should be on an assessment of the electricity market, not the entire economy.

On pragmatic grounds, calculating economy wide impacts would require the existing detailed market modelling of the electricity sector to be incorporated into either an extended partial equilibrium model or a general equilibrium model. This would be costly to achieve and would make the RIT-T process significantly less transparent (AER, sub. 13).

In any event, adding the complexity of economy-wide modelling is unlikely to dramatically change the outcome of RIT-T processes as most projects would have indirect costs as well as benefits (including the opportunity cost of investment in other industries).

DRAFT Recommendation 19.1

The Regulatory Investment Test for Transmission should not be amended to include indirect effects of investment decisions.

#### Allowing projects to be justified by reliability standards

The RIT-T aims to calculate the net present value (NPV) of identified options. However, currently, if the ‘identified need’ (or ‘driver’) for a project is to meet a reliability standard, the project with the highest NPV will be approved, even if that value is negative. As interconnectors do not have reliability standards, and must be justified on market benefit grounds (that is, they must have a positive NPV), this may mean that intra‑regional projects are given priority over interconnectors.

One option for reform would be to assign reliability standards to interconnectors so that all interconnectors and intra-regional transmission are treated equally under the RIT-T. The AEMC considered this as a stand-alone option in its first interim report of Transmission Frameworks Review (AEMC 2011f). But the optional firm access (OFA) package, considered in the AEMC’s second interim report, included scope for parties to buy ‘firm’ rights for access to transmission capacity on interconnectors (chapter 18), replacing the need for interconnectors’ reliability standards as a stand-alone option.[[17]](#footnote-17)

In chapter 15, the Commission is recommending moving to a probabilistic planning framework for all transmission projects. In the context of the RIT-T process, a move to probabilistic planning would mean removing reliability as a separately identified need, and in doing so remove any potential bias between types of projects. Benefits from improved reliability would instead be considered as a component of the overall benefits (in turn requiring measurement of the value of customer reliability (chapter 14)).

However, including reliability benefits is not straightforward if current approaches to reliability are retained:

* if transmission planning is driven by the specification of deterministic reliability standards (as is currently the case in NSW, Queensland and Tasmania), many transmission projects driven by reliability concerns (particularly intra‑regional projects) would run the risk of failing a cost-benefit test. This would result in TNSPs having to conduct modelling and report on projects that show a net cost, but proceeding with (the best of) those projects to meet reliability specifications — in many respects, this is the current practice.
* in the case of the ‘hybrid’ planning currently used in South Australia (and proposed for NEM‑wide application by the AEMC), while projects should in theory pass a cost‑benefit test (chapter 15), there may be marginal projects, or changes which have occurred since the hybrid standard was set, which result in the deterministically expressed standard not being entirely in alignment with economic benefit.

Accordingly, removing reliability as a separately identified need in the RIT-T requires at least a move to hybrid planning, but would only function smoothly in the context of probabilistic planning.

draft Recommendation 19.2

In combination with the adoption of probabilistic reliability planning (draft recommendation 15.3), the Regulatory Investment Test for Transmission should be changed so that reliability is only assessed as a component of overall benefits and not as a separate criterion.

#### Competition benefits

The RIT-T can include consideration of ‘competition benefits’ — that is, the dilution of localised generator market power where a transmission expansion allows the wholesale market to access more competitive generation from elsewhere in the NEM.

The Grid Australia RIT-T Handbook (2011) divides the class of competition benefits into three categories:

* A reduction of deadweight loss resulting from generators being motivated to bid closer to their marginal cost. The size of this gain will be positively correlated to the elasticity of demand in the electricity market concerned.[[18]](#footnote-18)
* An improvement in the merit order dispatch. With little to no competition, a generator may withhold some supply, which will result in lower merit (and higher cost) generators being dispatched, such as peaking plants, and a higher regional pool price. The introduction of further competition makes additional sources of power available to meet demand, reducing reliance on peaking generators and putting downward pressure on prices.
* A generator exercising market power can raise the price of electricity in an area and provide signals for new entrants. A transmission line may defer the entry of the new plant, which could be a significant cost saving that can be considered in the RIT-T.

The Commission agrees with the framework provided in the Handbook, although it is unclear whether all of the information required for these types of calculation would ever be available in practice. The Commission also understands that, to date, the estimation of competition benefits has focused on benefits of lower fuel costs to energy users. This would suggest that competition benefits may be underestimated.

If, over time, any tendency to underestimate competition benefits is considered to be significant, an adjustment to the RIT-T methodology could be warranted.

#### Future scenarios

The Garnaut review (2008) raised concerns about the ability of the existing interconnector regulation to facilitate structural change (as carbon policies lead to changes in generator location and technology mix). In particular, Garnaut argued that transmission planners: [[19]](#footnote-19)

… must consider the effects of climate change on demand (higher temperatures) and supply (severe weather events, water scarcity and bushfires). (2008, p. 450).

The Commission agrees that modelling methodologies should aim to represent the variables that have major effects on the decision in question. However, these cannot always be accurately predicted, nor definitively incorporated into a model. Indeed, most modelling of potential futures will be, by its very nature, an estimate, involving simplified relationships between variables.

Currently, AEMO develops a range of future scenarios in the National Transmission Network Development Plan (AEMO 2011d). These scenarios incorporate a range of generation, demand and policy settings. The transparent process of scenario development also allows interested parties (such as network businesses, generators, users and academics) to test the validity of the scenarios on a regular basis. The scenarios are then used by TNSPs for their modelling in RIT-Ts, with each scenario given a probability weighting. The project that performs the best across the weighted scenarios is then selected.

Without requiring a focus on any particular future outcome (which would risk biasing investment decisions to cater for futures that might not eventuate), these scenarios will update to reflect changing policy settings and available information. Illustratively, AEMO’s latest range of scenarios includes legislated carbon policies (as at January 2012), and also reflects the effect of such policies on economic growth by adopting the Treasury’s ‘core’ modelling forecast for the impact of the carbon price (AEMO 2012g).

The existing range of scenarios appear suitably broad, and are developed and updated independently of those who could have a financial incentive to game them. As such, the Commission considers that they are suitable for the task of planning for an uncertain future.

#### A bias away from gas transport alternatives?

Issues with the RIT-T process can occur when there is a choice between meeting a need with an electricity transmission project or through a gas pipeline. For example, electric power can either be generated at a gas field and transmitted to the city, or gas can be piped to the city and power generated there.

Under current NEM rules, provided that there is a transmission line nearby to the gas field, generators have an incentive to locate close to the gas fields, as they do not have to pay the full cost for the construction of the transmission line (only shallow access fees). Yet the capital cost of building infrastructure to transport gas is significantly lower than that for electricity, with some estimates suggesting electric energy is between one and a half and two and a half times as expensive to transport as the equivalent amount of gas energy (AEMO 2011d).

Further, a generator’s choice of location can contribute to congestion in the transmission network, necessitating (or bringing forward) other transmission investments (currently a cost that is recovered from users, not generators). As such, locating close to a gas field may appear cheaper to generators, but it may have a higher long term cost to the economy as a whole (particularly to electricity users who ultimately pay for the transmission charges).

As it does not consider gas transport alternatives, the RIT-T could be seen as too narrow, and thus may not result in the most efficient method of transporting energy. However, TNSPs (and electricity planners more generally) do not have the authority to direct gas pipeline investment. Consequently, a RIT-T that considered gas and determined it was the best option, could lead to a perceived ‘gap’ in the market if pipeline owners chose not to invest (deploying their capital elsewhere). However, if the RIT‑T analysis is transparent, and interested parties have a good understanding of the options (and benefits) considered, then normal commercial incentives may act to encourage an efficient outcome.

Given the problem arises due to generators not facing the ‘true’ cost of their connection to the electricity network, the solution lies not with the RIT-T, but in exposing generators to a larger share of the network costs they create. Some potential options (such as ‘firm access’ payments which could create a level playing field for gas and electricity) are discussed in chapter 18.

1. Clause 5.6.2A(b)(5). Where a party has not complied with this clause, the Australian Energy Regulator may apply for a court order under s61(1) of the National Electricity Law declaring a breach and require that the relevant party cease the act constituting breach, and/or take action to remedy it (among other things). [↑](#footnote-ref-1)
2. NER clause 5.6.2. [↑](#footnote-ref-2)
3. While the AEMC has a ‘Last Resort Planning Power’ which it can exercise in the event that identified constraints do not appear to be addressed, this merely directs a TNSP to commence a RIT-T process, not to conduct any particular investment. [↑](#footnote-ref-3)
4. NER clause 5.6A.2 (b)(3). [↑](#footnote-ref-4)
5. As noted above, failure to comply with requirements to ‘take into account’, or set out the differences from the NTNDP can lead to an injunction, or a financial penalty. Conversely, failure to comply with reliability standards includes a range of penalties, up to loss of the business’ licence (chapter 15). Further, the physical consequences of not meeting reliability standards (in the ‘home’ jurisdiction) are also substantial. [↑](#footnote-ref-5)
6. For example, if a TNSP in jurisdiction A is responsible for an upgrade to improve reliability in jurisdiction B, the effectiveness (or otherwise) of this upgrade could affect incentive payments for the TNSP in jurisdiction B (chapter 15). [↑](#footnote-ref-6)
7. Note that the Commission’s proposal envisages that while planning would be done on a NEM‑wide basis, local conditions and preferences would still be taken into account. If probabilistic planning were used, local consumer preferences should be reflected in disaggregated measures of the value of customer reliability (chapter 14). [↑](#footnote-ref-7)
8. The operation of the AEMC’s ‘optional firm access’ package would also provide another form of check on the national planner, as generators would be able to request (and pay for) levels of firm access that TNSPs would be obliged to build. To the extent that generators chose to take up firm access, some specific lines would be market-driven, and taken out of a planning context (chapter 18). [↑](#footnote-ref-8)
9. A major project is one where any of the options considered would cost more than $5 million. [↑](#footnote-ref-9)
10. Hypothetically a (short-term) customer benefits test could approve an investment that resulted in a benefit, of say $1 million to electricity consumers, but incurred a cost on particular generators (who would be unlikely to be able to fully recover the cost through the wholesale market) of $2 million. This could provide a disincentive for those generators to invest, and cause power supplies to fall below efficient levels in the future. (Note that the NEO, in focussing on the *long term* interests of consumers, would be unlikely to be met for such an investment.) [↑](#footnote-ref-10)
11. In effect, the RIT-T is a test where the TNSP sets the questions, prepares the answers and marks the exams themselves. The AER and other parties act only as observers, able to comment but not ‘mark’ the exam themselves. [↑](#footnote-ref-11)
12. Note that the Commission’s recommendation on transmission planning differs from the AEMC’s. The reasons for this difference are detailed in chapter 15. [↑](#footnote-ref-12)
13. At broad level, AEMO already effectively sets the scenarios as the TNSPs adopt those set out in AEMO’s National Transmission Network Development Plan. [↑](#footnote-ref-13)
14. Further, where the preferred option does not cost more than $35 million, the planner applying the RIT-T can be exempted from parts of the consultation process (AER 2012j, p. 6). [↑](#footnote-ref-14)
15. Examples of confidential material include the details of contracts with construction firms. These firms could suffer financial loss if their competitors discovered, and copied, particular aspects of their bidding and contracting arrangements. [↑](#footnote-ref-15)
16. This issue was also considered by ACIL Tasman (2006). [↑](#footnote-ref-16)
17. Under the OFA package, TNSPs would be obliged to maintain interconnector capacity to meet the subscribed levels of access. This level of capacity would be subject to a ‘firm access standard’(chapter 18) which would effectively perform the same role as a reliability standard. [↑](#footnote-ref-17)
18. There will be a rent transfer, from generators to consumers but, as discussed above, these are not considered under the RIT-T framework. [↑](#footnote-ref-18)
19. In his review, Garnaut (2008) contemplated a NEM-wide assessment, similar to the Californian Energy Transmission Initiative, as a role for the national transmission planner. [↑](#footnote-ref-19)