

4 June 2018

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Dear Adam

re: 2018 Review of the Electricity Transmission Code - Draft Decision

ElectraNet welcomes the opportunity to provide this submission in relation to the Draft Decision for the 2018 Review of the Electricity Transmission Code (the **Draft Decision**).

The Electricity Transmission Code (**ETC**) sets out the reliability framework for the South Australian transmission system. Most importantly, the ETC establishes the planning and restoration standards that must be maintained at the various categories of exit point. This provides certainty and transparency concerning the level of transmission supply reliability for South Australian electricity customers.

ElectraNet supports the need for targeted amendments to the ETC to clarify the intended operation of various clauses of the ETC, focused on the reliability standard for category 3 exit points. ElectraNet is also supportive of most of the other amendments proposed in the Draft Decision.

In particular, this submission:

- Supports the clarification of the best endeavours restoration requirement for category 3 exit points;
- Supports the proposed suspension of restoration targets when a transmission entity is prevented from restoring supply by events or circumstances beyond its control or due to health or safety concerns;

- Does not support the removal of the best endeavours requirement in relation to the obligation to restore 'N' equivalent line capacity (i.e. to restore the capacity to transmit energy to meet agreed maximum demand for an exit point using any means) at category 1 and 2 exit points within 2 days of commencement of an interruption. This would constitute a material change to the current restoration standards at these exit points and would impose a strict obligation on ElectraNet to restore 'N' equivalent line capacity within 2 days even if that was not reasonably possible (acting in good faith and using all using all reasonable efforts, skill and resources) in some rare but reasonably foreseeable circumstances (such as multiple tower failures on long radial lines);
- Supports the proposed treatment of grid scale battery loads pending appropriate treatment in the National Electricity Rules;
- Broadly supports the other miscellaneous corrections, clarifications and reporting requirements; and
- Summarises suggested drafting clarifications in Appendix 1.

Set out below are our specific comments in relation to the Draft Decision.

Category 3 reliability standards

The reliability standards in clause 2 of the ETC (particularly the category 3 reliability standards) have been subject to incremental change over time which appears to have led to the drafting no longer clearly aligning with the intent. This was evident in ESCOSA's assessment of the events of 28 September 2016¹.

ElectraNet therefore supports the clarification of the best endeavours expectation for category 3 exit points for the reasons outlined in the Draft Decision.

ElectraNet suggests that the appropriate instrument to address the amended reporting requirements in relation to the best endeavours reliability standards would be the Transmission Annual Planning Report, published annually in June. This provides both transparency for stakeholders and allows these requirements to be addressed within the context of ElectraNet's overall network planning framework and obligations under the National Electricity Rules. This will also allow the initial reporting timeframe to be brought forward slightly to June 2019.

Meaning of best endeavours as defined in the ETC

The term 'best endeavours' is separately defined in clause 1.5 of the ETC to mean '...to act in good faith and use all reasonable efforts, skill and resources'.

ElectraNet has received advice that this definition reflects the generally accepted meaning of the terms 'reasonable endeavours' and 'best endeavours' under the current Australian authorities. In particular, we understand that there exists a substantial body of case law in Australia which consistently states that 'best endeavours' prescribes a standard of endeavour which is measured by what is reasonable in the circumstances having regard to the nature, capacity, qualifications and responsibilities of the person on whom the duty is imposed.

The Australian Courts have also recognised that 'best endeavours' is a high standard and requires a party to do everything that is reasonably possible to discharge the required obligation.

¹ Transmission Licence Compliance Review - ElectraNet Pty Ltd – June 2017

Whilst the addition of the words '...to act in good faith' in the ETC definition does not add a great deal to the generally accepted meaning of 'best endeavours' as outlined above, it does emphasise the requirement to act honestly and fairly and with a high degree of transparency. This is relevant to the comments below concerning the form of the reporting requirements.

It follows that 'best endeavours' as defined in the ETC:

- is an objective standard;
- does not impose an absolute or unconditional obligation; and
- requires the relevant person to do all that can reasonably be done in the circumstances having regard to:
 - the objective of the 'best endeavours' obligation;
 - the relevant person's capacity, qualifications and responsibilities; and
 - the other circumstances surrounding the initiation and exercise of the relevant obligation.

What amounts to using '...all reasonable efforts, skill and resources' under the ETC will be judged by reference to the requirements of the National Electricity Rules and, in particular, good electricity industry practice after taking into account the particular regulatory obligations and external circumstances applying to the transmission entity.

This interpretation is supported by clause 2.2.1 of the ETC which states that the obligation to use best endeavours to restore a failed transmission line, transformer or network support arrangement so as to meet a reliability standard includes a requirement that the transmission entity must have regard to (amongst other things):

- good electricity industry practice (as defined in the NER);²
- the need to minimise the duration of any interruption to the provision of prescribed transmission services at the relevant exit point arising from that failure;
- the need to minimise the likelihood of an interruption occurring to the provision of prescribed transmission services at the relevant exit point; and
- the rights, obligations and processes set out in clause 9 of the ETC (which recognise that a transmission entity may be prevented from restoring the supply of prescribed transmission services by events or circumstances that are outside its reasonable control or due to health or safety risks).

² The exercise of that degree of skill, diligence, prudence and foresight that reasonably would be expected from a significant proportion of operators of facilities forming part of the power system for the generation, transmission or supply of electricity under conditions comparable to those applicable to ElectraNet's transmission system and consistent with applicable regulatory instruments, reliability, safety and environmental protection. The definition also makes clear that the determination of comparable conditions is to take into account factors such as the relative size, duty, age and technological status of the transmission system and the applicable regulatory instruments applying to the transmission system.

The formulation of the reliability standards themselves also support the objective nature of this standard. For example, the Commission notes in paragraph 2.1 of the Draft Decision that the ETC '...provides transmission customers with certainty about the level of reliability of supply that must be provided through transmission networks recognising that the benefits of highly reliable transmission services must be traded off against the costs of providing them'. The formulation of the reliability standards and the use of the best endeavours standard recognises this balance.

Increased levels of reliability can obviously be achieved by requiring greater levels of redundancy or strict restoration times but this comes at a cost. The ETC recognises that the benefits that accrue from increased levels of reliability must outweigh these costs. The use of the objective 'best endeavours' standard means that the transmission entity is not required to use unreasonable levels of effort, skill and resources to restore supply. In other words, a reasonable balance is achieved between cost and benefit by limiting the transmission entity's obligation to using all reasonable efforts, skill and resources.

Suspension of restoration targets

The ETC reliability standards seek to strike an appropriate balance between the costs of unplanned transmission outages to consumers and the solutions to minimise them. In setting these standards, the Commission relies on technical analysis from its adviser, the Australian Energy Market Operator (AEMO), information from the local transmission entity and distribution entity and broad public consultation with consumers and other stakeholders.

The standards are probabilistically determined taking into account a wide range of inputs and then deterministically expressed in the ETC to ensure that the characteristics of the required transmission solutions are clearly and transparently understood. ElectraNet in turn must plan and develop its transmission system such that each exit point or group of exit points, meets the minimum reliability standards applicable to that category.

The reliability standards are expressed both in terms of (a) specific planning standards that must be met in planning and developing the transmission network, typically related to the capacity to be provided at each exit point, and (b) restoration obligations to be met on a best endeavours basis in operating the transmission network following an interruption to the provision of prescribed transmission services, typically expressed as a target restoration time.

Notwithstanding the best endeavours of the transmission entity, there may be circumstances which are beyond its reasonable control that prevent or delay the restoration of supply. Typically such circumstances would include events involving the failure of large power transformers and transmission structures.

In the case of transformers, which typically have lead times from ordering to delivery in excess of 12 months, the ETC specifies the requirement for spares holdings and deployment plans in order to replace failed transformers within specified time frames. Despite these plans, it needs to be recognised that large power transformers present significant logistical challenges to redeploy, and the required timeframes may not be achievable under circumstances that are beyond reasonable control.

A number of ElectraNet transmission lines, particularly radial lines servicing category 1 and 2 exit points, are in excess of 100km long and are routed through rural and remote areas with challenging access conditions. Due to the risk to public safety, transmission lines are typically patrolled by ground crews or helicopters following unplanned outages before re-energisation. Fault indicators in substations will typically narrow the search area to be patrolled resulting in a typical time to determine the cause of the fault being in the range of 3 to 12 hours.

However, where a significant failure has occurred involving an insulator, conductor or structure, the challenges of site access for large plant and the deployment of temporary structures mean that an outage of more than 2 days, while rare, is possible even if ElectraNet acts in good faith and uses all reasonable efforts, skill and resources due to events beyond its reasonable control.

The proposed introduction of clauses 9.2.1 and 9.2.2 is appropriate and reflects the economic reality that a transmission entity using its best endeavours may still not be able to meet the restoration targets due to reasons beyond its reasonable control, and that it would not be in the best interests of customers to seek to completely eliminate this risk.

Category 1 and 2 reliability standards

Drafting amendments have been proposed to:

- remove the current ambiguity in relation to the nature of the load restoration requirement for category 1 and 2 line outages; and
- clarify the intended operation of the best endeavours obligation.

However, the reworded clauses proposed in the Draft Decision now require the restoration of equivalent line capacity within a fixed or strict period of time (i.e. the best endeavours obligation has been removed). This would be a material change in the current restoration obligation.

As noted above, ElectraNet cannot guarantee to achieve a maximum 2 day restoration period under all conceivable circumstances, even if it acts in good faith and uses all reasonable efforts, skill and resources in relation to its planning and operational response to the unplanned outage. ElectraNet does not support the introduction of a strict maximum two day requirement for line restoration for category 1 and 2 exit points. Rather, ElectraNet believes that the existing drafting of these categories should be amended to confirm the best endeavours requirements for the restoration of equivalent line capacity, consistent with the reliability standard for other categories of exit points under the ETC.

For example, current clause 2.6.1(b) of the ETC should be restated to remove any potential ambiguity as follows:

"...in the event of an interruption to the provision of **prescribed transmission services** at the **exit point**, use it **best endeavours** to:

- (i) restore **'N' equivalent line capacity** at the **exit point** within 2 days of the commencement of the interruption; and
- (ii) in any event, restore **'N' equivalent line capacity** at the **exit point** as soon as practicable."

In this way, the transmission entity is required to use its best endeavours to restore equivalent line capacity as soon as practicable with a particular focus on restoring within no more than 2 days.

As noted above, 'best endeavours' imposes a high standard on a transmission entity which is not easily discharged.

The Commission also states in paragraph 3.3.1 of the Draft Decision that the intent of the ETC (and how in practice it has been interpreted and implemented) is to require the satisfaction of

restoration standards where ElectraNet can reasonably achieve those restoration standards and where it is appropriately safe for it to do so. The introduction of a strict obligation to restore within a maximum period of 2 days, even if that is not possible using all reasonable efforts, skill and resources, is inconsistent with this intent.

If these reliability standards are changed to require ElectraNet to restore equivalent line capacity within 2 days in all circumstances (i.e. even if that is not possible using all reasonable efforts, skill and resources), ElectraNet would need to effectively establish N-1 redundancy levels for all category 1 and 2 exit point transmission lines. This could be achieved using network support arrangements (such as back-up generation), however ElectraNet believes that this would be very costly and could not be economically justified taking into account the marginal improvement in customer reliability which would result from requiring a strict restoration requirement for these very rare circumstances.

Due to the inherent challenges of deploying temporary generation in the 5 to 10 MW scale³ in very short timeframes, feasible solutions to minimise the impact of such interruptions would be likely to require the permanent installation of generation to provide equivalent line capacity. It should be noted that neither temporary nor permanent generation solutions have been considered in the most recent review of the ETC nor in any previous review of the ETC.

ElectraNet also notes that it has not had sufficient time to cost the possible 'N-1' redundancy solutions. However, it expects that the cost would be material. Any such change if it were to be contemplated in future would be best considered in detail during the substantive five-yearly review of the reliability standards under the ETC and not in the context of the current limited review.

The retention of the best endeavours obligation promotes an appropriate balance between the overall cost of meeting these restoration obligations and the associated reliability benefits to customers by only requiring ElectraNet to act in good faith and use reasonable efforts, skill and resources having regard to good electricity industry practice, the need to minimise the duration of the interruption and the requirements of clause 9 of the ETC.

Treatment of grid scale batteries

The fundamental difference between a load and a generator is that the former exists principally to consume energy while the latter principally produces energy. A grid scale battery, while currently required to register as both a customer and a generator under the National Electricity Rules if drawing energy from the transmission system for charging, functionally exists primarily to produce energy.

AEMO's dispatch and scheduling arrangements ensure that grid scale batteries are centrally dispatched for both generation and charging to ensure that the system operator has appropriate oversight and control of these devices. Under these arrangements, charging of grid scale battery should neither drive augmentation nor adversely affect the provision of exit services to bona fide end use customers. The shared transmission service enjoyed by the battery when charging is a negotiated transmission service with no guaranteed transfer capacity. For the negotiated transmission service definition to apply under the National Electricity Rules it is also required that a reliability standard does not apply to that transmission service under a jurisdictional instrument.

³ 5 MW diesel generators may weigh in excess of 60 tonnes dry and require a separate transformer and fuel source. The logistics of moving, connecting and commissioning such a device preclude a 2 day restoration via equivalent line capacity even if initiated on first notification of outage.

Accordingly it is appropriate that the connection point for a grid scale battery that is connected to the transmission network should not be required to be classified as an exit point for the purposes of the ETC. ElectraNet supports the amendments proposed by ESCOSA to this end.

Looking forward, the Australian Energy Market Commission (AEMC) is currently consulting on a review of the coordination of generation and transmission investment. ElectraNet has supported a submission by Energy Networks Australia which among other things addresses the treatment of batteries. That submission highlights that a special registration category for scheduled generator auxiliary loads, such as grid scale battery charging, would reduce uncertainty as to their treatment.

Amended reporting requirements

ElectraNet notes that a separate reporting obligation has been proposed in relation to the operation of the network support arrangements for the category 3 reliability standard. This obligation would logically be addressed in the annual operational performance reporting to ESCOSA in August of each year.

If the best endeavours obligation is reinstated in relation to clauses 2.6.1(b) and 2.7.1(b), ElectraNet would support the extension of the additional reporting obligations to these reliability standards. In addition, ElectraNet would support the inclusion of a requirement for ElectraNet to demonstrate to the Commission's reasonable satisfaction that it has in fact acted in good faith and used all reasonable efforts, skill and resources in any instances where ElectraNet has been unable to meet the target maximum restoration standard.

In this way, transparency will be promoted and the Commission can be assured that ElectraNet is both appropriately planning to meet, and is in fact meeting, its best endeavours obligations. In our view, this approach achieves an appropriate, prudent and efficient balance between cost and benefit and provides comfort to both the Commission and the broader community that ElectraNet will meet the reliability standards in the overwhelming majority of circumstances.

Specific drafting notes

Specific drafting notes are contained in the attachment to this submission.

If you have any question in relation to this matter please call Bill Jackson on (08) 84047969 in the first instance.

Yours sincerely



Simon Appleby
Senior Manager Regulation and Land Management

APPENDIX 1 – DRAFTING NOTES

Clause	Comment
1.5 Definition – connection point	The words “generator or distributor” should not be deleted from the definition because the term connection point is clearly intended to extent to this persons under the ETC.
1.5 Definition – exit point	The definition should include “transmission customer <u>or distributor</u> ” given that the definition of 'transmission customer' is limited to end use customers and most exit point obligations relation to connection points with the distribution network.
1.5 Definition – forecast agreed maximum demand	The definition should include “transmission customer <u>or the distributor (whichever is applicable)</u> ”.
1.5 Definition – “N”	The definition should include “to some transmission customers <u>or a distributor</u> ”.
1.5 Definition – Transmission customer	The use of the Act definition for 'customer' means that this term does not include distributors. It follows that every reference to 'transmission customer' in the ETC will need to be assess to determine whether it should also refer to distributor.
1.5 Definition – transmission services	The definition in the NER clearly includes prescribed transmission services. Suggest “...and includes, <u>for the avoidance of doubt,</u> prescribed transmission services.”
2.6 Category 1 exit points	<p>As noted in our submission above the strict 2 day line restoration target cannot be met in all reasonably foreseeable circumstances.</p> <p>The clause should be amended to read</p> <p>“2.6.1 In respect of Category 1 exit points, a transmission entity must, subject to clause 2.6.2 <u>and clause 9.2:</u>”</p> <p>Further the best endeavours requirement should apply to both (b)(i) and (b)(ii).</p> <p>In addition clauses (b)(i) and (b)(ii) could be reordered for additional clarity as:</p> <p>b) in the event of an interruption to the provision of prescribed transmission services at the exit point use its best endeavours to:</p> <p style="padding-left: 40px;">i restore “N” equivalent line capacity at the exit point within 2 days of the commencement of the interruption; ; and</p> <p style="padding-left: 40px;">ii. in any event, restore “N” equivalent line capacity at the exit point as soon as practicable</p>

2.7 Category 2 exit points	As for category 1.
2.8 – 2.10	Similarly to 2.6 and 2.7 it would be appropriate to reference clause 9.2 in each clause.
2.12 Network support arrangement requirements	As currently drafted it is unclear with respect to the network support provider's requirement to " <u>ensure</u> the capacity and availability of the network support arrangement". Further it is assumed that the "installed capacity" in 2.12.2 is the "N equivalent capacity".
2.18 Country connection points	Due to the requirement to reference "generator or distributor" in the definition of connection point we believe this clause should be entitled "Country <u>exit</u> points" rather than 'connection points'.
9.2.1(a) Unplanned interruptions	The subclause should be amended to read: "if an interruption to the provision of prescribed transmission services at one or more exit points is caused by or arises from one or more events or circumstances that are outside of the reasonable control of a transmission entity (which <u>for the avoidance of doubt</u> does not include events or circumstances that arise from a breach of this <u>industry</u> code, or a negligent act, by the transmission entity <u>unless that breach of this industry code is caused by an event or circumstance that is outside of the reasonable control of a transmission entity</u>);"
9.2.2(b) Unplanned interruptions	The reference to customers should include distributor.
9.4.2 Health and safety	This clause clearly refers to any connected party which supports the need for the broader definition of connection point and the associated amendments.