

PROPOSED VARIATION TO CLAUSE 2.10.2(D) OF THE ELECTRICITY TRANSMISSION CODE

DISCUSSION PAPER

April 2011



REQUEST FOR SUBMISSIONS

The Essential Services Commission of SA (the Commission) invites written submissions from interested parties in relation to this draft decision. Written comments should be provided by **Friday 6 May 2011**. It is highly desirable for an electronic copy of the submission to accompany any written submission.

It is Commission policy to make all submissions publicly available via its website (www.escosa.sa.gov.au), except where a submission either wholly or partly contains confidential or commercially sensitive information provided on a confidential basis and appropriate prior notice has been given.

The Commission may also exercise its discretion not to exhibit any submission based on their length or content (for example containing material that is defamatory, offensive or in breach of any law).

Responses to this paper should be directed to:

Proposed variation to clause 2.10.2(d) of the Electricity Transmission Code

Essential Services Commission of SA

GPO Box 2605

Adelaide SA 5001

Telephone: (08) 8463 4444

E-mail: escosa@escosa.sa.gov.au

Facsimile: (08) 8463 4449

Contact Officer: Adam Wilson

Director, Regulatory Development & Implementation

Public information about the Commission's activities

Information about the role and activities of the Commission, including copies of latest reports and submissions, can be found on the ESCOSA website at www.escosa.sa.gov.au.

TABLE OF CONTENTS

1	Introduction	1
2	The Electricity Transmission Code	2
2.1	Purpose of the ETC	2
2.2	Transmission Exit Point Reliability standards	2
3	Transformer replacement standards for the Adelaide Central Area	4
3.1	Transmission line capacity	4
3.2	Transformer capacity	4
3.3	The physical arrangements	4
3.4	The problem	5
3.5	What is to be done?	5
4	Next Steps	6

1 INTRODUCTION

Under clause 2.10.2(d) of the Electricity Transmission Code, ElectraNet is required to repair or replace a failed transformer in the Adelaide Central Area as soon as possible so as to minimise the likelihood of an interruption to supply to that area as a result of the failure of any other transformer installed at the relevant connection point.

Until 1 January 2012, there is only one transformer installed in the area, with a level of operational redundant capacity provided by the sub-transmission network. As such, the Commission has identified that the clause may need to be amended to clarify the intent that ElectraNet should effect the repair or replacement of the failed transformer as soon as possible to prevent the likelihood of an interruption as a result of not only the failure of any other transformer but, until 1 January 2012, also of any equivalent transformer capacity, such as the sub-transmission network.

It is the Commission's position that it is appropriate to amend clause 2.10.2(d) of that code so as to reflect the position outlined above.



2 THE ELECTRICITY TRANSMISSION CODE

The Electricity Transmission Code (**ETC**) was established in October 1999 as a part of the sale/lease process for various South Australian electricity assets. The ETC is an industry code made and administered by the Essential Services Commission (**Commission**) pursuant to Part 4 of the Essential Services Commission Act 2002. Compliance with the ETC is a mandatory condition of a transmission entity's licence by reason of the operation of section 21(1)(a) of the Electricity Act 1996.

2.1 Purpose of the ETC

The purpose of the ETC is to set various service standards with which the operators of transmission systems must comply. Those standards, as set by the Commission, form the basis of the regulatory pricing regime which applies to the services provided by those operators. Of note, while it is the role of the Commission to set those standards, under the provisions of the National Electricity (South Australia) Act 1996 and the associated National Electricity Rules, the Australian Energy Regulator (**AER**) is responsible for regulating the revenues of transmission system operators.

The key entity to which the ETC applies is ElectraNet SA Pty Ltd (**ElectraNet**), although various elements of the ETC also apply to Murraylink Transmission Company Pty Ltd and to ETSA Utilities.

In terms of particulars, the ETC prescribes standards in relation to matters such as network planning, interruptions, design requirements, technical requirements, access to sites and land, access for telecommunication purposes and, relevant to the purposes of this proposed amendment, transmission exit point reliability standards.

2.2 Transmission Exit Point Reliability standards

The transmission exit point reliability standards are contained in clauses 2.3 to 2.10 of the ETC. Of note, while the ETC applies broadly as described above, the transmission exit point reliability standards regime applies only to ElectraNet.

Clause 2.3 to 2.10 allocate each exit point (or group of exit points) from the ElectraNet network, connecting either to ETSA Utilities' distribution network or to the supply points of a small number of large direct connect customers, to one of six defined reliability categories.

For each category, the ETC requires ElectraNet to attain the specified level of reliability and supply restoration standards in terms of line capacity and transformer capacity. ElectraNet must therefore plan, develop and maintain its transmission system such that specified standards are met in relation to each connection point or group of connection points.

The standards specified are expressed in terms of levels of redundancy, being N, N-1 and N-2.

N reliability means that the transmission system is able to supply the maximum demand, provided that all the network elements are in service. This means that the loss of a single transmission element (a line, a transformer or other associated equipment) could cause supply interruption to some customers.

N-1 reliability provides a higher level of reliability. It means that no customers would be affected even with one network element out of service. It is also possible to define N-1 reliability for a percentage of the time or for a percentage of the maximum demand.

N-2 reliability means that no customers would be affected even if two network elements were out of service. This is a very high level of security that requires significant capital expenditure to achieve.

The transmission exit point reliability standards initially incorporated into the ETC were equivalent to the actual reliability standards that prevailed in the 12 months prior to October 1999, and were intended to ensure that transmission customers would not experience a reduction in reliability performance as a result of the long-term lease of the transmission assets.

Those standards were reviewed and re-set by the Commission in 2005/06, in anticipation of the AER's revenue reset process for ElectraNet for the period 2008 to 2013 and are shortly to be reviewed again by the Commission in anticipation of the subsequent AER process for the regulatory period 2013-2018.

3 TRANSFORMER REPLACEMENT STANDARDS FOR THE ADELAIDE CENTRAL AREA

While all transmission exit point reliability standards are important, there is a particular public emphasis which is often placed on the reliability of supply to the Adelaide Central Area. As the Commission is proposing an amendment to an aspect of the standards which apply to that area, it is appropriate to briefly describe the relevant regulatory arrangements under the ETC.

3.1 *Transmission line capacity*

Until 31 December 2011, ElectraNet is required to provide N transmission line capacity; after that time the obligation is to provide N-1 transmission line capacity which must be achieved by use of independent and diverse substations (one of which must be located west of King William Street). In the event of a transmission line failure, ElectraNet is obliged to use its best endeavours to restore capacity within four hours of an interruption.¹

3.2 *Transformer capacity*

Until 31 December 2011, ElectraNet is required to provide N transformer capacity; after that time the obligation is to provide N-1 transformer capacity which must be achieved by use of independent and diverse substations (one of which must be located west of King William Street). ElectraNet is required to repair or replace a failed transformer in the Adelaide Central Area as soon as possible so as to minimise the likelihood of an interruption to supply to that area as a result of the failure of any other transformer installed at the relevant connection point.²

3.3 *The physical arrangements*

ElectraNet currently satisfies its regulatory obligations to provide N transmission line and transformer capacity by means of the East Terrace substation. That substation receives supply from three separate substations, Dry Creek East, Magill and Northfield, and transmits that supply to the Adelaide Central Area through a single transformer. There is no redundancy in transformer capacity at the East Terrace substation.

To the extent that there might be a transformer failure, ElectraNet relies on the underlying sub-transmission network surrounding the connection point operated by ETSA Utilities. In the parlance of the ETC, this reliance is not on transformer capacity but instead on a concept known as *equivalent* transformer capacity. That is to say, it is a system which provides the capacity to transform energy to meet demand by means of network support arrangement other than transmission elements (which might include sub-transmission support arrangements, generation arrangements and the like).

¹ Refer Electricity Transmission Code, clause 2.10.1.

² Refer Electricity Transmission Code, clause 2.10.2.

3.4 The problem

As may be appreciated from these descriptions and a consideration of the present obligations to repair or replace a failed transformer, there may be a need to clarify the drafting of the ETC, to the extent that the obligation is contingent upon there being a second transformer in place. This, of course, is not the case; what is in place is equivalent transformer capacity.

3.5 What is to be done?

It is the Commission's preferred position that it should effect an amendment to the ETC so as to impose a specific obligation to restore or repair a failed transformer in the area so as to minimize the likelihood of outages in the event of the failure of another transformer or, and much more relevantly from an operational perspective, equivalent transformer capacity (i.e., reliance on ETSA Utilities' distribution network).

This option would acknowledge the current inter-connected nature of ETSA Utilities' and ElectraNet's networks in the area and the fact that, where the transformer does fail, switching occurs with the result that supply is maintained.

A direct benefit of that acknowledgment is that such an obligation will require ElectraNet to make real-time assessments of the demand/supply status of the connection point under prevailing conditions and effect a repair or replacement program having regard to those matters. If the risk of a subsequent failure is high, ElectraNet ought to be encouraged to accelerate the program and vice versa. This may be considered as an efficient approach and one which avoids the imposition of a timeframe which might be regarded as arbitrary.

The manner in which this recommendation would be implemented through the ETC is relatively simply, with clause 2.10.2(d) being amended by the insertion of additional text as shown in mark-up below:

*in the event of a **transformer** failure, use its **best endeavours** to repair the installed **transformer** or install a replacement **transformer** as soon as possible so as to minimise the likelihood of an interruption as a result of the failure of any other **transformer** installed or equivalent transformer capacity utilised at the relevant connection point.*



4 NEXT STEPS

As is the case with any variation proposed for an industry code made by the Commission under the authority of the Essential Services Commission Act 2002, the Commission is seeking stakeholder views on the proposal set out in this paper on or before the close of business on **Friday 6 May 2011**. Information on the manner in which submissions may be made is set out on the inside front cover of this paper.

Following the receipt of submissions, the Commission will further consider this matter and make a Final Decision in late May 2011. If the outcome of those further considerations is a decision to give effect to the amendment as proposed (or a variant of that proposal), the Commission would make that amendment effective from June 2011.