Government of **Western Australia**
Department of **Commerce**
Energy*Safety*

DISCUSSION PAPER

WORK ON LIVE ELECTRICAL EQUIPMENT

ISSUED FEBUARY 2015

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PRELIMINARY

In April 2008 Energy*Safety* issued a document titled *Code of Practice - Safe Low Voltage Work Practices by Electricians* (the **Code**). The purpose of the Code was to provide information on how to assess the risk of shock, injury or death when working on or near live low-voltage electrical equipment and installations.

Subsequently, Standards Australia published AS/NZS 4836:2011 *Safe working on or near low-voltage electrical installations and equipment* on 4 May 2011. This standard in essence makes the Code redundant.

It is proposed to insert this Standard in regulation 49 of the Electricity (Licensing) Regulations 1991. This will have the effect of making compliance with the provisions of the Standard mandatory.

It is also proposed to extend the scope of the Standard to include work on or near live high voltage electrical equipment and installations.

Note that regulation 49 of the Electricity (Licensing) Regulations 1991 does not apply to electricity networks and network operators who supply electricity to the general public. These persons will be subject to the Electricity (Network Safety) Regulations 2015 that requires them to have and comply with a safety management system as set out in AS 5577.

DISCUSSION

The purpose of the Code was to improve the safety performance of electricians. Analysis of incidents involving electricians since the Code was issued does not indicate that safety performance has improved. Electricians are still receiving shocks and are being injured or killed due to coming in contact with live conductors or live conductive parts.

The fact that the safety performance of electricians has not improved since the Code was issued presents as a regulatory failure that should be addressed. The do-nothing option will not result in the safety performance improving on its own.

AS/NZS 4836 provides a mechanism to assess risk associated with all types of electrical work at any voltage but specifically addresses work on or near installations operating at low-voltage in any environment. Where necessary, additional requirements will be inserted in the regulation to cover work on high voltage electrical equipment and installations.

Two regulatory measures are proposed:

- insert AS/NZS 4836 in regulation 49 of the Electricity (Licensing) Regulations 1991 so that the standard becomes a mandatory document similar to AS/NZS 3000 – Wiring Rules; and

- place a mandatory prohibition on electrical work on or near live electrical installations and equipment, subject to some specified exemptions.

The rules concerning work on or near live electrical installations and equipment

An electrical worker must never physically come in contact with live conductors or live conductive parts, even if insulated.

Work on any live electrical circuit is prohibited. The popular self-exemption in the Code that permitted live work in the interest of health and safety is not accepted because power supply from a network operator cannot be guaranteed to always be available or to be restored quickly after an interruption. If continuity of supply is critical then alternative arrangements must be designed into the installation including an allowance for equipment maintenance, or procedures developed to cover unexpected outages. Planned outages are significantly less of a threat to health and safety compared to an unexpected outage as the interruption is known by all persons likely to be affected and planned for the most convenient time.

Work on any electrical circuit may proceed only after correct isolation procedures have been carried out, including barriers if other live parts are adjacent.

General exemptions

The following activities may be carried out on or near live electrical equipment: operational switching; commissioning of electrical equipment for the first time, after maintenance or as part of condition monitoring; electrical fault finding using relevant instrumentation and equipment or to test equipment and take electrical measurements. A safe system of work must be provided by the electrical worker's employer and the worker must be satisfied that the activity can be carried out safely before these activities are commenced.

Special exemptions

Given the above removal of self-exemption, responders to this Paper are invited to provide examples of where they believe circumstances could exist that prevent adjacent electrical circuits being de-energised and under which a risk assessment could be undertaken to identify the hazards to persons who may be required to carry out work in close proximity to the live apparatus. A description of the measures to be taken to minimise or eliminate those hazards so that the work can proceed safely should be provided. These examples will be considered when the amendments to the regulations are being developed.

Exemption by request

There are operators of powerlines who are not network operators but who regularly engage persons to undertake live-line maintenance on their distribution and transmission lines. It is proposed that these operators will be required to request the Director of Energy Safety to

grant an exemption for this type of work to be carried out on their powerlines while they are energised. Such a request must be accompanied by details of the training and experience of the live-line personnel who will be involved and include details of the safety management procedures that will be applied. The request could be for a specific period not exceeding say 5 years or for a specified single instance. A request will be required for both live working on a pole or tower and live working from a helicopter.

POTENTIAL EFFECTS ON INDUSTRY

Contact by an electrical worker with live electrical conductors is avoidable. Such contact occurs because the equipment being worked on or adjacent equipment has not been properly isolated either electrically or mechanically. Proper isolation takes time. Time is precious and in short supply so anything that saves time is worth doing. This too often leads to cutting corners by performing live work. There is commercial incentive to complete the work in the least time possible. Most of the time this approach does not have a bad result but when contact with live conductors occurs a considerable amount of time is consumed in dealing with the after-effects.

If an electrical worker conscientiously follows a rigorous isolation process the job will take a bit longer to complete compared with the time taken by an electrical worker less concerned with working safely. This will be reflected in the amount each will charge for the same type of work which will have some effect on the amount of work each will obtain and complete and thus their income. There will be pressure on the safe worker to alter the work practices employed.

To achieve correct isolation of electrical plant it may be necessary to carry out the work outside normal operating hours which will incur additional expense. It may require the temporary connection of generators to supply other parts of the premises, also incurring additional expense. Good design of commercial and industrial electrical installations will minimise these costs but not always eliminate them.

A comprehensive prohibition on working on live electrical conductors will level the field, thus removing an incentive to “cut corners” and improve the overall safety performance of electrical workers.

You are invited to mail any comments you may have on this proposal to:

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or email them to livework@commerce.wa.gov.au with a subject line; Discussion paper on live electrical work – comments by 13 April 2015.