

Title	Respond to power system events and emergencies on the electricity supply power system		
Level	5	Credits	15

Purpose	People credited with this unit standard are able to: identify and analyse power system events; implement remedial actions; isolate system faults; and implement asset owner emergency procedures.
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Classification	Electricity Supply > Electricity Supply - Power System Management
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Available grade	Achieved
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Prerequisites	Unit 16277, <i>Diagnose faults on electricity supply network equipment (System Operation)</i> , or demonstrate equivalent knowledge and skills.
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Guidance Information

- Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable legislative and industry requirements.
- Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the current version of the Health and Safety at Work Act 2015; Electricity Act 1992; Electricity (Safety) Regulations 2010; and any subsequent amendments and replacements; Electricity supply industry codes of practice and documented enterprise procedures, including *Safety Manual – Electricity Industry (SM-EI)* (2015) Wellington: Electricity Engineers' Association www.eea.co.nz.
- Definitions
Asset owner refers to a participant who owns or operates assets used for generating or conveying electricity.
Emergency procedures are methods, strategies, and action taken by the asset owner to respond to power system events that threaten the continuity of supply of electricity to customers.
Industry requirements include all asset owner requirements; manufacturers' specifications; and enterprise requirements which cover the documented workplace policies, procedures, specifications, business, and quality management requirements relevant to the workplace in which assessment is carried out.
Network security refers to the asset owner's ability to maintain continuity of electricity supply to customers.

Power system events are routine occurrences that threaten the operational efficiency and performance of power system components, electrical route ways, circuits, plant, and equipment, and may pose a threat to the continuity of supply of electricity to customers.

SCADA – Supervisory Control and Data Acquisition system used for control, indication, and monitoring purposes.

Switching refers to actions carried out by a network control centre. Planned switching operations are defined by a Network Controller and change the configuration of the network, enabling isolation of a specific section of a circuit to allow planned work to be undertaken safely, while minimising supply outages to customers. Unplanned switching operations aim to isolate the faulty section of a circuit and restore supply to all customers outside this section after a fault has occurred.

Outcomes and performance criteria

Outcome 1

Identify and analyse power system events.

Performance criteria

- 1.1 Power system events are identified, and details are recorded.
- Range may include but is not limited to – external power system disturbance, lightning, Transpower network faults, generation loss, equipment failure.
- 1.2 Data and statistics on power system events are collated.
- Range may include but is not limited to – SCADA, customer responses, supplier responses, weather reports, system maximum demand.
- 1.3 Causes and effects of power system events are identified for analytical purposes.
- Range may include but is not limited to events such as – lightning, line faults, cable faults, car hits, bird strikes, animals, kites.
- 1.4 Possible solutions are developed for restoring supply.
- Range may include but is not limited to – supply from alternate high voltage circuits, supply from alternate low voltage circuits in urban areas, connection of emergency diesel generators.
- 1.5 Data and statistics are interpreted and confirmed in consultation with others.
- Range may include but is not limited to – event data and statistics, assessment of system fault conditions, appropriateness of alternate supply; others may include but are not limited to – supervising officer, other network controllers, Transpower system controller, field operators, system control manager.

Outcome 2

Implement remedial actions.

Performance criteria

- 2.1 Remedial actions are selected in accordance with the asset owner requirements.
- Range may include but is not limited to – customer impact, commercial impact, estimated time to implement, availability of resources, customer expectations, quality of alternative supply, approval for strategy.
- 2.2 Selected remedial actions are implemented within set timeframe.
- Range may include but is not limited to – response time by network controllers, field operators, contractors.
- 2.3 Performance indicators are established to monitor effectiveness of the selected actions.
- Range may include but is not limited to – incident investigation report, de-brief after events, customer responses, outage minutes.
- 2.4 Evidence of effectiveness of remedial action is gathered for analysis by operating supervisor at agreed intervals.
- Range may include but is not limited to – average time to effect remedial action, contingency strategies required.

Outcome 3

Isolate system faults.

Performance criteria

- 3.1 System faults are located and identified.
- Range may include but is not limited to – circuit involved, stations.
- 3.2 Switching requests to isolate faulty components are planned and actioned within agreed response time.
- Range may include but is not limited to – response time by system operators, field operators, contractors.

3.3 Isolation points are established in accordance with asset owner procedures and industry safety rules.

Range may include but is not limited to – the requirements of the SM-EI, Electricity Act 1992, Electricity (Safety) Regulations 2010, electricity supply industry codes of practice, industry procedures.

Outcome 4

Implement asset owner emergency procedures.

Performance criteria

4.1 Information identifying emergency situations is recorded and immediately forwarded to supervising officer.

4.2 Emergency procedures are initiated to disconnect hazardous equipment from the network.

Range may include but is not limited to – specific tasks required of network controller, field operators, contractors.

4.3 Emergency procedures are monitored, and evidence is gathered to develop strategies to resolve the emergency situations.

Range may include but is not limited to – specific tasks required of network controller, field operators, supervisor.

4.4 Unaffected equipment is restored to network supply after emergency procedures have been completed within the asset owner’s timeframe.

Range may include but is not limited to – specific tasks required of network controller, field operators, contractors.

4.5 Switching operations are confirmed with all parties prior to carrying out emergency procedures.

Range may include but is not limited to – specific tasks required of network controller, system operator, contractor, control centre supervisor.

4.6 Switching operations required to action emergency procedures are performed.

Range may include but is not limited to – specific tasks required of network controllers, field operators, contractors.

Planned review date	31 December 2025
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	03 August 1999	31 December 2019
Revision	2	11 February 2004	31 December 2022
Rollover and Revision	3	26 November 2007	31 December 2022
Review	4	16 April 2010	31 December 2022
Review	5	23 April 2020	N/A

Consent and Moderation Requirements (CMR) reference

0120

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Connexis – Infrastructure Industry Training Organisation qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.