ElectraNet
electricity transmission

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2 May 2013

Dr Paul Kerin
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By email: paul.kerin@escosa.sa.gov.au

Dear Paul

re: ElectraNet's Proposed Amendments to Revised Electricity Transmission Code – Draft Decision

On 26 November 2012, ElectraNet wrote to the Essential Services Commission of South Australia (ESCOSA) proposing various amendments to the version of the Electricity Transmission Code (ETC) that comes into effect on 1 July 2013.

The changes were proposed primarily to support the adoption of lower 10% probability of exceedance exit point demand forecasts to provide a better balance between reliable electricity supply and associated costs to consumers. Other amendments were also proposed, including transitional provisions to provide for an adequate transition from the arrangements under the current ETC to those under the new ETC.

ESCOSA issued a Draft Decision on 5 April in which it decided to amend the ETC to reflect some of the changes proposed by ElectraNet, but not others.

ElectraNet welcomes the opportunity to comment on the issues raised in ESCOSA's Draft Decision. The attached submission provides ElectraNet's response to the various issues raised and we look forward to discussing our submission with you and your team.

In the meantime please feel free to contact me on (08) 8404 7983 or Simon Appleby to discuss any aspect of our submission on (08) 8404 7324.

Yours sincerely

Rainer Korte

Rainer Korte
Executive Manager - Network Strategy and Regulatory Affairs

ElectraNet

Proposed Amendments to the Revised Electricity Transmission Code

Response to ESCOSA Draft Decision

May 2013

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1. Introduction

On 26 November 2012, ElectraNet wrote to the Essential Services Commission of South Australia (ESCOSA) proposing various amendments to the version of the Electricity Transmission Code (ETC) that comes into effect on 1 July 2013.

The proposed changes included transitional provisions to provide for an adequate transition from the arrangements under the current ETC to those under the new ETC. Amendments were also proposed to support the adoption of lower 10% probability of exceedance (POE) exit point demand forecasts to provide a better balance between reliable electricity supply and associated costs to consumers. Some other amendments were also proposed.

ESCOSA issued a Draft Decision on 5 April 2013 in which it decided to amend the ETC to reflect some of the changes proposed by ElectraNet, but not others.

ElectraNet welcomes the opportunity to comment on the issues raised in ESCOSA's Draft Decision.

The following two sections provide an overview of ElectraNet's response to some of the key issues raised in the Draft Decision. The remainder of the submission then addresses each of the seven change proposals considered by ESCOSA in its Draft Decision in greater detail.

2. Overview

In relation to the proposed changes to support the adoption of lower demand forecasts, ESCOSA has decided not to amend the ETC to mandate a particular basis for the demand forecasts used for the purpose of clause 2.11 of the ETC. However, the Draft Decision does clarify that the ETC does not imply a particular basis for the demand forecasts to be used to assess compliance with the ETC reliability standards and that this is a matter for ElectraNet to establish on an agreed basis with its customers (generally SA Power Networks, the distribution network service provider which takes supply from ElectraNet).

While this clarification is welcome, ElectraNet considered it preferable for the ETC to make transparent the basis for determining the Agreed Maximum Demand (AMD) and Forecast Agreed Maximum Demand (FAMD) that are used to ensure reliability standards are met.

The Draft Decision is critical of the timing of ElectraNet's proposed ETC changes (being outside of the 5-yearly review of the ETC reliability standards that commenced in 2010) and implies that the proposed changes to support lower demand forecasts may be motivated by a desire for windfall gains at the expense of customers.

ElectraNet categorically rejects this implication. The benefits of the proposed ETC changes to support lower demand forecasts go directly to electricity consumers.

In particular, ElectraNet's revised revenue proposal to the Australian Energy Regulator (AER) in January 2013 included a capital expenditure forecast based on the lower demand forecasts derived from a 10% POE approach (anticipating that the adoption of the lower demand forecasts would be supported by the proposed changes to the ETC). The lower demand forecasts result in capital deferrals of $113 million from the 2013-2018 regulatory control period, which are fully reflected in the AER's final revenue determination for ElectraNet[1]. This means that ElectraNet's approved maximum allowed revenue and the resulting customer transmission charges are lower as a result of the adoption of lower demand forecasts than they otherwise would have been. There are no windfall gains to ElectraNet with the benefits going directly to customers.

ElectraNet also notes that its proposed adoption of a 10% POE basis for exit point demand forecasts has been influenced by changes in the external environment, which were not foreseen at the time of ESCOSA's 5-yearly review of the ETC. These include a significant reduction in the projected rate of growth of electricity consumption and demand across the National Electricity Market, including South Australia, and increasing community concerns over rising electricity prices driving a reconsideration of the balance between network reliability and the costs to consumers of providing different levels of reliability.

3. The ETC as an applicable regulatory instrument

In its Draft Decision the AER concluded that the FAMD between SA Power Networks and ElectraNet is not an 'applicable regulatory instrument' for the purposes of determining forecast total capex required for the 2013-18 regulatory period. ESCOSA in its Draft Decision appeared to accept this position and stated:

> "…the code's requirements for forecasting agreed maximum demand are not the same as, and do not necessarily impact on, the NER demand-setting obligations for the purposes of determining revenues. In that context, the Commission notes the AER's view, as set out at section 2.5 of its November 2012 draft revenue determination for ElectraNet, that the basis of demand forecasting for the purposes of the general standard under clause 2.11 (forecast agreed maximum demand) is separate to, and distinct from, demand forecasting for the purposes of setting capital and operating expenditure allowances under the NER." (p3)
>
> "… the code's requirements for forecasting agreed maximum demand under clause 2.11 relate to a general obligation for future network capacity, whereas the actual annual standard which ElectraNet must meet are annual standards based on contracted agreed maximum demand. Further those standards are distinct from, and do not necessarily impact on, the NER demand setting obligations for the purposes of determining revenues by the AER."(p15)

ElectraNet does not accept this position. As described in Section 4.4 of ElectraNet's revised revenue proposal, it is clear that an obligation to plan the network in a manner to avoid a breach of a reliability standard contained in the ETC by reference to a change in FAMD is an applicable regulatory obligation as per the National Electricity Rules.

Specifically:

- While the relevant reliability standard is set by reference to contracted AMD, this does not mean that planning to avoid a future breach of the reliability standards by reference to FAMD is not an 'applicable regulatory obligation or requirement';
- The term "regulatory obligation or requirement" is defined in the National Electricity Law (NEL) and includes a requirement from a participating jurisdiction

[1] AER Final Decision, ElectraNet Transmission Determination 2013-14 to 2017-18, April 2013.

that materially affects the provision of electricity network services that are the subject of a transmission determination (NEL section 2D(1)(b)(v));

- The revenue and pricing principles as per section 7A(2) of the NEL provide that ElectraNet should be able to recover at least the efficient costs of complying with a regulatory obligation such as the requirements to plan to FAMD to avoid a future breach in the ETC;
- The obligations set out under the ETC are mandatory licence obligations and are clearly 'regulatory obligations' under the NEL and NER.

In its Final Decision, the AER has accepted that clause 2.11 of the ETC, which requires ElectraNet to react to a change in FAMD to ensure it has sufficient capacity to meet the reliability standards, is an applicable regulatory obligation under the NER[2].

Accordingly, any changes to the ETC, as they relate to ElectraNet's obligations to plan on the basis of the FAMD, necessarily impact on forecast capital expenditure and efficient revenue requirements of ElectraNet pursuant to the Rules.

The remainder of this response addresses the seven specific ETC change proposals considered by ESCOSA. These matters are addressed in turn.

4. Transition to new arrangements

4.1 ElectraNet Proposal

In November 2012, ElectraNet sought transitional arrangements for the introduction of the 2013 ETC. In particular, ElectraNet noted that the defined term Forecast Agreed Maximum Demand (FAMD) did not exist in the previous ETC and cannot apply retrospectively. Therefore as at 1 July 2013, there will not be an FAMD in place for the regulatory years 2013-14, 2014-15 and 2015-16 under the new ETC.

The implication of this omission is that ElectraNet would be required to be in a position to meet agreed maximum demand in those years without the benefit of the FAMD timeframes allowed under 2.11 of the new ETC.

To address this, ElectraNet proposed that transitional provisions be included to temporarily extend the rectification provisions under the current ETC to cover for the possibility of material changes in agreed maximum demand for the regulatory years 2013-14, 2014-15 and 2015-16.

4.2 ESCOSA Draft Decision

In its Draft Decision ESCOSA rejected ElectraNet's proposed amendments to provide for transitional arrangements to the new ETC noting that:

- The proposed clause 2.11.3 would allow ElectraNet to run late on rectification of a breach of the ETC regardless over a forward three-year period;
- ElectraNet is already informed about forecast exit point demands through joint planning and SA Power Networks annual Electricity System Development Plans.

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2 AER Final Decision, ElectraNet Transmission Determination 2013-14 to 2017-18, April 2013, p89.

However, ESCOSA recognised that an agreed FAMD will not be in place on commencement of the new ETC and proposes to establish a transitional clause. The Draft Decision requires ElectraNet to negotiate, on a commercial basis and in good faith, with SA Power Networks to determine the demand forecast to apply to clause 2.11 of the new ETC. The FAMD for each year 2013-14, 2014-15 and 2015-16 is to be established from current planning data used for the purposes of joint planning.

ESCOSA therefore determined that:

> ElectraNet will be required to negotiate in good faith with SA Power Networks to determine the forecast that is to apply to clause 2.11 of the revised code TC/07. For the purpose of transitional arrangements, the derived FAMD for each year 2013/14 to 2015/16 is to be adopted, based on current planning data as derived under the joint planning arrangements in accordance with the NER. The Commission will amend the code to reflect this transitional approach.

4.3 ElectraNet response

ElectraNet accepts ESCOSA's transitional arrangements and will negotiate a FAMD (to apply to the years 2013-14, 2014-15 and 2015-16) with SA Power Networks based on a 10% POE methodology as set out in ElectraNet's revised revenue proposal to the AER.

ElectraNet will also work with ESCOSA in relation to the required amendments to formalise this FAMD under the ETC.

5. Unanticipated demand increases

5.1 ElectraNet Proposal

ElectraNet noted that the new clause 2.11.2 did not provide sufficient protection against certain demand increases that were not reasonably expected to occur. That is, there exists a range of circumstances where possible step changes to FAMD could have been 'identified' in advance, but they may not have been reasonably expected to eventuate. Such step loads still warrant the benefit of the maximum 3 year implementation timeframe.

ElectraNet therefore proposed that the term "identifiable" in the new clause 2.11.2 be substituted with "not reasonably expected to occur based on the information available" at the time of the initial forecast.

5.2 ESCOSA Draft Decision

In its Draft Decision, ESCOSA rejected ElectraNet's amendments for unanticipated demand increases noting that:

- Replacing the word "identified" in Clause 2.11.2 with "reasonably foreseeable" is a lower and subjective test which should be taken into account in the "agreement" process and not codified;
- The wording "not reasonably expected to occur based on the information available" may allow ElectraNet to discount a firm commitment based on subjective grounds;

- The planning objective, FAMD, is to ensure that ElectraNet will have the capacity to contract supply without breaching the reliability standards;
- It is important to maintain a firm requirement on ElectraNet to undertake planning such that network capacity is maintained.

ESCOSA therefore determined that:

> To maintain the effect and the intent of clause 2.11.2 of the code, the Commission does not intend to amend the code as proposed by ElectraNet

5.3 ElectraNet response

ElectraNet disagrees with the assertion that changes to clause 2.11.2 by replacing "not able to be identified" with not "reasonably expected to occur" is a subjective test. On the contrary it means that the likelihood of the event occurring would be assessable based on evidence or objective reasoning. ElectraNet therefore continues to believe this alterative wording is preferable.

ElectraNet recognises that FAMD is a planning objective to ensure that sufficient capacity will be available to supply at the time of contracting AMD, however this should be achieved in an efficient manner and customers should not be exposed to costs of transmission work for loads that do not eventuate.

Substituting the term "identified" with "reasonably expected to occur" allows ElectraNet sufficient time to respond to drop in loads once it becomes clear they have a high probability of eventuating.

6. Basis of demand forecasts

6.1 ElectraNet Proposal

ElectraNet proposed a change from the traditional approach in South Australia of using peak demand forecasts as the basis for setting AMD and network planning to an approach using a level of demand based on a temperature adjusted 10% POE.

ElectraNet's proposed amendments seek to have this change transparently recognised in the ETC as the basis for setting FAMD and AMD. The proposed amendments affect clauses 2.11.1, 2.11.2 and 6.3.1 of the ETC. The 10% POE derived FAMD and AMD would only be applied to those connection points with an element of redundancy (i.e. non-radial connection points). Peak demand forecasts would continue to be applied to radial (Category 1) connection points.

ElectraNet considers that this approach and the proposed changes to the ETC would achieve a better balance between reliable electricity supply from the transmission network and the costs to consumers of providing that level of reliability.

6.2 ESCOSA Draft Decision

In its Draft Decision, ESCOSA rejected ElectraNet's amendments for setting the basis of demand forecasts noting that:

- FAMD under the ETC and a demand forecast produced for revenue determination purposes are not the same nor are they for the same purpose. ElectraNet must meet the annual standards based on contracted AMD. These standards are distinct from and do not impact on the demand that is used for revenue determinations;
- No details were provided on how savings are to be passed on to customers;
- There is no obligation under the ETC that requires that ElectraNet must accept SA Power Networks' demand forecasts. Demand forecasts are to be agreed, on a commercial and good faith basis, between the relevant parties;
- The AEMC is currently reviewing the national reliability framework and methodology and at this time it would be difficult to justify codifying a new methodology which may change as a result of a nationally developed model;
- The impact on the distribution network as a result of a lesser standard or reliability from the transmission network may breach clause 20(n)(v) of the Electricity Act and requires further analysis.

ESCOSA also noted that no details were provided of shortcomings of the current forecasting methodology, and although ElectraNet claimed the amendments would benefit customers through lower-cost reliability, no evidence was provided that lower reliability outcomes were supported by customers.

However, ESCOSA also concluded that ElectraNet is already free to agree the basis of demand forecasting with its customers under the current provisions of the new ETC, including adopting a 10% POE forecast, and nothing under the ETC prevents this from occurring.

ESCOSA therefore determined that:

> The Commission has decided not to amend the transmission code to mandate a particular demand forecasting methodology for the purposes of clause 2.11 of the code at this time.

6.3 ElectraNet response

ElectraNet addresses each of the above matters in turn.

6.3.1 Applicable regulatory instrument

Refer to section 3 above

6.3.2 Benefits to customers

To address ESCOSA's concerns over the lack of evidence of the benefits of the proposals to customers, ElectraNet has undertaken further analysis of the trade-off between reliability and cost in moving to using a 10% POE demand forecast to set FAMD and AMD for the purposes of meeting the reliability requirements of the ETC.

As noted in section 2 above, the gross benefits to customers of moving to a 10% POE demand forecast is the deferral of $113 million in demand driven network investments over the forthcoming regulatory period of 2013-14 to 2017-18. This equates to a direct reduction of $16.3 million in the required transmission revenue to be collected from SA customers over this period[3].

The deferral of this investment carries with it a marginal increase in risk to reliability of supply. In other words, during a peak demand event expected to occur once in every ten years on average, there would be less redundancy in the network to cope with unplanned outage events.

ElectraNet has calculated that over the 5-year period, the cost to customers in terms of the risk of lost load is approximately $1.6 million. Therefore, the net benefit in this period alone is over $14.6 million. Further details of this analysis are provided in Appendix A.

The following is an extract from ElectraNet's January 2013 revised revenue proposal listing the projects deferred as a result of adopting a 10% POE demand forecast.[4]

> "The adoption of the revised connection point forecasts has resulted in the deferral of significant load driven investment from the 2013-2018 forecast period. The overall reduction in the load driven capital program for the period is about $130 million ($2012-13) as detailed in Table 6-4 below. Of this $113 million ($2012-13) is directly attributable to the adoption of the revised 10 per cent probability of exceedance connection point demand forecasts."

Table 6-4: Reduction in load-driven capex in the 2013-2018 period ($m 2012-13)

Project	Category	($m)
Kincraig Substation Replacement and Transformer Upgrade	Replacement	-39.2
East Terrace Second Transformer	Connection	-23.2
Keith Substation Rebuild	Replacement	-18.6
Mount Barker South 275-66kV Transformer	Connection	-8.9
Bungama Second Transformer	Augmentation	-8.1
Blanche 15MVar Capacitor Bank	Augmentation	-4.9
Penola West 15MVar Capacitor Bank	Augmentation	-3.4
Monash Capacitor Bank	Augmentation	-3.2
Torrens Island Transformer Upgrade	Augmentation	-2.0
Kadina East 132KV Capacitor Bank	Augmentation	-1.3
Net impact of other project timing movements from the period	Connection / Augmentation	-18.9
Total		**131.7**

As noted above, this investment deferral has been fully factored into the AER Final Decision for the forthcoming 2013-14 to 2017-18 regulatory period. Customers will therefore receive the full benefit of this reduction from July 2013 onwards.

3 This direct revenue impact from specific demand driven network investment deferrals does not include the reduction in strategic land acquisitions, flow on operational expenditure impacts and other consequential revenue reductions from the adoption of the 10% POE forecasts.

4 ElectraNet Revised Revenue Proposal, January 2013, p70.

6.3.3 Ability to negotiate

ESCOSA has clarified that for the purposes of the ETC, the FAMD and AMD are to be agreed as a result of commercial negotiations between ElectraNet and its customers. This would enable a 10% POE demand forecast methodology to be applied, should negotiations be successful. ElectraNet has agreed with SA Power Networks to progress this methodology and is currently negotiating the corresponding changes to the transmission connection agreement between the parties.

In the interests of transparency, ElectraNet considers that it remains preferable that the demand forecast methodology should be codified in the ETC, as it has proposed.

However, failing this, ElectraNet requests that ESCOSA's final decision further clarify that there is nothing in the ETC that is intended to preclude the adoption of 10% POE demand forecasts and that the basis of the FAMD and AMD is subject to commercial negotiations between ElectraNet and its customers.

6.3.4 AEMC review of transmission reliability

ElectraNet acknowledges that the AEMC has embarked on a review to develop a nationally consistent framework for transmission reliability in the NEM. It would be expected that the outcomes of this review would have a longer-term influence over the form of future reliability standards, including greater consistency in the framework for determining and expressing standards across the NEM.

For the purposes of the forthcoming 2013-14 to 2017-18 regulatory period for which the new ETC will apply, the 10% POE demand forecast amendments ElectraNet has proposed align the operation of the ETC with the basis of the AER's April 2013 revenue determination.

6.3.5 Electricity Act

ElectraNet notes that specific standards of service have been set that apply to SA Power Networks in the Distribution Code and that these standards are to be at least equivalent to that which existed in late 1999 and are to take into account national benchmarks.

ElectraNet considers that the adoption of a 10% POE basis for transmission exit point demand forecasts, namely FAMD, and AMD, is consistent with national benchmarks as discussed below, and the requirements of the Electricity Act.

6.3.6 Accepted methodology

ElectraNet understands that South Australia is the only jurisdiction in which an extreme peak demand forecasting methodology for non-radial transmission exit point planning has been used. The adoption of a 10% POE methodology as proposed by ElectraNet is therefore more consistent with accepted industry practice elsewhere in the NEM.

In particular:

- Victoria - AEMO applies 50% POE and 10% POE demand forecasts (weighted at 70% and 30% respectively) in its planning to assess the market impact of each network limitation.[5]
- Queensland - Powerlink develops 10%, 50% and 90% POE demand forecasts. Assessment of network capabilities is generally based on scenarios which utilise 50% POE demand forecasts.[6]
- New South Wales - TransGrid applies demand forecasts no more onerous than 10% POE to non-radial connection point planning.[7]
- Tasmania - Transend applies 10% POE demand forecasts for its connection point planning.[8]
- Western Australia - Western Power must design its network to support a 10% POE demand forecast.[9]

6.3.7 Customer support

ElectraNet notes that both the Energy Users Association of Australia (EUAA) and the Energy Consumers Coalition of South Australia (ECCSA) as customer representative organisations expressed strong support in their submissions in response to the AER's Draft Decision for the reduction in the demand forecasts proposed by the AER and ElectraNet for transmission planning purposes.

For example, the ECCSA noted that[10]:

> "ElectraNet commissioned its consultant to examine both the EMCa/AER forecast and the AEMO forecast. Resulting from this work, ElectraNet has reviewed its peak demand forecasts and revised its expectations downward to a level slightly below that of EMCa but still higher than that of AEMO.
>
> As a result of lower expectations by ElectraNet of demand growth, ElectraNet has reduced its expected capex for growth and connections below that assessed by the AER in its draft decision. The ECCSA considers that the entire process has resulted in a better outcome for consumers."

In addition, the South Australian Council of Social Services (SACOSS) expressed strong concerns over the level of the original demand forecasts, and questioned the value placed by the community on high levels of network reliability[11].

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5 AEMO, Annual Planning Report 2012, p3-32

6 Powerlink, Annual Planning Report 2012, p54

7 TransGrid, Annual Planning Report 2012, p81

8 Transend, Annual Planning Report 2012, p123

9 Western Power, Annual Planning Report 2012, Forecasting Data Supplement, p3

10 ECCSA, AER, SA Electricity Transmission Revenue Reset, ElectraNet Application, Response by ECCSA, February 2013 pp7-8

11 SACOSS, Submission to the AER Consultation on ElectraNet's 2013-18 Transmission Network Revenue Proposal, August 2012

ElectraNet would encourage ESCOSA to consider these views and any further representations from stakeholders in its consideration of the ETC change proposals.

7. Economic augmentation

7.1 ElectraNet Proposal

Small, short duration peaks in demand have the potential to cause significant transmission investments (particularly major line augmentations) in order to meet the reliability standards of the ETC. ElectraNet recognises that the cost of network or non-network solutions to prevent a potential breach of the ETC may be disproportionate to the benefit of maintaining the relevant standard (based on a cost of unserved energy).

ElectraNet therefore proposed that additional flexibility be introduced to the ETC empowering ESCOSA the ability to grant dispensation from compliance under the ETC on the basis on an economic cost benefit basis.

7.2 ESCOSA Draft Decision

In its Draft Decision, ESCOSA rejected ElectraNet's amendments for additional flexibility to the reliability standards in relation to economic augmentation noting that:

- The proposal towards a more probabilistic approach to reliability planning including economic mitigation to network developments may be worthy of consultation;
- The economic cost-benefit approach proposed by ElectraNet is likely to result in windfall gains to ElectraNet at a cost of reliability to customers. Furthermore ElectraNet has not made it clear how any savings as a result of this change would reduce customers costs;
- ESCOSA is keen to develop an appropriate VCR for South Australia and to the level of connection points or at least the seven electrical distribution regions;
- ESCOSA is not aware of any studies or evidence to support ElectraNet's assertion that SA consumers' willingness to accept a lower level of reliability in return for lower electricity charges.

ESCOSA therefore determined that:

> The Commission agrees that a comprehensive cost-benefit analysis is the basis on which exit point augmentations should be proven. However, the Commission has misgivings regarding the derivation of VCR as currently applied to South Australia and, given the current review which is underway by the AEMC, any amendments should be considered in accordance with recommendations of that review.
>
> The Commission's decision is not to amend the code to enable consideration of dispensations requested as a result of a cost benefit analysis during a regulatory period, where the funding is set in accordance with a revenue proposal at the beginning of that period, and may result in a windfall gain to ElectraNet.

7.3 ElectraNet response

The proposed additional flexibility in the ETC is not intended to provide ElectraNet with the opportunity to make windfall gains. The purpose of the proposed ETC change was to empower ESCOSA to be able to grant a dispensation from compliance with a reliability standard provided it could be demonstrated that a network or non-network solution to achieve compliance with that reliability standard should be deferred on an economic cost benefit basis. Benefits of any capital deferrals would automatically flow through to electricity consumers through a lower regulated asset base and lower transmission charges from the commencement of the following regulatory control period.

There is also no opportunity for ElectraNet to benefit from the proposed change in the 2013-2018 regulatory control period. This is because ElectraNet's revised revenue proposal contains no 'new' augmentation for the duration of the new ETC, and includes only the completion of load driven projects currently in progress. As such, this proposed additional flexibility clause would only relate to proposed 'contingent projects' in the short-term. As customers do not fund any portion of a contingent project until the project is formally approved by the AER, customers would obtain the full benefit from any economic deferrals of these projects.

ElectraNet notes that the AEMC review of transmission reliability has now commenced with the release of an issues paper.

On balance, ElectraNet accepts that the immediate need for the proposed amendment may no longer be necessary given the scope of the review now on foot by the AEMC. ElectraNet will approach ESCOSA on any ETC compliance issues on a case by case basis should any issues arise in the forthcoming regulatory period.

8. Quality of supply and reliability

8.1 ElectraNet Proposal

ElectraNet noted that clause 2.1.2 of the ETC requires ElectraNet to plan, develop and operate the transmission system so as to ensure, amongst other things, that there would be minimal requirements to shed load under normal and reasonably foreseeable operating conditions.

As there is a marginal increase in the potential risk of loss of supply under a 10% POE demand based FAMD and AMD, ElectraNet sought to recognise this specifically in the operation of clause 2.1.2.

8.2 ESCOSA Draft Decision

In its Draft Decision, ESCOSA rejected ElectraNet's amendments for additional flexibility to clause 2.1.2 noting that:

- The provisions of clauses 2.1.2 ensure that ElectraNet will not shed load at one exit point to maintain reliability at another in the normal course of operating its network;
- As with the basis for demand forecasts, the dependency of this clause is on the outcomes of the AEMC review.

ESCOSA therefore determined that:

> The Commission has decided not to amend clause 2.1.2 of the code because the amendment, as proposed, is dependent on outcomes of a broader review by the AEMC. It may also affect the current level of reliability afforded under the current code provisions.

8.3 ElectraNet response

ElectraNet recognises its obligations under clause 2.1.2 to plan, develop and operate the transmission system in relation to the reliability requirements of the NER so as to minimise the requirement for load shedding under normal and reasonably foreseeable operating conditions.

ElectraNet notes that ESCOSA has stated in its Draft Decision that nothing in the ETC prevents a 10% POE standard from being adopted for the purposes of the ETC.

ElectraNet maintains that a specific reference in clause 2.1.2 to the use of a probabilistic based demand forecast is desirable in order to make this transparent under the ETC. However, if ESCOSA decides not to make this change then ElectraNet requests that ESCOSA's final decision specifically further clarify that the requirements of clause 2.1.2 do not preclude the adoption of a probabilistic basis for the demand forecasts (e.g. 10% POE) used for the purposes of the ETC.

In this respect, ElectraNet notes the views expressed by the AER that:

> The ETC only requires ElectraNet to plan its network and systems to minimise or not shed load under normal or reasonably foreseeable operating conditions.
>
> We consider that ElectraNet will have planned its network to not shed load under reasonably foreseeable operating conditions when it forecast demand based on a realistic expectation of demand…
>
> There is always the potential for peak demand to exceed capacity. If ElectraNet needs to shed load in times of peak demand, it does not necessarily breach the ETC. The ETC requires ElectraNet to plan its network to meet demand under reasonably foreseeable operating conditions only.[12]

9. Fault restoration obligations

9.1 ElectraNet Proposal

ElectraNet has advised ESCOSA that for practical reasons it cannot realistically comply with the fault restoration obligations of clause 2 under all circumstances. In particular ElectraNet will not be able to comply with:

- the Category 1 exit point restoration of line outages within 2 days obligation under clause 2.5.1 (a)(ii); and
- the Category 4 exit points restoration of N equivalent line capacity within 12 hours obligation under clause 2.8.1 (a)(ii)B.

[12] AER Final Decision, ElectraNet Transmission Determination 2013-14 to 2017-18, April 2013, p92.

To alleviate this problem without imposing unreasonable costs on consumers, ElectraNet proposed amending the restoration obligation for Category 1, 2 and 4 exit points to a best endeavours requirement.

9.2 ESCOSA Draft Decision

In its Draft Decision, ESCOSA accepted in part ElectraNet's amendments for fault restoration noting that:

- ESCOSA is concerned that diluting the standard will have a negative effect on reliability;
- The best endeavours standard was erroneously omitted from the equivalent line capacity restoration in clause 2.8.1(a)(ii)A;
- That a cost benefit approach to setting restoration standards, as suggested by AEMO, is dependent on the outcomes of the AEMC review.

ESCOSA therefore determined that:

> The Commission will amend clause 2.8.1(a)(ii)A to reflect reciprocal best endeavour restoration standards for Category 4 line and transformer failures. The Category 1 and 2 exit point restoration standards are unvaried from the current code (ET/06) and the Commission will maintain those standards.
>
> A cost benefit approach to setting restoration standards is dependent on the outcomes of the AEMC review and would be considered if recommended or mandated.

9.3 ElectraNet response

ElectraNet supports the changes ESCOSA proposes to make to clause 2.8.1(a)(ii)A.

ElectraNet understands that the fault restoration requirements of the ETC remain operational obligations, and not planning standards that might otherwise drive uneconomic or inefficient network investment. As such, ElectraNet stresses that it will not be possible to comply with the fault restoration standards under all foreseeable circumstances, and extreme and exceptional situations will still arise when full compliance will not be possible. ElectraNet will continue to notify ESCOSA of such situations as and when they occur.

10. Reclassification of Kanmantoo Mine substation

10.1 ElectraNet Proposal

As part of its capital expenditure planning for the 2013-2018 regulatory period, ElectraNet plans to replace Kanmantoo Mine substation due to asset condition and risk. It is important to note that despite its name this substation does not serve any mining load and is fully dedicated to supplying the distribution network, which is currently supplied via the 11 kV tertiary winding from a single transformer.

The Kanmantoo Mine connection point is classified as Category 1, which requires no transmission line or transformer redundancy. The new ETC due to come into effect on 1 July 2013 provides for ElectraNet to use its 'best endeavours' to restore the equivalent line and transformer capacity following an interruption, but in any case restore that capacity with 2 days for a line interruption and 8 days for a transformer interruption.

In November 2012, ElectraNet requested ESCOSA to examine the case for reclassifying the Kanmantoo Mine connection point from Category 1 to Category 2 based on the economic benefit to consumers that would be derived from such an increase in reliability.

10.2 ESCOSA Draft Decision

In its Draft Decision ESCOSA rejected ElectraNet's request to reclassify the Kanmantoo Mine connection point from Category 1 to Category 2 noting that:

- SA Power Networks' 2012 Electricity System Development Plan (ESDP) did not forecast any need for work at this connection point;
- There is a 'strong case' for replacing the substation to Category 1 requirements "as this outcome would be in the best interests of customers and such cost should be absorbed in the current regulatory period in day to day operational procedures";
- Network service providers have an incentive to 'gold-plate' through over engineering assets at a cost to all consumers;
- ElectraNet's project scope for the installation of 2 x 10 MVA transformers is an increase in capacity of 400% where a single transformer would provide the 600 customers with sufficient capacity at the current standard;
- It was unclear if other options, such as mobile transformers, have been considered to support all Category 1 connection points to address transformer failures.

ESCOSA therefore determined that:

> ElectraNet's objectives are unclear in the context of proposing to upgrade the Kanmantoo [Mine] exit point at a cost to all customers when clearly, the code provides for meeting the required reliability level under its current regulatory obligations. Furthermore, the upgrade proposal, though feasible on a cost/benefit basis, does not appear to demonstrate efficient use of assets from a demand perspective. The Commission believes that ElectraNet should consider other options that provide a broader approach to network support for similar Category 1 exit points.
>
> The Commission has decided therefore, not to upgrade the Kanmantoo exit point from Category 1 to Category 2 at this time

10.3 ElectraNet response

ElectraNet addresses each of these matters below.

10.3.1 SA Power Networks Electricity System Development Plan

ElectraNet conducts joint planning with SA Power Networks in accordance with Chapter 5 of the NER. ElectraNet discussed the replacement of the Kanmantoo Mine Substation (as a transmission limitation) with SA Power Networks as part of joint planning in August 2012.

However, ElectraNet also notes that joint planning with SA Power Networks and whether or not the SA Power Networks' 2012 ESDP forecasts any need for work at this connection point is not directly relevant to the proposed reclassification of the connection point to Category 2, which is based on an economic assessment of the benefits to consumers of making this change.

10.3.2 Background to project

As ESCOSA correctly notes, the Kanmantoo Mine substation was constructed in 1971 and is the sole source of electricity supply for the townships of Kanmantoo and Callington and surrounding areas.

ElectraNet's asset condition assessment has indicated that the substation is performing poorly in both serviceability and reliability. ElectraNet plans to replace the entire substation. The original transformer has already been removed and an emergency transformer is currently supplying the area until the substation is fully replaced.

Timing for the replacement of the substation is to coincide with the emergency transformer running out of capacity to supply forecast demand, by the summer of 2017/18. Further details can be found in ElectraNet's revised revenue proposal, including a full response to the concerns raised by the AER's consultant, which are cited by ESCOSA[13].

The decision to use 132/33 kV 10 MVA transformers minimises long run costs as it reduces the number of different types of spare transformers needed to be carried by ElectraNet, and improves the efficiency of ongoing transformer maintenance requirements. The differential between the purchase cost of a 5 MVA transformer and a 10 MVA transformer is minimal (in the order of approximately $100,000). Additionally the 10 MVA transformers will provide sufficient capacity to supply the customers of the Kanmantoo Mine connection point until the substation needs to be replaced again in 50 years' time without the need to change out the transformers mid-life.

ElectraNet also notes that the need for this project, and its timing, scope and cost have been reviewed and accepted by the AER and its consultants for the purposes of revenue setting for the forthcoming regulatory period. The only relevant question for the purposes of the ETC is the proposed reclassification of this connection point to Category 2, as addressed below.

10.3.3 Economic benefit of upgrade

ESCOSA's Draft Decision questions the network option identified for delivering proposed Category 2 reliability. ElectraNet has demonstrated that the customer benefits of the upgrade substantially outweigh the costs on the basis of the network option that has been identified. Should less costly options ultimately be identified, this would only strengthen the case for the reclassification of the connection point from Category 1 to Category 2.

To establish the case for reclassifying the Kanmantoo Mine connection point to ETC Category 2, ElectraNet relied on the analytical model used by AEMO during the 2010 review of the ETC. AEMO's submission to ESCOSA on this amendment supported the economic assessment of the reclassification of Kanmantoo Mine as it was consistent

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13 ElectraNet Transmission Network Revised Revenue Proposal 1 July 2013 to 30 June 2018, January 2013, pp62-64, available at http://www.aer.gov.au/node/16617

with the approach it uses. AEMO, however, questioned the use of the general South Australian value of customer reliability (VCR) for a single customer dominated connection point (assumed by AEMO to be a mine).

AEMO was incorrect in assuming that the connection point serviced mainly one customer only. In fact, there is no mining load or other direct connect customer serviced by this connection point and, as ESCOSA points out, there are currently 600 distribution customers supplied from the Kanmantoo Mine substation. Therefore the use of the general value of the SA VCR, as applied in the 2010 review, is appropriate.

However, to further test the robustness of its assessment, ElectraNet conducted additional sensitivity studies to demonstrate the cost effectiveness of the proposed category change. Using a value of 50%, 100% and 120% of the current South Australian VCR of $45,757 per MWh, the range of net benefits accrued to customers has been calculated and provided in the table below.

Sensitivity	Value of Customer Reliability ($/MWh)	Present Value of Net Customer Benefits
50%	$22,884	$3.9m
100%	$45,757	$13.7m
120%	$54,921	$17.6m
120%	$54,921	$17.6m

It is important to note that these are benefits to customers net of costs. The net benefits of increasing the reliability standard to Category 2 using the current SA VCR and using the lower demand forecast issued to the AER in December 2012 is $13.7m. The cost of upgrading to Category 2 used in the analysis was for the installation of a transmission network asset valued at $4.3m. The analysis shows that by not increasing the reliability to Category 2, ESCOSA is effectively imposing a reliability cost to customers at Kanmantoo Mine connection point of $17.9m. The analysis also shows that even if the VCR is halved, the category upgrade will still deliver a net customer benefit.

Further, ElectraNet notes that the value of benefits to the customers of the Kanmantoo Mine connection point are equivalent to those accrued to the customers of the Baroota connection point as a result of ESCOSA approving a move to ETC Category 2 for this connection point.

ESCOSA's assertion that increasing the reliability of supply to the consumers of the Kanmantoo Mine connection point is tantamount to 'gold plating' is both disturbing and unfounded, and undermines the very framework that the ETC reliability standards are based on.

ESCOSA is correct to state that installing two transformers at Kanmantoo Mine substation would be in excess of the minimum standard required by the current classification. However this statement is irrelevant to what is being proposed. A Category 2 reliability classification would require duplicated transformer capacity. As has been discussed, the analysis demonstrates this reclassification is economic and produces net benefits for customers.

ElectraNet notes that the final detailed solution to providing equivalent N-1 transformer capacity under Category 2 will be as a result of cost benefit analysis of all technically and economically feasible options undertaken through the RIT-T process.

10.3.4 Assessment of alternative options for restoration of Category 1 connection points

ESCOSA suggests that as an alternative to increasing the reliability of the Kanmantoo Mine connection point to Category 2, options such as the use of mobile substations could be employed to address transformer failures at Category 1 connection points around the state.

ElectraNet's current information on mobile transformer deployment solutions indicates that there are no immediate cost savings available through deployment of this option to assist with the restoration requirements for Category 1 connection points under the ETC, particularly given the spare transformer holdings already in place.

Alternatively, as a dedicated option at the Kanmantoo site, ElectraNet understands the cost of a mobile solution would be comparable with the cost of a fixed transformer option, and would again be unlikely to deliver material cost savings.

10.3.5 Renaming of connection point

ElectraNet requests that to avoid confusion ESCOSA rename the "Kanmantoo Mine" connection point to "Kanmantoo" under the ETC, reflecting the fact that there is no longer a mine supplied from this connection point.

Amendments to Revised Electricity Transmission Code

Appendices

May 2013

Appendix A Cost / Benefit of Change in Basis of Demand Forecasts

Background

ElectraNet has adopted a revised demand forecast methodology by applying a 10% POE demand forecast for connection points with transformer or transmission line redundancy (e.g. N-1) and a peak demand forecast for connection points without any redundancy (i.e. N).

The effect of moving from a peak demand forecast to one based on a 10% POE is a deferral of capacity limitations. That is, a number of capital augmentation projects that were timed to deliver an increase in capacity to match the projected growth rate under a peak demand forecast will be deferred until the capacity constraint appears at a later date under the lower 10% POE forecast.

During the period of this deferral, there is a minor increase in the potential risk to supply at affected connection points given the possibility that demand may exceed the 10% POE projection and, therefore, exceed N-1 capacity. Under these circumstances, if a simultaneous network outage occurred, there is a risk of load shedding.

This appendix describes the high level methodology ElectraNet has used to estimate the magnitude of this potential risk.

Methodology for quantifying the risk

1. Identify the connection points where capacity has been forecast to be exceeded under a peak demand forecast during the regulatory period 2013-14 to 2017-18 and the year prior to the one in which capacity is exceeded.

2. For these connection points also determine the year in which capacity is forecast to be exceeded under the 10% POE based demand forecast;

3. For the relevant connection points, these two years represent the time period over which there is an increased risk of load shedding resulting from the adoption of lower 10% POE demand forecasts.

4. Construct annual load duration curves using the peak demand forecasts in ElectraNet's 2012 APR for each year during the increased risk exposure period.

5. For each of the relevant connection points, calculate the half hourly load at risk for each half-hour segment h of the load duration curve for a given year y.

6. The load (measured in MW) at risk is the amount by which the load duration curve exceeds the maximum capability of the network for the half-hour period under consideration. It can be represented by the formula:

$$Halfhourly\ load\ at\ risk = MW_{y,h} = max\left(Halfhourly\ demand_{y,h} - Peak\ Demand_{Year\ 0},\ 0\right)$$

7. Calculate the actual energy at risk at time of peak demand taking into account the probability of demand exceeding the 10% POE demand forecast in any year:

$$Energy\ at\ risk = \sum_{y\ \in Years} \sum_{\substack{h\ \in \\ half \\ hour \\ Intervals}} MW_{y,h} * \frac{1}{2} * 10\%$$

8. Calculate the probable value of unserved energy at peak using the generic value of customer reliability (VCR) and the actual energy at risk:

$$Probable\ value\ of\ unserved\ energy\ = Energy\ at\ risk * VCR$$

Assumptions

The following assumptions have been used in the analysis:

1. The risk of demand exceeding a 10% POE demand forecast in any year is 10%.
2. Analysis period 2013-14 to 2017-18.
3. Maximum capability of the network is approximated by the level of peak demand in the year prior to the one in which capacity is exceeded under a peak demand forecast.
4. The load duration curve is based on the 2008-09 financial year (the last year South Australia experienced 10% POE demands).
5. Pre-contingent load shedding will be undertaken to avoid overloading equipment once 10% POE demand levels are exceeded that cause N-1 network capacity limits to be exceeded. However, in practice, operational actions or protection settings can be utilised that will limit the amount of load-shedding that will be required.
6. Value of customer reliability = $46,000/MWh (as published by AEMO).

Results

Table A1 below presents the estimated value of potential unserved energy (USE) in the 2013-2018 period from the adoption of 10% POE demand forecasts based on the maximum load at risk during an extreme demand event for those six connection points where capacity was forecast to be exceeded under a peak demand forecast during the regulatory period 2013-14 to 2017-18, and for which augmentation has now been deferred beyond the period.

Table A1. Reliability Impacts of 10% POE forecast

Project	Original Driver Date	Deferred Driver Date	Years of deferral in 2013-18	Estimated USE risk (MWh)	Estimated value of USE
Kincraig Substation Replacement and Transformer Upgrade	2016-17	2019-20	2	0.1	$3,484
East Terrace Second Transformer	2016-17	2024-25	2	7.2	$331,995
Mount Barker South 275-66kV Transformer	2015-16	2019-20	3	11.5	$527,836
Bungama Second Transformer	2014-15	2023-24	4	0.2	$7,344
Monash Capacitor Bank	2015-16	2025-26	3	0.3	$14,948
Torrens Island Transformer Upgrade	2014-15	2017-18	3	15.0	$690,605
TOTAL					**$1,576,212**

This analysis assumes that control schemes and other protection arrangements are *not* in place, and that the entire excursion of load above N-1 equipment ratings at a connection point would be shed on a pre-contingency basis under 10% POE conditions to avoid equipment overloading should a contingency event occur. This represents a worst case scenario.

However, more realistically, assuming that control schemes are in place to manage the potential for a contingency event under 10% POE demand conditions, the potential load at risk would be much less, as load would only be shed in the event the worst case contingency actually occurred during a period of extreme demand.

Even without control schemes in place to manage contingency events under extreme demand conditions, it can be seen that the customer benefits of augmentation deferral in the next regulatory period ($14.6m) clearly outweigh the potential reliability impacts. With suitable network control schemes and other protection arrangements in place, the potential load at risk is much less.