Queensland Government

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Your reference: Energex and Ergon Energy Determination 2020-2025

Electrical Safety Office

Office of
Industrial Relations

15 January 2020

Warwick Anderson
General Manager
Australian Energy Regulator
Email: EnergyQueensland2020@aer.gov.au
GPO Box 520
Melbourne VIC 3001

Dear Mr Anderson,

Comments to the Energex and Ergon Energy AER Draft Decision 2020-2025

Thank you for the opportunity to respond to the draft decisions on the Energex and Ergon Energy AER Determinations 2020-2025.

The Electrical Safety Office (ESO) has reviewed the Energex and Ergon Energy AER draft decision, and revised business case submissions, in relation to the potential impacts on safety risk management and legislative duties.

Section 29 of the *Electrical Safety Act* (2002) (Qld) (the 'Act') defines the electrical safety duties of an electrical entity as:

"(1) An electricity entity has a duty to ensure that its works—
(a) are electrically safe; and
(b) are operated in a way that is electrically safe.

(2) Without limiting subsection (1), the duty includes the requirement that the electricity entity inspect, test and maintain the works."

Energex Submission, Low voltage network safety (ref: Attachment 5: Capital Expenditure Draft Decision – Energex 2020-25, p. 5-41 to 5-47)

The ESO supports the safety improvement initiatives proposed in the revised business case for LV Network Safety (ref: Energy Queensland business case, LV Network Safety). The ESO has identified the public safety risks associated with consumer high impedance neutral connections as a priority risk and current risk management approaches used by Energy Queensland have not adequately managed the risks. Delivery of Energy Queensland's plans will assist in eliminating or minimising these risks so far as reasonably practical (as required by The Act).

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The prioritisation of this risk is justified by:

a) The potentially lethal consequences resulting from a neutral failure event (evidenced by a recent fatality in Queensland).
b) The significant public exposure to this hazard.
c) The effectiveness of current control measures to manage the risks associated with this hazard.
d) Reported incident data (which are subject of under-reporting)[1] shows that from June 2018 to July 2019 approximately 98 electric shock incidents occurred due to entity neutral related failures.

Given the availability of new technologies which provide a significant improvement in the detection of unsafe operating conditions, the ESO does not believe that current risk management approaches alone used by Energy Queensland are adequate in eliminating or minimising managing the risks associated with high impedance consumer neutral connections so far as reasonably practicable. This belief is founded on the lessons learned in Victoria, Western Australia and independent research into modern practices and technologies being utilised by other distribution entities.

In accordance with the Act, Energex have a duty of care to eliminate or minimise risks associated with the operation of their network to so far as is reasonably practical (see Attachment 1 for definitions). Advancements in remote monitoring technologies provide a practical means of improved risk management. In meeting their duty of care, Energex is required to evaluate the use of this technology to improve safety performance. The safety benefits of this technology have already been demonstrated in Victoria.

Energex Submission - Back-up protection installation (ref: Attachment 5: Capital Expenditure Draft Decision – Energex 2020-25, p. 5-25)

The ESO supports the safety improvement initiatives proposed in the revised business cases for Backup Protection (ref: Energex business case, Backup Reach Program).

It is the expectation of the ESO that adequate power system protection is provided for all network assets such that risks to workers and the general public are eliminated or minimised so far as is reasonably practicable as defined in the Act.

In accordance with the National Electricity Rules (S5.1.9), all operational plant at a distribution level should be protected by both a primary and back-up protection scheme. This approach ensures that all practical faults can be detected and cleared to adequately manage the risk exposure to workers and the broader public. In general, the requirement for two layers of protection is also justified by the need to allow for the failure of any one system to detect and/or clear a fault condition, and to allow for periodic test and maintenance operations to be carried out.

If an incident was to occur where injury to personnel, the public, or damage to property resulted from the failure of a protection scheme and no back-up protection was provided then an entity may have breached their duty of care as detailed in section 29 of the Act.

[1] Shock incidents are under-reported. Research has been commissioned in relation to electrical injuries in Queensland. The preliminary data has identified that there is significant under reporting of electrical incidents and injuries occurring in the home and community. Evidence of this is clear from a recent fatality where a neutral conductor connection had been faulty for a number of months and the consumer failed to report experiencing electric shocks. This neutral failure was not identified until it resulted in a fatality.

Energex Submission - Aged asset replacement (ref: Attachment 5: Capital Expenditure Draft Decision – Energex 2020-25, p. 5-34)

The ESO is concerned by the approach taken by the AER regarding aged asset replacements and the comments made by ECA that extending asset age is not likely to expose Energex to excessive risk.

This concern is supported by the 2009 Victorian Bushfire Royal Commission (Volume 2, Electricity Caused Fire, Section 4.3) which found that a number of the Victorian bushfires were caused by the failure of aged assets which had reached the end of their engineering life.

Whilst the ESO accepts the use of methods such as Condition Based Risk Management in support of identifying the need for asset replacement, the ESO requires Energex to identify, assess and manage safety related risks associated with the operation and maintenance of all assets. Where asset condition (due to age or any other contributing factors) results in unacceptable levels of safety risk then replacement (or substitution) of the asset is required. In order to meet electrical safety legislative requirements, Energex must also manage reasonably foreseeable risks associated with asset failure, including the management of planned replacement works such that risk exposures are maintained at acceptable levels.

Ergon Energy Submission – Low voltage network safety (ref: Attachment 5: Capital Expenditure Draft Decision – Ergon Energy 2020-25, p. 5-44 to 5-49)

The ESO supports the safety improvement initiatives proposed in the revised business cases for LV Network Safety (ref: Energy Queensland business case, LV Network Safety) and the Overhead LV Service Replacement Program (ref: Ergon Energy case, Overhead LV Services Replacement Program).

The rationale for support of the LV Network Safety is as per the Energex proposal discussed above. Additionally, the Overhead LV Service Replacement program for Ergon Energy is supported due to higher proportion of aged service lines in the Ergon Energy area and the strong correlation between service line age and public shocks.

Ergon Energy Submission - Back-up protection installation (ref: Attachment 5: Capital Expenditure Draft Decision – Ergon Energy 2020-25, p. 5-25 to 5-26)

The ESO supports the safety improvement initiatives proposed in the revised business cases for Sensitive Earth Fault and Backup Protection systems (ref: Ergon Energy business case, Backup Reach Program and Energy Queensland business case, Sensitive Earth Fault Protection on the Distribution Network).

The rationale for support of Back-up protection installation is as per the Energex proposal discussed above.

Ergon Energy Submission - Protection scheme upgrades (ref: Attachment 5: Capital Expenditure Draft Decision – Ergon Energy 2020-25, p. 5-26 to 5-27)

The ESO supports the safety improvement initiatives proposed in the revised business cases for Distributed Energy Resources (DER) driven protection system upgrades (ref: Energy Queensland business case, Protection Upgrades to Support Increasing Distributed Energy Resources).

The AER has not approved requested funding to perform protection system upgrades as a result of high DER penetration. It is the expectation of the ESO that adequate power system protection be provided for all network assets, under all normal and abnormal operating conditions, such that risks to workers and the general public are eliminated or minimised so far as reasonably practicable (as defined in the Act).

If an incident was to occur where injury to personnel, the public or damage to property resulted from the failure of protection to detect and clear a system fault then an entity may have breached their duty of care as detailed in section 29 of the Act.

Ergon Energy - Aged asset replacement (ref: Attachment 5: Capital Expenditure Draft Decision – Ergon Energy 2020-25, p. 5-32 to 5-37)

The ESO is concerned by the approach taken by the AER with regards to aged asset replacement.

The rationale for support of aged asset replacement is as per the Energex proposal discussed above.

Ergon Energy - CTS/CTG remediation works (ref: Ergon Energy Business Case, Clearance to Ground and Clearance to Structure 2020-2025)

The ESO supports the safety improvement initiatives proposed in the revised business cases for clearance to ground and clearance to structure remediation works (ref: Ergon Energy business case, Clearance to Ground and Clearance to Structure 2020-2025).

The Electrical Safety Regulations 2013 define required clearances to ground and structures for overhead electric lines. These requirements must be achieved to manage public risk exposure and as such Ergon Energy has a duty of care to rectify any non-conformances. If remediation works are not undertaken to rectify identified non-conformances within a practically reasonable timeframe then Ergon Energy would be seen to have breached their duty of care (as defined in section 29 of the Act).

The ESO has taken enforcement action in relation to the management of clearance non-conformances and will continue to monitor rectification work progress over the upcoming regulatory period.

Ergon Energy - Pole monitoring and replacement (ref: Ergon Energy Business Case, Poles and Towers Replacement program 2020-2025)

The ESO supports the safety improvement initiatives proposed in the revised business cases for pole and tower replacements (ref: Ergon Energy business case, Poles and Tower Replacement Program).

The ESO recognises pole failures as a significant public safety risk and requires this risk to be managed in accordance with relevant legislation and codes of practice[2]. Asset management strategies, including the monitoring and management of pole failure risk, will be closely monitored and evaluated by the ESO over the upcoming regulatory period. The ESO will take

[2] The Electrical Safety Code of Practice 2020, Works, states that "An electricity entity should have a maintenance system that achieves a minimum three-year moving average reliability against the incidence of failure of 99.99 per cent a year."

enforcement action where works are not undertaken to suitably manage the risk exposure associated with pole failures.

If you require further information or assistance, please contact me on [redacted].

Yours sincerely

[redacted]

John Quinn
Director, Supply and Networks
Electrical Safety Office
Office of Industrial Relations

Attachment:

1. **Relevant *Electrical Safety Act 2002* (Qld) definitions**

Attachment 1

Relevant *Electrical Safety Act 2002* (Qld) definitions

Meaning of electrical risk, electrically safe and electrical safety (ESA s.10) are defined as follows:

(1) ***Electrical risk*** means—

(a) in relation to a person, the risk to the person of death, shock or injury caused directly by electricity or originating from electricity; or

(b) in relation to property, the risk to the property of—

(i) damage caused by a cathodic protection system; or

(ii) loss or damage caused directly by electricity or originating from electricity.

(2) ***Electrically safe*** means—

(a) for a person or property, that the person or property is free from electrical risk; and

(b) for electrical equipment or an electrical installation, that all persons and property are free from electrical risk from the equipment or installation; and

(c) for the way electrical equipment, an electrical installation or the works of an electricity entity are operated or used, that all persons and property are free from electrical risk from the operation or use of the equipment, installation or works; and

(d) for the way electrical work is performed, that all persons are free from electrical risk from the performance of the work; and

(e) for the way a business or undertaking is conducted, that all persons are free from electrical risk from the conduct of the business or undertaking; and

(f) for the way electrical equipment or an electrical installation is installed or repaired, that all persons are free from electrical risk from the installing or repairing of the equipment or installation.

(4) In this section—***free from electrical risk***, for a person or property, means that—

(a) electrical risk to the person or property has been eliminated, so far as is reasonably practicable; or

(b) if it is not reasonably practicable to eliminate electrical risk to the person or property, the risk has been minimised so far as is reasonably practicable

S.28 What is reasonably practicable in ensuring electrical safety

In this Act, *reasonably practicable*, in relation to a duty to ensure electrical safety, means that which is, or was at a particular time, reasonably able to be done in relation to ensuring electrical safety, taking into account and weighing up all relevant matters including—

(a) the likelihood of the hazard or the risk concerned happening; and

(b) the degree of harm that might result from the hazard or the risk; and

(c) what the person concerned knows, or ought reasonably to know, about—

(i) the hazard or the risk; and

(ii) ways of eliminating or minimising the risk; and

(d) the availability and suitability of ways to eliminate or minimise the risk; and

(e) after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.