



1 October 2010

Chairman
Australian Energy Market Commission
PO Box A2449
SOUTH SYDNEY NSW 1235

Dear Mr Pierce,

EPR0019: Transmission Frameworks Review Issues Paper

Origin Energy Limited (Origin) welcomes the opportunity to contribute to the Australian Energy Market Commission's (AEMC) Transmission Frameworks Review.

The National Electricity Market (NEM) has been largely successful in meeting the energy requirements of end consumers as evidenced by its performance against key parameters such as the reliability standard and the maintenance of network security. Origin is of the view, however, that given changing market dynamics the continuation of this trend is largely dependent on the ability of energy market frameworks to adapt over time.

As the means of getting energy to consumers, a robust transmission regime is vital to the efficient functioning of the market, and thus should be a focus of policy makers and market participants if the above objective is to be achieved. This view has been validated by the AEMC's *Impacts of Climate Change Policy on Energy Markets Review* which concluded that the introduction of climate change policies is likely to materially impact the transmission system and market as a whole.

Additionally, Origin considers it important to bear in mind that the effectiveness of the transmission framework is not only dependent on the robustness of each individual element (i.e. planning, investment, connection and access) but also their interconnectedness. For example, a sound planning framework can only be deemed successful if it results in efficient investment decisions. As such, this Review should also examine ways to enhance the synergies between the different elements of the transmission framework.

Our answers to the specific questions in the Issues Paper and views on the various aspects of the Review are detailed in the attached submission.

If you wish to discuss any of these issues further please do not hesitate to contact me on (02) 8345 5250 or Steve Reid on (02) 8345 5132.

Yours Sincerely,

A handwritten signature in black ink, appearing to read "Tim O'Grady".

Tim O'Grady
Head of Public Policy



Key Points

Application of the National Electricity Objective (NEO):

Key to achieving efficient outcomes and satisfying the NEO is the need for transmission frameworks to encourage and facilitate timely and efficient investment, particularly as the grid trends toward full capacity.

Role of transmission

The role of transmission must now go beyond simply being a means of meeting reliability in the short term and be extended to a mechanism that will assist in ensuring the sustainable development of the market.

Transmission planning

Whilst the more national and strategic approach in the National Transmission Network Development Plan (NTNDP) should in theory enhance system efficiency, in practice it is not entirely clear how this will filter down to TNSP investment decisions. Our concern stems from the fact that the five year TNSP planning horizon might be unable to support more strategic and long term transmission build envisioned in the NTNDP.

Promoting efficient investment

The problems surrounding the justification of transmission projects on the basis of market benefits are likely to persist under the Regulatory Investment Test - Transmission (RIT-T). This is primarily due to the complex, and in some cases contentious nature of the assessment, given the many assumptions (such as generator dispatch patterns, fuel costs) that need to be made in undertaking the analysis.

Economic regulation of TNSPs

The changing nature of the market is likely to require TNSPs to be more forward looking. The extent to which this is possible under the five year revenue reset process is an issue that the AEMC should examine under this Review.

Network Charging for generation and load

Origin is strongly of the view that the current locational signals in the market are sufficient to promote overall market efficiency and that an additional price signal is not required.

Nature of access

In Origin's view the open access regime has worked well to date. It promotes competition between different types of generation plant and does not discriminate irrespective of fuel type or on the basis of new entry or incumbency. Any alterations to the existing regime considered in this Review must adhere to the same principle.

Connection Arrangements

Current connection arrangements do not wholly reflect the needs of the market and as such it is appropriate that they are revisited under this Review. There is a lack of clarity around certain NER Chapter 5 connections provisions which results in inconsistent application by TNSPs and increasing uncertainty for connecting parties. Our detailed thoughts on this topic are expressed in Appendix A of the National Generators Forum (NGF) submission to this Review.



Network Operation

Greater incentives particularly as they relate to the timing of network outages and the efficient building of redundancies in the network should be further explored.

Dispatch of the market and management of congestion

Origin considers that the management of congestion is best addressed through a strong transmission investment framework and greater incentives to optimise the utilisation of the existing network capability. Consideration of additional market mechanisms to manage any residual congestion should only occur after ascertaining the materiality of such congestion.

1. Application of the National Electricity Objective (NEO):

Do frameworks governing electricity transmission allow for the minimisation of total system costs and for overall efficient outcomes in accordance with the NEO? What evidence, if any, is there to demonstrate that this is or is not the case?

The Issues Paper acknowledges that there has been limited investment in new transmission capacity in recent times. Whilst previously this might have been appropriate given the excess capacity that was installed prior to privatisation and market start, a number of indicators point to the need for a change in approach. In particular, continued load growth, declining network capacity, ageing infrastructure and an ever increasing volume of renewables entering the market is anticipated to test the vitality of the transmission framework. Given this, it is reasonable that as the grid trends toward full capacity, the ability of the existing framework to support the efficient and timely expansion of the network be put under scrutiny.

Key to achieving efficient outcomes and satisfying the NEO is the need for transmission frameworks to encourage and facilitate investment to overcome the current inertia in the short term. This should be done with the view to achieving a more even and sustainable development profile in the medium- to long-term. Given the long lead times involved in the planning and development of transmission this will require a more strategic and forward looking approach than is currently being employed.

For example, periodic investment “bubbles” such as that currently emerging in transmission can lead to a number of inefficient outcomes whereby projects are at risk of sub-optimal planning and execution due to scheduling pressures. Where there are delays, reliability could be compromised and costs are likely to increase to the extent that resources are stretched. Already there is evidence in some jurisdictions that lumpy catch-up transmission investments have resulted in price shocks to consumers. Aside from consumer backlash, step increases in electricity prices result in more customers struggling to pay bills, inevitably increasing bad debt write-offs for retailers which then have to be recovered from the remainder of the market. Better sustainable and efficient outcomes would be achieved through more uniform, staggered investment over time.



2. Role of transmission:

Is there a need to consider the appropriate future role of transmission in providing services to the competitive sectors of the NEM? What evidence, if any, is there to suggest that the existing service provided to facilitate the market, or the definition of this service, is inappropriate or insufficient?

Fundamentally, the role of transmission is to provide a technically robust, reliable and efficient means of transporting power from generators to load centres. It should seek to optimise long term market outcomes taking into account not only the legacy of existing network infrastructure, but also current and emergent developments that have the potential to radically change the future landscape. This includes government policy, environmental considerations, technological trends and community expectations. Origin is concerned that traditional thinking has been overly focused on incremental augmentation of existing infrastructure, rather than big picture, long term investment.

Most recently, transmission build has frequently been justified on the basis of meeting reliability standards - which has been successful given the NEM's track record in delivering reliability. However new trends such as the increased penetration of renewables and gas plant, as well as the emergence of major new load centres such as South West Queensland (as a result of coal seam gas (CSG) activities), will now put increased pressure on the transmission system. These developments will require large scale expansion of the network and a more long term view of future transmission requirements. This suggests that the role of transmission must now go beyond being simply a means of meeting reliability in the short term and be extended to a mechanism that will assist in ensuring the sustainable development of the market as a whole. Origin considers that recent developments, such as the greenfield augmentation options being considered through the AEMO/ElectraNet joint interconnector feasibility study is a step in the right direction.

In order to facilitate desirable outcomes for the competitive sectors of the NEM, transmission should, as far as practicable, minimise investment uncertainty for generators and provide a consistent and streamlined process for grid augmentation and connection.

3. Transmission planning:

Does the current transmission planning framework appropriately reflect the needs and intention of the market (including generators, loads and demand side response)? Will this adequately provide reliable information to TNSPs on where and when to invest, or when to defer or avoid investment, in an uncertain planning environment, or is there a case that additional market based signals might be beneficial?

As the AEMC Issues Paper notes, decisions on location of new generation are significantly influenced by key factors including access to fuel and transmission losses (in effect, a proxy for distance from load centres); network congestion is another key factor. New generation investment is therefore most likely to arise in regions or corridors that exhibit favourable attributes when measured against such factors (e.g. in proximity of gas pipeline corridors, regions with significant wind / solar / geothermal potential). Similarly, aside from large resource projects the majority of electricity load growth seems likely to continue in coastal regions. Long term transmission planning should



therefore be influenced accordingly, with the objective of delivering scaleable grid extensions and reinforcement to facilitate power transfer from regions likely to best support new generation development to market.

A key shortcoming of transmission planning arrangements to date is that they have been regionally focused and reactive, rather than national and strategic. Origin has therefore been supportive of the recent changes to the planning framework, which have sought to address these issues. In particular, the establishment of the National Transmission Planner, charged with the publication of a National Transmission Network Development Plan (NTNDP), should assist in streamlining transmission planning by taking a holistic and longer term view of the network. By indicating when and where transmission augmentations are most efficiently undertaken, the NTNDP should help inform future investments.

The intent has always been that the NTNDP's role should be informative, with investment decisions ultimately the responsibility of private participants such as TNSPs. Therefore, whilst the more national and strategic approach in the NTNDP should in theory enhance system efficiency, in practice it is not entirely clear how this will filter down to TNSP investment decisions. This is notwithstanding that under the Rules TNSPs are obliged to have regard to the NTNDP when undertaking their own planning arrangements.

Our concern stems from the fact that TNSPs generally have a planning horizon of five years which essentially encourages a more reactive approach, whereby augmentations are largely undertaken to satisfy more immediate load requirements. The focus on a five year horizon biases investment decisions toward the achievement of short term objectives, largely ignoring the benefits of effecting augmentations in anticipation of more distant market developments. Adequate incentives therefore need to be put in place if TNSPs are to be encouraged to reverse this trend. It should be noted that our preference is for this to be market driven and we are not advocating a central planning model at this stage.

Ultimately the new transmission planning framework can only be deemed successful if it results in efficient investment decisions.

In regard to the specific outputs of the NTNDP, Origin notes that competition benefits and option value will not form part of AEMO's analysis when assessing transmission augmentations, despite now being part of the RIT-T process to be undertaken by TNSPs. Option value facilitates a forward looking approach to investment and allows for the building of transmission ahead of time where appropriate, taking into account the costs saving associated with building now as opposed to later. Similarly, competition benefits recognise the efficiency gains of transmission investments that lead to an expansion in the number of generators competing for dispatch. While we understand that the inclusion of these benefits is likely to be a resource intensive process requiring complex analysis, we are concerned that their exclusion from the NTNDP analysis may mean that some of the more potentially long term and strategic transmission projects will not be identified. If there are limited incentives for TNSPs to undertake such projects anyway, there possible exclusion from the NTNDP may mean that they are never undertaken.

Origin is of the view that at least initially AEMO should attempt to broadly indicate where potential augmentations are likely to confer option value and competition benefits to the market. In future years we consider it appropriate that AEMO aims to fully include the assessment of these benefits in the NTNDP.



4. Promoting efficient investment:

Will existing frameworks, including the recently introduced RIT-T, provide for efficient and timely investment in the shared transmission network?

Historically, one of the weaknesses of the RIT-T's predecessor (Regulatory Test) was its bias toward reliability based augmentations at the expense of projects that confer wider benefits to the market. This has been mainly due to the inherent difficulties associated with justifying the latter. Whilst the RIT-T is likely to assist in lessening this bias (by amalgamating the reliability and market benefits limbs of the Regulatory Test), it is essentially new and untested.

Origin is concerned that the problems surrounding the justification of transmission projects on the basis of market benefits are likely to persist under the RIT-T. This is primarily due to the complex, and in some cases, contentious nature of the assessment given the many assumptions (such as generator dispatch patterns, fuel costs) that need to be made in undertaking the analysis. The ability to substantiate these projects is key to the RIT-T achieving strategic outcomes and providing incentives to TNSPs to undertake augmentations other than those required to satisfy reliability standards. Arguably a cost-benefit analysis such as the RIT-T may not be an appropriate means of achieving these outcomes, where ultimately some element of risk is unavoidable, and where future benefits are not easily quantifiable. For example there is some doubt as to whether the RIT-T is able to adequately capture the long term benefits of over-sizing transmission assets to the extent that such projects are able to pass the test. This is notwithstanding the recent inclusion of option value in the test framework - in practice there are likely to be a number of difficulties associated with quantifying the exact benefits of over-sizing transmission assets that typically have a life of up to fifty years.

There are also some doubts as to whether the RIT-T is able to facilitate the efficient and timely augmentation of transmission assets that confer inter-regional/national benefits, such as interconnectors. For example a common theme that seems to be emerging from various sources is the need for increased interconnection between South Australia and Victoria. A number of recent studies and reports suggest that there is likely to be significant generation potential that could be unlocked through such grid augmentation, which, in turn, is likely to support the transmission investment. Origin is aware that AEMO is considering increased interconnection between South Australian and the eastern states through its joint feasibility study with ElectraNet. Though we applaud this initiative we share the AEMC's concern that it is likely to be difficult for such augmentations to satisfy the RIT-T. If this process is unworkable, Origin queries how such projects will proceed within the timeframes necessary. Absent a workable alternative, the logical conclusion is that those works simply won't proceed.

5. Economic regulation of TNSPs:

Does the current regime for the economic regulation of transmission lead to efficient network investment? Do the incentives on TNSPs lead to appropriate investment decisions and the efficient delivery of additional network capacity?

The building block approach has worked reasonably well in delivering incentives for TNSPs to meet reliability objectives. However as stated previously, the changing nature of the market is likely to require TNSPs to be more forward looking. The extent to which



this is possible under the five year revenue reset process should be explored under this review.

In regard to the adoption of an ex-post efficiency test to incentivise TNSPs to undertake efficient investments, Origin is of the view that this would most likely have the opposite effect in that it could make TNSPs more cautious and conservative in their approach. This would ultimately have negative implications for the market.

6. Network Charging for generation and load:

Is a price signal of locational network costs for generators required to promote overall market efficiency? Would there be any consequential impacts on transmission pricing arrangements for load?

As a major investor in the market, Origin is well aware of the factors that prospective generators have to bear in mind when deciding where to locate. Some of these include access to fuel, proximity to load, and the ability to procure easements and negotiate the relevant planning approval process. Despite the existence of these, other “core” locational signals such as loss factors and network congestion have the ability to materially affect the economics of projects to the extent that, even if the aforementioned factors are favourable, a prospective generator is unlikely to locate where these “core” signals are unfavourable. This means that generators are unlikely to locate in areas where high levels of network congestion increases the prospects of being “constrained off” to the extent that the generator cannot be assured of getting its output to market often enough to make a reasonable return on the investment. Similarly generators will not locate in areas where high loss factors render an investment unprofitable.

By dictating to a large extent where generators choose to locate, loss factors and congestion risk results in efficiency gains to the market. For example lower loss factors closer to load provides incentives for generators to locate in these areas and is reflective of the market efficiency benefits of having generation within close proximity to demand centres. Similarly, the increased prospects of being “constrained off” in congested areas provide a strong signal to generators not to locate in these areas which reflects the negative implications for the market if they do so. Given this Origin is strongly of the view that the current locational signals in the market are sufficient to promote overall market efficiency and that an additional price signal is not required. The introduction of a locational price signal represents a significant change in the NEM and can only be justified if the current framework is not working. It is also important that contemplation of additional locational signals is not seen as a substitute for the need to efficiently expand the transmission network to adapt to the changing patterns of generation and load.

Origin notes that the AEMC has previously proposed the imposition of a Generator - Transmission Use of System (G-TUOS) charge as means of strengthening locational signals in the market. As we have stated above the current signals in the market provide sufficient incentives for generators to locate appropriately. The introduction of a variable locational charge will not increase efficiency and is only likely to create greater uncertainty for generators. Potential investors and the financial institutions that support them require as much certainty as possible about potential future costs and regulatory obligations.



In its Issues Paper, the AEMC appears to acknowledge that congestion is (or, at least notionally, should be) transient in nature. That being the case, it follows that the “right” and “wrong” locations for generators from a transmission perspective are only valid at a particular point in time and have the potential to change, perhaps significantly, during the course of asset lifecycles. This is truer now than ever, with carbon policy having the potential to fundamentally alter supply / demand dynamics and grid development, in turn, significantly altering traditional network flowpaths. In this context, Origin queries how locational pricing can be effective or applied in practice.

The AEMC previously stated that the G-TUOS will be reflective of the forward looking long run incremental network costs at a particular location. The calculation of such a charge will depend on forecasts of future network congestion, load growth, new entry \ exit of customers and generators, and changing patterns of network flows. All these variables are subject to considerable uncertainty rendering the calculation of the G-TUOS inevitably complex, subjective, and open to dispute.

7. Nature of access:

Would it be appropriate for generators and load to have the option of obtaining an enhanced level of transmission service? Would this help generators to manage risks around constraints and dispatch uncertainty?

Origin’s view is that the open access regime has worked well to date. It promotes competition between different types of generation plant and does not discriminate irrespective of fuel type or on the basis of new entry or incumbency. Any alterations to the existing regime considered in this Review must adhere to the same principle.

Whilst we agree that the current regime has largely been successful, Origin recognises that if transmission investment does not keep pace with increasing levels of congestion on the network the “open access” nature of the transmission regime may substantially increase risks for participants. Under this scenario, participants may find it more difficult to predict and manage their level of dispatch and therefore access. While the ability to procure a greater level of access could assist in the management of this risk it seems to be a solution geared toward treating the symptom of the problem rather than the problem itself. The most efficient solution would be the prevention of enduring and inefficient levels of network congestion by ensuring that network planning and investment are able to respond to changing generation and load patterns.

8. Connection arrangements:

Do current arrangements for the connection of generators and large end-users reflect the needs of the market? To the extent that more fundamental reforms to transmission frameworks are considered under the review, would it be appropriate to revisit the connection arrangements?

Current connection arrangements do not wholly reflect the needs of the market and as such it is appropriate that they are revisited under this Review. There is a lack of clarity around certain NER Chapter 5 connections provisions which results in inconsistent application by TNSPS and increasing uncertainty for connecting parties. Our principal



thoughts surrounding the connections regime are captured in Appendix A of the NGF's submission to this Review.

9. Network operation:

Are more fundamental reforms required to financial incentives on TNSPs to manage networks efficiently and to maximise operational network capability of the benefit of the market? Should further options for information release and transparency on network availability and outages be considered?

The Efficient Benefit Sharing Scheme and the Service Target Performance Scheme both provide incentives to TNSPs to better manage the operation of the network. Maximising network capability is key to minimising the amount of transient network congestion. We therefore support the AEMC investigating and identifying options to strengthen these current Schemes and where appropriate develop new options to enhance the commercial incentives on TNSPs to make the network available when the market values it the most.

10. Dispatch of the market and management of congestion

Is there a need for material congestion to be more efficiently managed in the NEM?

In deciding if a greater level of congestion management is required it is important that the materiality and nature of congestion (i.e. if it is enduring or transient) is established. Origin notes that a key finding of the AEMC's *Impacts of Climate Change Policy Review* is that network congestion is likely to be a material problem in some regions of the NEM, particularly as a result of the expected influx of renewables under the renewable energy target (RET) and Carbon Pollution Reduction Scheme (CPRS). Given the recent changes to the RET and the delay to the CPRS, Origin recommends that the AEMC undertake more up to date modelling to test its previous findings.

Origin considers that the key to managing congestion is to promote a transmission investment framework that provides TNSPs with incentives to respond dynamically and forecast potential network pinch-points. Developing a forward thinking approach to transmission investment and operation can go a long way in pre-empting short-term congestion problems. As discussed above, strengthening TNSP incentives to maximise network capability is a key part of that strategy.

Any option to address short term congestion is likely to add a significant level of complexity and operational risk to the market. Congestion pricing mechanisms, by definition, would add additional price risk to a market that is already the most volatile commodity market in the world. While generators do face dispatch risk when the network is congested, the materiality of this problem would need to be substantive in order to for the AEMC to justify further consideration of these types of mechanisms.