

# Electrical safety priorities—Powerlines

Priority	Powerlines
Priority goal	Reduction in serious electrical incidents, injuries and property damage related to contact with powerlines and associated equipment.
<b>Scope</b>	
• People:	All persons associated with contact or potential contact with powerlines, including: <ul style="list-style-type: none"><li>• electricity supply industry workers including electrical and non-electrical workers engaged to perform work by electricity entities;</li><li>• non-electrical workers performing intentional work in the vicinity of powerlines;</li><li>• persons performing non-work related activities in the vicinity of powerlines;</li><li>• owners and persons in control of powerlines and associated equipment; and</li><li>• members of the public.</li></ul>
• Places:	All places where powerlines and associated equipment are located, including: <ul style="list-style-type: none"><li>• workplaces;</li><li>• dwellings;</li><li>• rural properties;</li><li>• private property; and</li><li>• public places.</li></ul>
• Products:	All overhead and underground powerlines and service lines, including those which form part of a consumer electrical installation. Additionally all associated equipment used for the transmission or distribution of electrical energy, including: <ul style="list-style-type: none"><li>• supports, insulators and apparatus;</li><li>• pole mounted equipment like voltage regulators, fixed capacitors and inductors, air breaks and reclosers; and</li><li>• underground wiring enclosures.</li></ul>



## Evidence base

Contact with overhead powerlines is associated with a significant number of electrical incidents overall; representing 29 per cent of all electrical fatalities over the past 10 years. Many of the fatalities involved people in a variety of settings.

Incidents resulting from contact with powerlines can be grouped into four main areas:

- intentional work on or around powerlines (e.g. electricity supply industry workers, vegetation management workers, agricultural workers, construction workers, landscapers, fencers, pool builders);
- non work-related activities around powerlines (e.g. home owners trimming trees, painting gutters);
- physical failure of the asset (e.g. powerlines coming down in storms); and
- defective powerlines creating electrical safety risks in electrical installations.

There have been 17 fatalities involving powerlines over the past 10 years. Ten of these involved unsafe work practices of non-electrical workers, four involved contact with fallen powerlines and three involved unsafe electrical work practices. Electrical fatalities involving contact with underground powerlines have also been an issue in recent years, and as such this has now been included in the powerlines priority area.

The electrical safety risk associated with powerlines is significant as Queensland has over 200,000 km of overhead and underground conductors and around 65,000 km of Single Wire Earth Return (SWER) conductors. Queensland's SWER network is the largest in Australia and one of the largest in the world. SWER operates at 11kv, 12.7kv and 19.1kv extending from coastal areas to remote inland rural areas and supplies approximately 26,000 customers.

## Key stakeholders

- Workplace Health and Safety Queensland (including the Board and industry sector standing committees)
- Electricity entities (e.g. Ergon Energy, ENERGEX)
- Industry associations (e.g. agricultural, construction, crane)
- Professional associations (e.g. engineers)
- Unions
- Local Government
- Training industry
- Universities, research organisations and design organisations
- Developers
- Equipment designers, manufacturers, importers and suppliers

# Electrical safety priorities—Powerlines

## Strategy

**Education/Awareness** The need for increased awareness of safety issues and requirements (including exclusion zones) in respect of powerlines to both industry and the general public is ongoing, particularly in high risk areas.

This will be addressed by the continuing development of initiatives and information materials in association with industry stakeholders targeting high risk industry sectors and related behaviours. High risk industry sectors to be considered include:

- Rural/Agriculture
- Construction
- Transport
- Electrical industry

Interventions such as awareness activities or media campaigns will be improved by working more closely with key stakeholders and exploring options for more innovative and effective ways to reach target audiences.

Community engagement activities will also be enhanced to provide topical and timely information to a wider range of stakeholders. The use of ‘real life’ case studies will be explored to help promote and reinforce safety messages.

Similarly, public information initiatives targeting domestic activities and the general public will be further developed and coordinated with electricity entities.

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## Legislation

Specific legislation deals with requirements and prohibitions in the area of powerlines and includes provisions within the Act as well as the Regulation and code of practice references.

A comprehensive review of the adequacy and content of all such existing legislation and supporting materials to include evaluation of capacity for their enforcement will be undertaken in consultation with industry and stakeholders. The review will also look at ‘best practice’ nationally and consider the impacts of technological innovation on the regulatory framework for powerlines.

As part of the continuing development of a nationally consistent legislative regime impacting powerlines, contribution to the development of Energy Networks Australia standards will be maintained.

Monitor any national or Council of Australian Governments’ policy developments likely to have an impact on power line safety and address any issues as required to ensure safety standards are retained (e.g. in relation to electrical licensing or exclusion zones).

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Compliance	<p>Maintenance of targeted proactive audit programs in cooperation with Workplace Health and Safety Queensland will continue, utilising an evidence-based approach from a range of inputs to determine target auditing activities. This evidence-based approach for determining auditing activities will evaluate inputs including:</p> <ul style="list-style-type: none"><li>• Research of serious electrical incidents and dangerous electrical events</li><li>• Assessment of the electricity entity quarterly reports</li><li>• Emerging trends and issues</li><li>• Community expectations</li></ul> <p>Compliance activities will also include analysis of audit results to identify specific areas of non-compliance for further response. Increased compliance and enforcement action in relation to powerlines is likely to concentrate on high risk industry sectors to get the electrical safety message through to these stakeholders. Activities will also focus on maintaining compliance with the electrical licensing regime.</p> <p>A strategy of comprehensive investigation of Type 1 incidents (fatalities, grievous bodily harm) and target events will support the compliance effort. The enforcement framework will continue to inform the response to such incidents and will be reviewed based on the outcomes of both the target audit and investigation strategies.</p>
Training	<p>The continuing development and promotion of electrical safety training for industry (including electrical and non-electrical - e.g. rural/agriculture) will be encouraged through involvement with electricity entities, industry associations and training organisations.</p> <p>The skills maintenance regime for electrical licence holders will also be enhanced to ensure skills and knowledge remains current in the areas of electrical safety legislation, risk management and testing. As a strategic response to industry skills shortages, this will also ensure ongoing and improving access to training for electrical supply industry workers.</p>
Equipment Design / Innovation	<p>The active monitoring and facilitation of research outcomes and innovations with the potential to improve the safety of powerlines, for both workers who interact with them and the general public will continue to be resourced. Also investigate/research any electrical safety implications of other industry technological developments and address these as appropriate.</p> <p>Seek to work with a range of stakeholders to encourage the identification and establishment of improved research capabilities in relation to electrical safety of powerlines.</p> <p>Utilise electrical incident data strategically and maintain contribution to the development of Energy Networks Australia standards to influence better safety performance in relation to powerlines.</p> <p>Continue to encourage the development, adaptation and evaluation of innovations or engineering controls and explore their application in the Queensland environment. Such innovations or engineering controls include:</p> <ul style="list-style-type: none"><li>• warning devices</li><li>• barrier systems</li><li>• equipment design improvements</li><li>• fail-safe systems</li></ul>

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# Electrical safety priorities — Electrical installations

Priority	Electrical installations
Priority goal	Reduction in serious electrical incidents, injuries and property damage related to electrical installations and associated equipment.
<b>Scope</b>	
• People:	All persons associated with electrical installations and related equipment, including: <ul style="list-style-type: none"><li>• general electrical industry workers including persons assisting electrical workers in performing electrical work;</li><li>• non-electrical workers who affect the electrical safety of an electrical installation;</li><li>• persons performing unlicensed electrical work or electrical work outside the scope of an electrical work licence;</li><li>• persons directly affected by the performance of electrical work;</li><li>• owners and persons in control of electrical installations; and</li><li>• members of the public.</li></ul>
• Places:	All places where electrical installations are located including: <ul style="list-style-type: none"><li>• workplaces;</li><li>• dwellings; and</li><li>• public places.</li></ul>
• Products:	All fixed wiring, electrical equipment and electrical accessories associated with an electrical installation including: <ul style="list-style-type: none"><li>• all wiring in which cables are fixed or supported in position;</li><li>• all permanent electrical wiring of a building or structure;</li><li>• all associated socket outlets, switchboards, hot waters systems, lamp holders, fittings, adaptors, ceiling roses;</li><li>• all electrical equipment permanently electrically connected to an electrical installation (e.g. an oven or solar photovoltaic array installation); and</li><li>• flexible cables exceeding the definition of a flexible cord.</li></ul>



## Evidence base

Fixed wiring has been associated with the highest number of electrical fatalities in the past 10 years. This category represented 31 per cent or 18 fatalities during this time.

The major contributing factor associated with fixed wiring was unsafe electrical work practice, representing 39 per cent or seven fatalities (e.g. unsafe live work practices, failing to test).

The second highest contributing factor involved the work practice of non-electrical workers at 28 per cent or five fatalities (e.g. a worker replacing house stumps and placing a chain around a house bearer and adjoining electrical wiring).

Electrical fatalities involving electrical accessories have been an issue in recent years, and as such, this as well as fixed wiring has been included in the new electrical installations priority area.

It was identified that 72 per cent of the fatalities in this area could have been prevented had a safety switch been installed.

It is likely that in the future through the increased coverage of safety switches and the continuation of electrical safety awareness programs, the percentage of serious electrical incidents involving electrical installations is likely to decline over time.

## Key stakeholders

- Workplace Health and Safety Queensland (including the Board and industry sector standing committees)
- Industry associations (e.g. electrical industry)
- Unions
- Professional associations (e.g. engineers)
- Community associations
- Local Government
- Training industry
- Equipment designers, manufacturers, importers and suppliers
- Building Services Authority
- WorkCover Queensland
- Insurers
- Emergency services
- Universities, research organisations and design organisations

# Electrical safety priorities — Electrical installations

## Strategy

**Education/Awareness** The number of incidents in recent years associated with electrical installations in workplaces and homes demonstrates the need for increased awareness of safety issues and requirements in respect of electrical installations for both industry and the general public.

This will be addressed by the continuing development of initiatives and information materials in association with industry stakeholders including electricity entities to raise awareness of electrical safety issues in workplaces and homes, and focus on improving attitudes towards electrical safety in some industry sectors.

Key initiatives in relation to electrical installations to be considered include:

- Improving community knowledge and understanding of electrical safety (e.g. the dangers of unlicensed electrical work) and continuing to promote the use of safety switches
- Targeting high risk industry sectors, especially in relation to live work practices and unlicensed electrical work (e.g. the electrical industry and industries associated with electrical work)
- Targeting peer groups and families to minimise injuries to workers in high risk industries
- Increasing the focus of education and safety awareness on workplaces, including small business

Interventions such as awareness activities or media campaigns will be improved by working more closely with key stakeholders and exploring options for more innovative and effective ways to reach target audiences.

Community engagement activities will also be enhanced to provide topical and timely information to a wider range of stakeholders. The use of ‘real life’ case studies will be explored to help promote and reinforce safety messages.

Similarly, public information initiatives targeting domestic activities and the general public will be further developed and coordinated with electricity entities and other key stakeholders where appropriate.

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**Legislation** Electrical safety legislation outlines requirements and prohibitions in the area of electrical installations and includes provisions within the Act as well as the Regulation and code of practice references.

A comprehensive review of the adequacy and content of all such existing legislation and supporting materials to include evaluation of capacity for their enforcement will be undertaken in consultation with industry and stakeholders. The review will also look at ‘best practice’ nationally and consider the impacts of technological innovation on the regulatory framework for electrical installations. Additionally, examine options for improving the coverage of safety switches.

As electrical safety legislation defers to standards such as *AS/NZS 3000* for certain technical specifications and requirements, contribution to Australian Standards committees for the development of standards such as the *AS/NZS 3000* will be maintained.

Monitor any national or Council of Australian Governments’ policy developments likely to have an impact on electrical installations and address any issues as required to ensure safety standards are retained (e.g. in relation to electrical licensing).

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Compliance	<p>Maintenance of targeted proactive audit programs in cooperation with Workplace Health and Safety Queensland will continue, utilising an evidence-based approach from a range of inputs to determine target auditing activities. This evidence-based approach for determining auditing activities will evaluate inputs including:</p> <ul style="list-style-type: none"><li>• Research of serious electrical incidents and dangerous electrical events</li><li>• Assessment of the electricity entity quarterly reports</li><li>• Emerging trends and issues</li><li>• Community expectations</li></ul> <p>Compliance activities will also include analysis of audit results to identify specific areas of non-compliance for further response. To assist in conveying the electrical safety message through to stakeholders, increased compliance and enforcement action in relation to electrical installations will be undertaken, focusing on the following:</p> <ul style="list-style-type: none"><li>• Electrical industry</li><li>• Industries associated with electrical work (e.g. air conditioning, plumbing, whitegoods repair)</li><li>• Other industries that do not normally involve electrical workers (e.g. insulation, wider construction industry)</li></ul> <p>The electrical licensing regime will also be supported through activities focusing on maintaining compliance with electrical licensing requirements.</p> <p>A strategy of comprehensive investigation of Type 1 incidents (fatalities, grievous bodily harm) and target events will support the compliance effort. The enforcement framework will continue to inform the response to such incidents and will be reviewed based on the outcomes of both the target audit and investigation strategies.</p>
Training	<p>The continuing development and promotion of electrical safety training for industry (including electrical and non-electrical - e.g. wider construction industry) will be encouraged through involvement with electricity entities, industry associations and training organisations.</p> <p>The skills maintenance regime for electrical licence holders will also be enhanced to ensure skills and knowledge remains current in the areas of electrical safety legislation, risk management and testing. As a strategic response to industry skills shortages, this will also ensure ongoing and improving access to training for electrical workers.</p>
Equipment Design / Innovation	<p>The active monitoring and facilitation of research outcomes and innovations with the potential to improve the safety of electrical installations will continue to be resourced. Also investigate/research any electrical safety implications of other industry technological developments and address these as appropriate.</p> <p>Seek to work with a range of stakeholders to encourage the identification and establishment of improved research capabilities in relation to electrical safety of electrical installations. Continue to promote the use of safety switches and investigate the programmed replacement of safety switches at the end of their useful life.</p> <p>Utilise electrical incident data strategically and maintain contribution to Australian Standards committees to influence better safety performance for electrical installations and fixed wiring standards (e.g. encourage electrically safe design and maintenance capabilities).</p> <p>Continue to encourage the development, adaptation and evaluation of innovations or engineering controls and explore their application in the Queensland environment. Such innovations or engineering controls include:</p> <ul style="list-style-type: none"><li>• warning devices</li><li>• barrier systems</li><li>• design improvements</li><li>• fail-safe systems</li></ul>

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# Electrical safety priorities — Electrical equipment

## Priority

## Electrical equipment

### Priority goal

Reduction in serious electrical incidents, injuries and property damage related to electrical equipment.

## Scope

- **People:** All persons associated with electrical equipment including:
  - electrical industry workers;
  - persons directly affected by the performance of electrical work;
  - non-electrical industry workers;
  - owners and persons in control of electrical equipment;
  - designers, manufacturers, importers and suppliers of electrical equipment; and
  - members of the public.

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- **Places:** All places where electrical equipment is located including:
  - workplaces;
  - dwellings; and
  - public places.

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- **Products:** Electrical equipment, including:
  - portable electrical appliances;
  - stationary electrical appliances;
  - flexible cords and cord extension sets; and
  - other related electrical equipment not associated with electrical installations or powerlines.
  - Electrical equipment that is permanently electrically connected to an electrical installation or associated with powerlines is not considered part of this priority area (e.g. a wall oven or solar photovoltaic array installations)



## Evidence base

Portable appliances have been associated with 14 electrical fatalities in the past 10 years. There were two main contributing factors each representing 36 per cent or five of the total 14 fatalities.

The first contributing factor involved unsafe work practices of non-electrical workers (e.g. a worker welding without protective gloves, clothes, etc).

The second such factor involved maintenance of consumer equipment, where the equipment was not maintained in a condition that a reasonable person would consider as electrically safe (e.g. damaged appliances exposing live conductors). The lack of maintenance of portable electrical appliances by consumers has contributed to fatalities and serious electrical incidents in Queensland, despite extensive community educational programs on maintaining electrical appliances.

Electrical fatalities involving stationary electrical appliances and flexible cords have also been an issue in recent years, and as such these have been included in the new electrical equipment priority area.

It was identified that 80 per cent of the electrical fatalities in this area could have been prevented with the use of a safety switch.

It is likely that through the increased coverage of safety switches and the continuation of electrical safety awareness programs, the percentage of serious electrical incidents involving electrical equipment is likely to decline over time.

## Key stakeholders

- Workplace Health and Safety Queensland (including the Board and industry sector standing committees)
- Industry associations (e.g. electrical industry)
- Unions
- Professional associations (e.g. engineers)
- Community associations
- Local Government
- Training industry
- Equipment designers, manufacturers, importers and suppliers
- Manufacturers and suppliers
- Building Services Authority
- WorkCover Queensland
- Insurers
- Emergency services
- Universities, research organisations and design organisations

# Electrical safety priorities — Electrical equipment

## Strategy

**Education/Awareness** The need for increased awareness of safety issues and requirements in respect of electrical equipment to both industry and the general public is ongoing, particularly in relation to maintenance.

This will be addressed by the continuing development of initiatives and information materials in association with industry stakeholders to raise awareness of related electrical safety issues in workplaces and homes.

Key initiatives in relation to electrical equipment to be considered include:

- Improving community knowledge and understanding of electrical safety (e.g. look for approval number/markings, maintenance of electrical equipment, the dangers of unlicensed electrical work) and continuing to promote the use of safety switches
- Targeting high risk industry sectors (e.g. the electrical and construction industries)
- Increasing the focus of education and safety awareness activities on workplaces, including small business

Interventions such as awareness activities or media campaigns will be improved by working more closely with key stakeholders and exploring options for more innovative and effective ways to reach target audiences.

Again, community engagement activities will also be enhanced to provide topical and timely information to a wider range of stakeholders. The use of ‘real life’ case studies will be explored to help promote and reinforce safety messages.

Similarly, public information initiatives targeting domestic activities and the general public will be further developed and coordinated with electricity entities and other key stakeholders where appropriate.

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**Legislation** Specific legislation deals with requirements and prohibitions in the area of electrical equipment and includes provisions within the Act as well as the Regulation and code of practice references.

A comprehensive review of the adequacy and content of all such existing legislation and supporting materials to include evaluation of capacity for their enforcement will be undertaken in consultation with industry and stakeholders. The review will also look at ‘best practice’ nationally and consider the impacts of technological innovation on the regulatory framework for electrical equipment.

Monitor the implementation of recommendations from the Electrical Regulatory Authorities Council national review of the Electrical Equipment Safety System and address any subsequent legislative changes required from an agreed national electrical equipment approval model to ensure safety standards are retained.

Additionally, maintain contribution to Australian Standards committees for the development of standards under which approvals for electrical equipment are sought.

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Compliance	<p>Maintenance of targeted proactive audit programs in cooperation with Workplace Health and Safety Queensland will continue, utilising an evidence-based approach from a range of inputs to determine target auditing activities. This evidence-based approach for determining auditing activities will evaluate inputs including:</p> <ul style="list-style-type: none"><li>• Research of serious electrical incidents and dangerous electrical events</li><li>• Assessment of the electricity entity quarterly reports</li><li>• Emerging trends and issues</li><li>• Community expectations</li></ul> <p>Compliance activities will also include analysis of audit results to identify specific areas of non-compliance for further response. To assist in conveying the electrical safety message through to stakeholders, increased compliance and enforcement action in relation to electrical equipment will be undertaken.</p> <p>A strategy of comprehensive investigation of Type 1 incidents (fatalities, grievous bodily harm) and target events will support the compliance effort. The enforcement framework will continue to inform the response to such incidents and will be reviewed based on the outcomes of both the target audit and investigation strategies.</p>
Training	<p>The continuing development and promotion of electrical safety training for industry (including electrical and non-electrical) will be encouraged through involvement with electricity entities, industry associations and training organisations.</p> <p>The skills maintenance regime for electrical licence holders will also be enhanced to ensure skills and knowledge remains current in the areas of electrical safety legislation, risk management and testing. As a strategic response to industry skills shortages, this will also ensure ongoing and improving access to training for electrical workers.</p>
Equipment Design / Innovation	<p>Seek to work with a range of stakeholders to encourage the identification and establishment of improved research capabilities in relation to electrical safety.</p> <p>Utilise electrical incident data strategically and maintain contribution to Australian Standards committees to influence better safety performance for electrical appliance and equipment standards (e.g. encourage electrically safe design and maintenance capabilities).</p> <p>Continue to encourage the development, adaptation and evaluation of innovations or engineering controls and explore their application in the Queensland environment. Such innovations or engineering controls include:</p> <ul style="list-style-type: none"><li>• design improvements</li><li>• extra low voltage equipment</li><li>• fail-safe systems</li></ul>

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