

Electrical Safety (Solar Farms) Amendment Regulation 2019

Explanatory notes for SL 2019 No. 46

made under the

Electrical Safety Act 2002

General Outline

Short title

Electrical Safety (Solar Farms) Amendment Regulation 2019

Authorising law

Section 210 of the *Electrical Safety Act 2002*

Policy objectives and the reasons for them

The objective of the *Electrical Safety (Solar Farms) Amendment Regulation 2019* (the Amendment Regulation) is to establish a clear framework and direction in relation to the mounting, fixing, locating and removal of photovoltaic (PV) modules to ensure this work is undertaken in a manner that is electrically safe and minimises risks to health and safety. The Amendment Regulation only applies to solar farms with a total rated capacity of at least 100kW that are operated by a person conducting a business or undertaking. This ensures that residential installations, which are already subject to specific safety standards, are not captured.

When the *Electrical Safety Act 2002* was drafted it did not anticipate an electricity generating system powered through PV modules on a large scale such as now used on a solar farm. As a result, the existing electrical safety legislative framework does not adequately address competency requirements for mounting or removing PV modules. PV modules attract electrical safety risks unique to this piece of equipment when used on solar farms.

This presents safety risks to workers due to the potential for electric shock, burns and the risk of fire if a fault occurs from incorrect installation, earthing, or during removal of the PV modules. PV modules cannot be switched off or isolated while they are being mounted in position or electrical connections are being made. Unsafe or incorrect mounting or removal of solar panels creates significant electrical safety risks if this work is undertaken by workers without the specialist skill and knowledge required to manage these risks. These risks are amplified by the volume of electricity generated on solar farms and also that the solar panels are connected and energised when removal work is required.

Safety risks identified with mounting, fixing, locating or removing PV modules include:

- mechanical bonds that form part of the earthing circuit being installed by unskilled workers;
- solar farms generating higher amounts of electricity, creating potential for risk of electric shock or fire if a fault occurs as the result of incorrect earthing or installation;
- PV modules generating electricity the moment sunlight is on the surface and that the module and its associated wiring is not able to be isolated from electricity unless it is covered to prevent exposure to light;
- the proximity of other existing arrays of PV modules with high direct current voltages posing a safety risk during mounting, fixing, locating or removal work;
- lack of clarity about the work that can be performed by a non-licensed worker and the work to be performed by a licensed electrician; and
- unsafe removal and replacement of PV modules without proper electrical isolation first.

Given the object of the *Electrical Safety Act 2002* (ES Act) and the unique risk profile for mounting, fixing, locating or removing PV modules at solar farms, a regulatory amendment is necessary to provide clarity and consistency and ensure the mounting and removal of PV modules at solar farms is undertaken by appropriately skilled and qualified electricians.

Achievement of policy objectives

The policy objectives are achieved by making the Amendment Regulation, which will require:

- licensed electricians to mount, locate, fix or remove PV modules on solar farms, and;
- a person conducting a business or undertaking to ensure mounting, locating, fixing or removal of PV modules is only undertaken by licensed electricians.

Consistency with policy objectives of authorising law

The Amendment Regulation is consistent with the object of the ES Act to:

- eliminate the human costs to individuals, families and the community, of the death, injury and destruction that can be caused by electricity; and
- establish a legislative framework for preventing persons being killed or injured, or property being destroyed or damaged, by electricity.

Inconsistency with policy objectives of other legislation

The Amendment Regulation is not inconsistent with the policy objectives of other legislation.

Alternative ways of achieving policy objectives

The policy objectives can only be achieved by regulatory amendment.

Benefits and costs of implementation

The Amendment Regulation will ensure the electrical safety risks associated with the mounting, locating, fixing and removal of PV modules are managed by licensed electricians with the appropriate specialist skill and knowledge required to manage these risks and will provide certainty and consistency for industry.

The Amendment Regulation is estimated to increase the overall cost of solar farm projects by between 0.56% and 1.1% depending on the design and system used for the solar farm. These estimates are based on a 100MW solar farm using 270,000 PV modules of 370 watts each, with a construction cost of \$200 million.

These cost impacts are likely to be somewhat offset by work being undertaken more efficiently by licensed electricians who are not required to be supervised or have their work reviewed. The estimated increased cost is also considered to be outweighed by the safety benefits of ensuring licensed electricians perform this work to minimise exposure to electrical hazards and any future faults or hazards that may result from incorrect installation.

Consistency with fundamental legislative principles

The Amendment Regulation is consistent with the fundamental legislative principles.

Consultation

A broad range of stakeholders were consulted on the proposed regulation including industry representatives, unions, network services providers, engineering bodies, and other relevant government departments. The majority of industry stakeholders consulted support the proposed regulation.

The Office of Best Practice Regulation (OBPR) within the Queensland Productivity Commission was consulted on the Amendment Regulation. While OBPR advised that further regulatory impact assessment on the proposed regulation should be undertaken Government decided to proceed with the regulation to urgently address safety concerns, particularly in view of the anticipated continued rapid growth in the sector.

Notes on Provisions

Short Title

Clause 1 provides the short title of the regulation.

Commencement

Clause 2 provides that the regulation commences on 13 May 2019.

Regulation

Clause 3 notes that the regulation amends the *Electrical Safety Regulation 2013*.

Insertion of new s73A

Clause 4 inserts a new section 73A in the *Electrical Safety Regulation 2013* (the ES Regulation). New section 73A requires the locating, mounting, fixing or removal of a PV modules at a solar farm to be undertaken by a licensed electrical worker. Restriction of this requirement to solar farms ensures only systems with a total rated capacity of at least 100kW that are operated by a person conducting a business or undertaking are captured. Residential installations will not be captured.

Clause 4 also requires a person conducting a business or undertaking to ensure that, in the conduct of the business or undertaking, a person does not locate, mount, fix or remove a PV module if they are not a licensed electrical worker. To maintain consistency with existing provisions of the ES Regulation, new section 73A also requires the PV module that is being worked on to be compliant with the wiring rules (defined in Schedule 9 of the ES Regulation as AS/NSZ 3000).

New section 73A does not apply to moving, packing or unpacking PV modules. For example, boxes containing PV modules can be moved around a solar farm by appropriate means and can be unpacked by non-licensed workers. However, physically mounting and securing the PV module to a supporting frame must be done by licensed electricians.