

Power System Safety Rules Definitions

Defined terms may contain the definition plus additional supplementary information that is included to condense, provide context, or intent to rules that follow. To enable identification between the two parts the definition is shown in bold text, and the supplementary information is shown in text that is not bold.

Key Defined Terms

A key defined term describes a framework, principle, role, process, condition or state that forms part of the core structure of the PSSR or the safe operation of Power System *apparatus*. Key defined terms are essential to understanding or applying the PSSR and appear across multiple rules, processes and procedures.

Key defined terms are identified in the PSSR and Handbooks by italics.

Term	Definition
<i>Access Authority (AA)</i>	Any form of authorisation, which allows access to work on or near, or testing of <i>apparatus</i>, which includes: (a) The identification of the <i>apparatus</i> to be worked on; (b) The extent of access and description of work; (c) Reference to the PRI number authorising the issue of the Access Authority; and (d) Provision for declaration of issue, receipt, suspension, transfer, and cancellation.
<i>Access Authority earth</i>	Approved earthing and short-circuiting equipment applied to electrical <i>apparatus</i>, as a requirement for the issue of an Access Authority, to ensure the electrical <i>apparatus</i> is earthed.
<i>apparatus</i>	Electrical <i>apparatus</i> and mechanical <i>apparatus</i>, including SCADA and associated control schemes.
<i>authorised person</i>	A person who has been formally granted authorisation in a defined PSSR category is an authorised person for the duties within that category.
<i>Authorised Person in Charge (APIC)</i>	An authorised person to whom an Access Authority has been issued and is the person responsible for compliance with the requirements of the Access Authority.
<i>Controller</i>	An approved person responsible for operational control of all or a designated part of the Power System.
<i>de-energised</i>	Not connected to any source of energy but not necessarily Isolated.
<i>designated work area (DWA)</i>	A clearly defined work area associated with a HV Access Authority for work on High Voltage <i>apparatus</i>.

Term	Definition
<i>disconnected apparatus</i>	HV Apparatus not electrically connected, made safe for work, and excluded from HV, Field and Cable Access Authority requirements.
<i>disconnecter</i>	<p>A mechanical switching device which provides, in the open position, an isolating distance in accordance with design standards.</p> <p>This term includes isolators, air break switches, bypass switches and link switches.</p>
<i>Do Not Operate (DNO) Tag</i>	<p>An approved tag, used in accordance with approved procedures, warning of a particular hazard or hazardous condition that is likely to be life threatening. The Tag is affixed to a device as an instruction against the operation of the device.</p> <p>Use of Do Not Operate Tags, which may be electronic, must be as follows:</p> <p>(a) A Do Not Operate Tag <i>shall</i> only be affixed by an <i>authorised person</i></p> <p>(b) A Do Not Operate Tag <i>shall</i> be affixed:</p> <ul style="list-style-type: none"> • Whenever isolation is required to prevent <i>apparatus</i> from being <i>energised</i> unintentionally at High Voltage; and • Whenever isolation of apparatus from Low Voltage and mechanical sources of energy is required and such isolation is not required to be restored during the work.
<i>earthed</i>	Connected to the general mass of earth by a conductor to ensure and maintain the effective dissipation of electrical energy.
<i>Earthing Plan</i>	An approved plan which describes how over the sequence of work to be completed, the HV electrical apparatus will be effectively earthed for the purpose of controlling induced voltages, currents and transferred potentials.
<i>electrical apparatus</i>	Any electrical equipment, including overhead lines and underground cables, the conductors of which are live or can be made live.
<i>energised</i>	Connected to a source or electrical supply.
<i>Extra-Low Voltage (ELV)</i>	<p>A Nominal Voltage not exceeding 50 volts alternating current (AC) or 120 volts ripple free direct current (DC).</p> <p>Typical: 50VDC Alarm supplies; 110VDC Control supplies.</p>
<i>High Voltage (HV)</i>	A Nominal Voltage exceeding 1,000 volts alternating current or exceeding 1,500 volts direct current.
<i>High Voltage area</i>	An area identified by notice containing HV apparatus with no exposed conductors.

Term	Definition
	Examples include the tunnels, switch floor and basement areas of GIS Substations.
<i>HV Live Work Plan</i>	<p>An approved plan that provides specific detail on how the HV live work will be performed safely.</p> <p>HV Live Work Plans ensure that the HV live work activity will comply with Transgrid's Power System Safety Rules as well as Australian Standard AS-5804, and are made up of 3 main parts:</p> <ul style="list-style-type: none"> • HV live work Manual(s) • HV live work Procedure(s) • HV live work Certificate of Approval
<i>instructed person</i>	A person supervised by an authorised person to enable them to avoid the hazards which may be present.
<i>in the charge of a Controller</i>	Any apparatus that can directly or indirectly affect the operation of the Power System.
<i>isolated</i>	Disconnected from all sources of energy by means which prevent unintentional energisation of the apparatus and which is assessed as a suitable step in the process of making safe for access purposes.
<i>live</i>	Energised or subject to hazardous induced or capacitive voltages.
<i>live work</i>	All work performed on components of electrical apparatus which is not isolated, proven de-energised, and earthed where required.
<i>Low Voltage (LV)</i>	<p>A Nominal Voltage exceeding Extra Low Voltage but not exceeding 1,000 volts alternating current (AC) or 1,500 volts direct current (DC).</p> <p>Typical: 110VAC VT supplies; 230/400VAC Aux supplies; 250VDC Control supplies.</p>
<i>LV/MECH Enclosure</i>	<p>A purpose-built enclosure that contains LV/MECH apparatus in the charge of a Controller. This does not include control buildings, battery rooms, cable trenches or general work areas.</p> <p>Examples include:</p> <ul style="list-style-type: none"> • Tunnel boards • Secondary boxes • Panels, kiosks or cabinets that contain LV/MECH apparatus in charge of the Controller
<i>mechanical (MECH) apparatus</i>	Any equipment that has mechanical motion, including rotation, or is pneumatic or hydraulic in nature or contains stored energy through mechanisms, liquid, thermal or gas contained within the equipment.

Term	Definition
<i>minimum approach distance (MAD)</i>	<p>The minimum air gap, or summation of gaps, measured between any part of the authorised person working under a <i>HV Live Work Access Authority</i> and the electrical <i>apparatus</i> under access.</p> <p>MADs are documented in the relevant <i>HV Live Work Plan</i>.</p>
<i>on or near</i>	<p>A person is on or near when either of the following situations occur:</p> <ul style="list-style-type: none"> on - a person has breached the relevant Safe Approach Distance, either directly or indirectly. near - there is a reasonable possibility a person could come within the relevant Safe Approach Distances, either directly or indirectly. <p>A person can be considered on or near either</p> <p>(a) directly, through any part of their body, or</p> <p>(b) indirectly through a conductive object, tool, equipment, or material, other than that which forms part of the installed <i>apparatus</i>.</p> <p>On is a fixed boundary determined by the relevant Safe Approach Distance. Near is determined through a risk assessment, and may vary depending on the work activity, access method, tools, equipment and environment.</p>
<i>Power System</i>	<p>The transmission and distribution system consisting of <i>apparatus</i> which are used to convey or control the conveyance of electricity between generators' and customers' points of connection.</p>
<i>Preparation and Restoration Instruction (PRI)</i>	<p>A written instruction, prepared in accordance with approved procedures setting out the safe sequence of steps required to:</p> <ul style="list-style-type: none"> Prepare <i>apparatus</i> and make it safe for the work and/or test as described in the Request for Access; and/or Return the <i>apparatus</i> to service; Take <i>apparatus</i> out of service for plant security; <p>PRIs are either a:</p> <p>HVPRI – a PRI prepared for HV <i>apparatus</i>; or</p> <p>LVMPRI – a PRI prepared for LV/MECH <i>apparatus</i></p>
<i>Request For Access (RFA)</i>	<p>A formal request for permission to work, which may be submitted verbally, in writing or electronically.</p>
<i>Safe Approach Distance</i>	<p>The minimum separation in air from an exposed conductor that must be maintained by a person, or any object held by or in contact with that person (other than insulated objects designed for contact with live conductors or that which forms part of the installed <i>apparatus</i>).</p>

Term	Definition
<i>Safety Observer</i>	A person competent for the task and specifically assigned the duty of observing and warning against unsafe approach to electrical apparatus.
<i>substation</i>	A switchyard, terminal station or place at which High Voltage supply is switched, converted or transformed.
<i>switchyard</i>	An area identified by a notice and surrounded by security fences or walls, inside which there are exposed conductors which (except for conductors in any cage within the switchyard) maintain standard safety clearances.
<i>test/testing</i>	<p>Work where the modification of some or all safety isolations or Access Authority earths is necessary and as a result, additional safety precautions are required to be implemented to ensure the safety of personnel.</p> <p>Testing may include operational checks, the application of test voltages or the application of mechanical energy. Testing does not include the application of extra Low Voltages or voltages produced by an insulation testing device operating at 1,000 volts or below, provided it is not connected to a length of cable or a capacitor with a capacitance greater than 4000 pF.</p>
<i>transmission cable</i>	A High Voltage cable which leaves the switchyard earth grid, regardless of voltage.
<i>vicinity</i>	Surrounding area
<i>visible break</i>	The point at which conductors are visibly separated by a distance appropriate for the insulating medium and the nominal voltage.
<i>Warning Tag</i>	<p>An approved tag, used in accordance with approved procedures affixed to a device as a warning that this device must not be operated, except as indicated on the tag.</p> <p>Use of Warning Tags, which may be electronic, must be as follows:</p> <p>(a) A Warning Tag must only be affixed by an authorised person;</p> <p>(b) A Warning Tag must be affixed when:</p> <ul style="list-style-type: none"> (i) Limiting the operation of a device which may be required to be operated in conjunction with work or testing; and (ii) Limiting: <ul style="list-style-type: none"> • The removal and replacement of an Access Authority earth, used in conjunction with testing without proving the conductors de-energised; or • Guarding against unauthorised operation of the controls of essential equipment used to maintain a safe working environment.

Supporting Defined Terms

A supporting defined term provides clarification, contextual information, or detail to assist in understanding and/or applying a rule, process or work activity. They can enhance understanding and intent but are not foundational to the PSSR structure and are not identified in the supporting procedures by italics.

Term	Definition
access	<p>The act of entering or opening a defined HV or LV/MECH area, easement or enclosure for any purpose.</p> <p>Access does not require physical interaction with the electrical <i>apparatus</i> and occurs the moment the person enters/opens the controlled area/enclosure.</p>
air insulated switchgear (AIS)	Switchgear that uses the insulation properties of ambient air for insulation.
approved	Having appropriate organisational endorsement in writing for a specific function.
assess/assessment	Formal review of proposed work to determine whether safety of personnel is involved and hence whether an Access Authority will be required, or operating procedures will apply.
barrier	A rope, tape, barricade or alternative erected in accordance with approved procedures.
bonding lead	An approved conductor which is used when seeking to create an equipotential area.
bridging lead	An approved conductor which is used to maintain a current path when a conductor is to be broken or disconnected.
cable	An insulated conductor, or two or more conductors, laid together, whether with or without fillings, reinforcements, or protective coverings. (Note: Cable for the purpose of these Rules also means aerial bundled cables)
cage	A fully fenced or walled area, room, or compartment, with a locked means of access, identified by a notice, containing High Voltage exposed conductors which do not maintain standard safety clearances.
competent	Having the skills, knowledge, and attributes a person needs to complete a task.
conductor	A wire, Cable or form of metal designed for carrying electric current.
description of work	A description of the work to be carried out, sufficient to allow appropriate steps to be identified to make the <i>apparatus</i> safe for work.

electrical operating work	Work involving the operation of switching devices, links, fuses, or other connections intended for ready removal or replacement, proving electrical conductors de-energised, earthing, and short circuiting, locking and/or tagging of electrical apparatus and erection of barriers and/or signs.
exposed conductor	An electrical conductor, approach to which is not prevented by a barrier or by insulation which is adequate under a relevant Australian Standard specification for the voltage concerned
gas insulated switchgear (GIS)	Switchgear which relies on sulphur hexafluoride (SF₆) gas as the insulating medium.
Human Machine Interface (HMI)	A device used to interface with <i>apparatus</i>, including the SCADA, touch screens, personal computers etc.
insulated	Separated from adjoining conducting material by a non-conducting substance which provides resistance to the passage of current, or to disruptive discharges through or over the surface of the substance at the operating voltage, to mitigate the danger of shock or injurious leakage of current.
mechanical operating work	The operation of devices that control sources of energy, such as, mechanical, hydraulic, pneumatic or fuel energy and the implementation of control measures to prevent the unintentional release of that energy by the locking and tagging of mechanical apparatus and the erection of barriers and/or signs.
mobile plant	Cranes, elevating work platforms, tip trucks or similar plant, any equipment fitted with a jib or boom and any device capable of raising or lowering a load.
must	Is to be interpreted as ‘mandatory.’
nominal voltage	Means the a.c. (phase to phase r.m.s) or d.c. voltage by which a system of supply is designated.
overhead line	Any aerial conductor or conductors with associated supports, insulators and other <i>apparatus</i> erected, or in the course of erection, for the purpose of the conveyance of electrical energy
pilot cable	Pilot cables are used for control, protection, signalling, telecommunications and data transmission purposes associated with power transmission systems.
Protection Metering Withdrawal Instructions (PMWI)	A specialised PRI specifically associated with maintaining system and network security for work on protection and metering <i>apparatus</i>.
should	Is to be interpreted as ‘advisory or discretionary.’

spotter	A person competent for the task and specifically assigned the duty of observing and warning against general hazards.
standard safety clearances	The clearances used in the design of High Voltage installations to provide safe conditions from High Voltage exposed conductors for a person walking at ground level, or a person on any fixed ladder or platform.
totally enclosed apparatus	<p>Apparatus within which the electrical conductors can only be exposed by unbolting or unlocking covers or shutters which prevent normal access.</p> <p>Cables with insulation adequate under the relevant Australian Standard Specification shall be regarded as totally enclosed apparatus.</p>
vehicle	A truck (non-tipping), car, utility, or other general-purpose conveyance used for the carriage of persons or goods
voltage	Potential difference between conductors, and between conductors and earth.
work	<p>When the purpose of a person's activity is to effect some degree of change, then work is being undertaken.</p> <p>If the purpose of the activity is to observe only (i.e., to look, measure or photograph without coming on or near), then work is not being undertaken.</p>
working earth	<p>Approved earthing and short-circuiting equipment applied to electrical apparatus, additional to Access Authority earths, following the issue of an Access Authority.</p> <p>Working earths are under the control of the APIC. They must be removed prior to the cancellation of the Access Authority.</p>