

# Regulatory Assessment Statement

Electrical Safety Office

Extension of mandatory requirements for fitting  
of safety switches in residential accommodation

## **TABLE OF CONTENTS**

EXECUTIVE SUMMARY.....	3
1. ISSUES STATEMENT .....	5
2. POLICY OBJECTIVES.....	6
3. OPTIONS AND ALTERNATIVES .....	8
4. IMPACT ASSESSMENT .....	13
5. CONSULTATION.....	21
6. PREFERRED OPTION .....	22
7. CONSISTENCY WITH OTHER POLICIES AND REGULATION .....	23
8. IMPLEMENTATION, EVALUATION AND COMPLIANCE SUPPORT STRATEGY .....	23

## EXECUTIVE SUMMARY

The purpose of the *Electrical Safety Act 2002* (the Act) is directed at eliminating the human cost to individuals, families and the community of death, injury and destruction that can be caused by electricity. In support of this objective, *The Electrical Safety Plan for Queensland 2009-2014* (the Plan) was developed by the Electrical Safety Board. One of the priorities of the Plan is the expansion of safety switch protection for all Queensland residents and visitors.

A review of causes of death by electrocution in Queensland in the ten years to 30 June 2010 reveals that safety switches could have prevented 76% or 25 of the 33 non-power line/ service line related electrical fatalities where safety switches could have been fitted. Since October 2009, there have been three Queensland electrical fatalities associated with the installation of ceiling insulation. These deaths could have been prevented had safety switches been fitted to all capable circuits. In order to address the tragic deaths and injuries resulting from electric shock, four options for the compulsory fitting of safety switches and two additional related amendments are canvassed. The status quo is also examined at Option 5.

The options will not only address the expected increase in electrocutions of workers in roof spaces but will also protect householders and workers from inadvertent contact with unprotected circuits in all other areas of residential dwellings.

Option 1 proposes to mandate the fitting of safety switches on power and lighting circuits in all residential premises including temporary accommodation, leased residences and government and employer supplied residences. Under Option 1, this would occur within two years for temporary accommodation and leased residences and within five years for domestic dwellings, including government and employer supplied. At \$292.5M, this is the lowest cost option, apart from “do nothing” or status quo (Option 5).

Option 2 similarly proposes to mandate the retrofitting of safety switches to power and lighting circuits in all premises targeted under Option 1, and provides an additional opportunity for the fitting of the safety switches when significant electrical work on the electrical installation at the premises is undertaken. Similarly to Option 2, compliance would be achieved within two years for temporary accommodation and leased residences and in an estimated 13.2 years for residential premises. Option 2 is costed at \$270M.

The benefits of both of these sub-options fall short of those expected for the more comprehensive Options 3 and 4.

Option 3 proposes an extension to the requirements of Option 1 by requiring the fitting of safety switches to all safety switch capable final sub-circuits. Options 1 and 3 allow a compliance lead in period of two years for operators of temporary accommodation and properties subject to a residential tenancy agreement, to fit the safety switches. Under these options, all other domestic residential properties will have a five year period in which to comply.

Option 4 is identical to Option 3 in its requirements; however, it allows an extended compliance period for domestic residential properties including government and employer-provided residences based on the mandatory fitting of the safety switches at the time of the completion of most types of electrical work on the electrical installation at the premises. It is estimated that practical compliance will be reached in around 13.2 years after introduction.

Option 4 is the cheaper of these two options at an annual average cost of \$38.1M (totalling \$502.4 million after 13.2 years). It exceeds the benefits of Option 3, as the longer phase-in period allows affected property owners and the economy time to adjust and is expected to encourage the uptake of more electrical apprenticeships, easing pressure on skilled labour in the longer term.

The benefits of Options 3 and 4 estimated conservatively post implementation include 51 fewer deaths and 9,212 fewer potentially harmful electrical shocks over a 30-year period<sup>2</sup>, fewer electrical fires and environmental damage associated with electrical faults. Option 4 is the preferred option.

Additional amendments propose the banning of bypass switches which negate the protective effects of safety switches and the introduction of a mandatory requirement for all newly constructed residential properties to be fitted with safety switches to all capable final sub-circuits at the time of construction. The cost of these additional amendments is expected to be negligible.

In November 2009, the Electrical Safety Office (ESO) circulated a discussion paper to industry and community stakeholders canvassing proposals for mandatory fitting of safety switches on power and lighting circuits in all residential electrical installations in Queensland. The options proposed have been developed in consideration of the outcomes from this consultation and with input from the departments of Communities, Works and Housing and Queensland Treasury as well as electrical industry stakeholders. Further detailed consultation with all stakeholders will follow any agreement to the drafting of the regulation proposed. Such regulation will be made under the authority of Section 210 of the Act which provides the necessary Regulation making power.

The implementation of the preferred Option 4, together with the other amendments outlined, will provide a sound foundation for building on the Government's climate change and renewable energy initiatives as well as fostering caring and safe communities for *Tomorrow's Queensland*.

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<sup>2</sup> These figures are projections derived from Queensland fatalities and shocks occurring within the period 2000-2010

## 1. ISSUES STATEMENT

Safety switches, also known as Residual Current Devices or Ground Fault Circuit Interrupters, can protect a person from harmful electric shock resulting from various causes including faults in electrical appliances, circuit wiring or misuse of electrical equipment. Safety switches can mean the difference between life and death when a fault does occur.

Safety switch install and test messages have been an ongoing part of the ESO communication activities since 2002 to encourage voluntary installation of safety switches throughout Queensland. Over the past eight years the communication strategy has included TV and poster (Adshell) campaigns, press advertising, brochures, media coverage and online content.

In June 2005, the Ombudsman released a report entitled "*The Workplace Electrocutation Project*" which was the compilation of nine investigations into twelve electrocutions. In part 7.2.2 of the report the Ombudsman stated that he would "*continue to monitor developments as they arise*" in relation to the adequacy of the voluntary uptake of safety switch installation throughout the community.

Despite the Queensland five year moving average of electrical fatalities decreasing over the past decade, over the five years to June 2010 there has been a turnaround in this trend. In the national comparison of electrical fatality rates for 2010, Queensland was ranked in sixth place, with only Western Australia and the Northern Territory recording worse results.

A review of cases of death by electrocution in Queensland in the ten years to 30 June 2010 reveals that safety switches could have prevented 76% or 25 of the 33 related electrical fatalities where safety switches could have been fitted. Eight of these deaths occurred in non-residential workplaces.

Since October 2009, there have been three Queensland electrical fatalities associated with the installation of ceiling insulation. All of these deaths could have been prevented had safety switches been fitted to all capable circuits.

The rapid emergence of climate change and sustainability initiatives is driving the wide-spread take-up of renewable energy technologies, such as solar power and heating, which introduce new forms of electrical installation activities and associated injury risks in domestic properties.

As the adoption of these technologies grows in Queensland's housing stock over time, increasing injuries and deaths are likely to result from contact with live unprotected circuits if electrical installations in such homes are not safety switch protected. It is important however that the balance between the efficiency benefits available to homeowners through early adoption of these technologies and improved safety outcomes is supported by the introduction of appropriate requirements in respect of safety switch protection.

As more than 80 percent of Queensland homes already have a safety switch fitted on power circuits, the retrofitting of solar hot water will not be considered in such cases as a trigger for the fitting of safety switches, under the preferred Option 3. Solar power generation installations are not safety switch compatible and will not initiate the requirements. Consumers adopting these technologies are however strongly advised to consider that fitting of safety switches on all unprotected circuits as part of the installation process.

The penetration of safety switches in Queensland homes and accommodation places has been driven by a combination of improvements to the *AS/NZS3000 Electrical installations* (known as the Wiring Rules), and government regulation. Changes to the Wiring Rules have required the fitting of safety switches on both power and lighting circuits in new and renovated residential properties progressively over the last twenty years, while government regulation has mandated the retrospective fitting of safety switches on power circuits in existing Queensland properties on sale and tenancy since 2002 and 2006 respectively.

The introduction of new regulation to further increase the uptake of safety switches will result in a need for additional electrical work. All wiring and electrical equipment requires maintenance over

time and it is expected that these new safety switch proposals will bring this work forward in time, further protecting Queenslanders from existing unsafe electrical wiring and equipment.

The regulatory options proposed will have both cost and benefit impacts for business, the community and government as all three sectors are stakeholders in the residential accommodation market. These impacts are discussed in detail in the Impact Assessment section of this document.

Maintaining the status quo as detailed at Option 5 will result in continuing electrocution deaths and shock injuries in circumstances where the means of addressing these risks is readily available and the cost per capita is small.

## **2. POLICY OBJECTIVES**

The purpose of the Act is directed at eliminating the human cost to individuals, families and the community of death, injury and destruction that can be caused by electricity. Each year people are killed and injured while using electrical equipment or installations that are either unsafe or not being used safely. In many cases, these incidents can be prevented or the adverse effects minimised by safety switches.

The Queensland Government has a longstanding commitment to increasing electrical safety in the community through requiring the installation of safety switches in certain domestic premises. The following domestic situations are now required to be protected by safety switches in Queensland:

- All new homes built after 1992 and before 2000  
Safety switches have been compulsory on all new power circuits in Queensland homes since 1992; so many Queenslanders already have a safety switch in their homes.
- All homes extended after 1992  
The requirement for fitting of safety switches to all new power circuits also applies to homes extended from 1992 as such electrical installation extensions are subject to the Wiring Rules standard applying at the time the work is undertaken. Homes built prior to 2000 which have had the electrical installation extended after 2000 to include additional lighting and power circuits will have safety switch protection on both lighting and power circuits.
- All new homes built from 2000  
Safety switches have been compulsory on all new power and lighting circuits in Queensland homes built since 2000 following the change in Wiring Rules, so some Queenslanders have safety switch protection on both power outlets and lights in their homes.
- Homes sold or transferred after 1 September 2002  
For homes that do not have a safety switch installed on power circuits and sold or their title transferred after 1 September 2002, licensed electricians may only perform electrical installation work on the home if a safety switch is installed as part of the work, or if it is an emergency. Sellers must declare on the sales contract (REIQ contract for houses and land) whether the home has a safety switch, as well as when completing the Department of Environment and Resource Management Form 24 (Property Information Transfer). If there is no safety switch on the premises, the buyer must have one installed on the power circuit within three months of the date of legal possession, with a maximum penalty of \$1,500 if this requirement is not fulfilled. This law applies to any home transfer including estate, Family Law and mortgagee transfers.
- All rental properties covered by residential tenancy agreements  
From 1 March 2006 legislation was introduced for the installation of safety switches on power circuits in rental properties within six months of any new residential tenancy agreement, with all rental properties covered by a residential tenancy agreement to have an approved safety switch on power circuits from 1 March 2008. This regulatory change was supported by a further Regulatory Impact Statement (RIS) associated with the *Electrical Safety Amendment Regulation (No 1) 2006*. As of 1 March 2008, it has been compulsory for owners of leased domestic residences subject to a residential tenancy agreement to have safety switches installed for all power points.

## ***Fatalities***

Although safety switches are a proven method of preventing harmful electrical shocks, they are not a substitute for proper electrical maintenance and safe practices and should not be viewed as a panacea for all electrical incidents. As a secondary means of protection, however, they provide the most practical and significant assurance against severe injuries and deaths from contact with electricity. Three electrocutions in the first three months of 2011 could have been prevented if safety switches were installed.

In the recent cases involving the deaths of three ceiling insulation installers, it is highly unlikely that these deaths would have occurred if safety switches had been fitted on all capable circuits in the properties involved. Additionally, the electric shocks and burns suffered by a fellow worker would also have been averted. These tragedies highlight the electrical risks associated with maintenance or other work increasingly undertaken by tradespersons and homeowners in domestic properties working in the vicinity of electrical wiring and equipment. Traditional examples include air-conditioning and as well as telecommunications technicians and plumbers. A safety switch is the most effective protection for workers and residents alike against such tragedies.

The rapid emergence of climate change and sustainability initiatives is driving widespread take-up of renewable energy technologies such as solar power and heating which introduce new forms of electrical installation activities and associated injury risks in domestic properties. These risks are also mitigated by the fitting of safety switches to all capable circuits in the subject electrical installation.

Safety switches also provide a primary method for obligation holders to discharge their electrical safety obligations under the Act in relation to the use of electrical equipment in places that provide accommodation to the public. Employers and the self-employed owners of rental or other accommodation places have an obligation under section 30 of the Act to ensure that their business or undertaking is conducted in a way that is electrically safe.

The installation of safety switches is a primary method of meeting this obligation. Currently, mandated retrospective fitting of safety switch protection on power circuits in residential accommodation applies only to existing domestic properties, whether owner-occupied or leased.

By extending the requirements to include temporary accommodation places (such as short-term holiday accommodation), the electrical safety protection available to permanent or temporary residents in Queensland, will be equitable. Further, the expansion of the current requirement so as to include all safety switch capable circuits will provide comprehensive protection to all Queensland residents and visitors.

In November 2009, the ESO circulated a discussion paper to industry and community stakeholders canvassing proposals for mandatory fitting of safety switches on power and lighting circuits in all residential electrical installations in Queensland.

Responses to this paper were generally supportive of the progressing of requirements for mandatory retrofitting of safety switches on lighting and power circuits in accommodation and domestic properties, and informed the development of the options in this paper.

Between October 2009 and February 2010, however, two of the three insulation installer fatalities occurred as a result of contact with circuits other than those supplying light and power. Accordingly, this paper also looks to safety switch provisions that extend beyond protection of the lighting and power circuits only.

In summary, the objectives of the regulatory options canvassed in this paper are to ensure the highest levels of electrical safety for occupants of domestic properties and temporary accommodation places. Not only will the options address the expected increase in electrocutions of workers in roof spaces but they will also protect householders and workers from inadvertent contact with unprotected circuits in all other areas of residential dwellings. The outcomes associated with the options proposed are therefore consistent with policy objectives and the purpose and intent of the Act.

### 3. OPTIONS AND ALTERNATIVES

The proposals canvassed in each option apply to the three types of residential accommodation detailed under Option 1 below and are presented in a phased approach, recognising that such significant proposals require a reasonable period of time to enable widespread adoption.

#### **Option 1 - Power and lighting circuits within a fixed period**

**Phase 1:** Introduction of a requirement as soon as is practicable for the mandatory fitting of safety switches on power and lighting circuits within three months of the sale or transfer of:

- properties used, or designed to be used, for temporary accommodation places e.g. short-term holiday accommodation, hostels, boarding houses, hotels, motels, on-site temporary and semi-permanent accommodation provided by caravan and holiday parks;
- all properties subject of a residential tenancy agreement; and
- all other domestic residential properties including pre-1992 residences and employer supplied accommodation.

**Phase 2:** Extension of the present mandatory requirement for retrospective fitting of safety switches on power circuits to include all lighting circuits:

- in all properties subject of a residential tenancy agreement, within 3 months of the signing of the lease or commencement of the proposed provision, whichever occurs first or, where the existing lease is for a term exceeding two years, before the expiry of a period of two years from the date of commencement of the provision; and
- application of the same mandatory requirements for all properties used, or designed to be used, as temporary accommodation places e.g. short-term holiday accommodation, hostels, boarding houses, hotels, motels, on-site temporary and semi-permanent accommodation provided by caravan and holiday parks to have safety switches fitted on power and lighting before the expiry of a period ending two years from the date of commencement of the provision.

**Phase 3:** Introduction of a requirement for the mandatory fitting of safety switches on power and lighting circuits in all other domestic residential properties, including pre-1992 residences and government and employer provided accommodation, before the expiry of a period ending five years from the date of commencement of the provision.

Option 1 - Pros	Option 1 - Cons
<ul style="list-style-type: none"> <li>• Increases protection for householders and tradespersons against risk of contact with live power and lighting circuits. In the last 10 years this would have resulted in 14 fewer deaths by electrocution.</li> <li>• Is consistent with Wiring Rules requirements for new domestic installations since 2000.</li> <li>• Provides a response to a publicly acknowledged electrical safety risk.</li> <li>• Consolidates existing safety switch requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Does not address exposures to other unprotected sub-circuits such as hot water, air-conditioning and electric stove installations.</li> <li>• Does not address residual (publicly acknowledged) electrocution risk.</li> <li>• Implementation of this option would not have prevented two of the four fatalities associated with domestic premises in 2009-10, nor 9 such fatalities in the last 10 years.</li> <li>• Imposes additional costs to many owners of domestic use properties.</li> <li>• Potentially a breach of Fundamental Legislative Principles by creating retrospective non-compliance in homes compliant with present requirements. There are however precedents for such an approach.</li> <li>• Does not address the increased electrical safety risks posed by the rapid take-up of renewable energy options such as solar generated power and hot water systems in domestic premises.</li> </ul>

**Option 2 – Power and lighting circuits when significant electrical work is undertaken**

Phase 1: As per Phase 1 of Option 1.

Phase 2: As per Phase 2 of Option 1.

Phase 3: Introduction of a requirement for all other domestic properties not already captured in Phase 1 for the mandatory fitting of safety switches on all lighting and power circuits when any electrical work modifying the electrical installation is undertaken. This would provide for a more discretionary approach to the requirement to retrofit safety switches in pre-1992 homes. This requirement would not apply where minor repair work or replacement of existing components in the installation is required, such as replacing an existing light fitting or ceiling fan where no modification of the installation is otherwise required.

Electrical work of the type listed below constitutes significant electrical work requiring the fitting of safety switches to circuits under this option and also under the preferred Option 4:

- rewiring of an existing domestic installation;
- replacement of switchboard;
- initial installation of electric stove or hot water system e.g. conversion from gas;
- installation of new air-conditioning circuit;
- additions to existing power, lighting, air-conditioning or ancillary circuits other than for the purposes of solar hot water or solar power generation;
- all work requiring installation of safety switches under the Wiring Rules as varied.

This option will enable owners of pre-1992 homes not otherwise dealt with in Phases 1 or 2 to better manage the timing of the mandatory safety switch installation to coincide with elective changes to their electrical installation, thus reducing the cost overhead of engaging a contractor specifically to fit the required safety switches. While Australian Bureau of Statistics (ABS) data indicate that electrical work is performed in a household on average every 4.4 years, this may include minor repair work excluded from the requirement.

Option 2 - Pros	Option 2 - Cons
<ul style="list-style-type: none"> <li>• Increases protection for householders and tradespersons against risk of contact with live power and lighting circuits. In the last 10 years this would have resulted in 14 fewer deaths by electrocution.</li> <li>• Is consistent with Wiring Rules requirements for new domestic installations since 2000.</li> <li>• Provides a response to a publicly acknowledged electrical safety risk.</li> <li>• Consolidates existing safety switch requirements.</li> <li>• Provides a timely and comprehensive government response to (publicly acknowledged) electrical safety risk, with greater control available to the householder over the associated costs.</li> </ul>	<ul style="list-style-type: none"> <li>• Does not address exposures to other unprotected sub-circuits such as hot water, air-conditioning and electric stove installations.</li> <li>• Does not address residual electrocution risk.</li> <li>• Implementation of this Option would not have prevented two of the four fatalities associated with domestic premises in 2009-10, nor 9 such fatalities in the last 10 years.</li> <li>• Imposes additional costs to many owners of domestic use properties.</li> <li>• Does not address the increased electrical safety risks posed by the rapid take-up of renewable energy options such as solar generated power and hot water systems in domestic premises.</li> <li>• Inconsistent with the Wiring Rules requirements for new domestic installations.</li> <li>• Imposes some additional costs to all owners of domestic use properties constructed in compliance with the Wiring Rules.</li> <li>• Renders currently compliant retrofitted installations non-compliant and thereby potentially breaches Fundamental Legislative Principles by creating retrospective non-compliance: however there are precedents for such an approach.</li> </ul>

### **Option 3 – All safety switch capable circuits within a fixed period**

In the period October 2009 to March 2010, the ESO consulted with stakeholders on proposals contained in Option 1, with feedback being generally supportive.

During this period of consultation, ceiling insulation workers were electrocuted in circumstances where an operating safety switch would have prevented the deaths. Two of the three deaths resulted from contact with unprotected ancillary circuits - a hot water circuit and a stove circuit - neither of which are currently required to be fitted with a safety switch under the Wiring Rules.

The third death would have been prevented had the requirements proposed under Options 1, 2 or 3 been implemented at the installation concerned. The recent widespread use of conductive foil ceiling insulation and the increasing popularity of air-conditioning, roof mounted photovoltaic (solar) cells, cable television and extensive renovation in existing domestic residences also increases the likelihood of contact by tradespersons and householders with the wiring of unprotected circuits and, to a lesser extent, those circuits protected under Options 1 and 2.

A phased approach is also proposed under this option as follows:

Phase 1: As per Phase 1 of Option 1 but with the requirement extended from power and lighting only to include all safety switch capable circuits.

Phase 2: as per Phase 2 of Option 1 but with the requirement extended from power and lighting only to include all safety switch capable circuits.

Phase 3: Introduction of a requirement for the mandatory fitting of safety switches on all safety switch capable circuits in properties, as described in Phase 3 of Option 1.

Option 3 - Pros	Option 3 - Cons
<ul style="list-style-type: none"><li>Increases protection for householders and tradespersons against risk of contact with all live safety switch capable circuits. In the last 10 years this would have resulted in a reduction in 17 recorded deaths by electrocution.</li><li>Provides a timely and comprehensive government response to a publicly acknowledged electrical safety risk.</li><li>Consolidates existing safety switch requirements.</li></ul>	<ul style="list-style-type: none"><li>Inconsistent with Wiring Rules requirements for new domestic installations.</li><li>Imposes significant additional costs to all owners of domestic use properties constructed in compliance with the Wiring Rules.</li><li>Renders presently compliant retrofitted installations non-compliant and is potentially a breach of the Fundamental Legislative Principles by creating retrospective non-compliance, although there are precedents for such retrospective requirements.</li></ul>

### **Option 4 – All safety switch capable circuits when significant work undertaken on any part of the electrical installation**

Phase 1: As per Phase 1 of Option 3.

Phase 2: As per Phase 2 of Option 3.

Phase 3: Introduction of a requirement for the mandatory fitting of safety switches on all safety switch capable circuits in all domestic residential properties not already captured in Phase 1, when any electrical work modifying the electrical installation is undertaken, other than work undertaken by, or on behalf of, an electricity distribution entity. This includes government and employer provided and pre-1992 residences.

This option would provide the same Phase 1 and 2 approaches as Option 3, however the third phase would provide for a more discretionary approach to the requirement to retrofit safety switches in pre-1992 homes. In this option, the home owner is required to have safety switches fitted to all safety switch capable circuits when sold, rented or when any significant electrical work modifying the installation is undertaken by a licensed electrical contractor, with no period specified for compliance with the provision. This requirement would not apply where minor repair work or replacement of existing components in the installation is required, such as replacing an existing light fitting or ceiling fan where no modification of the installation is otherwise required.

The type of significant electrical work which triggers the fitting of safety switches under this option is defined under Option 2.

This option will enable owners of pre-1992 homes not otherwise dealt with in Phases 1 or 2 to better manage the timing of the mandatory safety switch installation to coincide with elective changes to their electrical installation, thus reducing the cost overhead of engaging a contractor specifically to fit the required safety switches. While Australian Bureau of Statistics (ABS) data indicate that electrical work is performed in a household on average every 4.4 years, this may include minor repair work excluded from the requirement.

Option 4 - Pros	Option 4 - Cons
<ul style="list-style-type: none"> <li>• Increases protection for householders and tradespersons against risk of contact with all live safety switch capable circuits. In the last 10 years would have resulted in a reduction in 17 recorded deaths by electrocution.</li> <li>• Provides a timely and comprehensive government response to (publicly acknowledged) electrical safety risk, with greater control available to the householder over the associated costs than Options 1 and 2.</li> </ul>	<ul style="list-style-type: none"> <li>• Inconsistent with the Wiring Rules requirements for new domestic installations.</li> <li>• Imposes some additional costs to all owners of domestic use properties constructed in compliance with the Wiring Rules.</li> <li>• Renders currently compliant retrofitted installations non-compliant, and is potentially a breach of the Fundamental Legislative Principles by creating retrospective non-compliance, although there are precedents for such retrospective requirements.</li> </ul>

### **Option 5 – Status Quo**

Maintenance of the status quo position will result in the continuing and inequitable exposure of Queensland residents and visitors to the risk of death or injury from electric shock resulting from exposure to domestic electrical installations not currently required to be protected by a safety switch. The increasing economic focus on the domestic sector for renewable energy and climate smart initiatives may increase the electrical safety risk exposure of tradespersons and homeowners in the longer term.

The group of people left completely unprotected includes those in pre-1992 dwellings that have not been sold nor had their title transferred since the introduction of the mandatory requirement for fitting safety switches on power circuits in 1992.

Temporary accommodation places e.g. short-term holiday accommodation, hostels, boarding houses, hotels, motels, on-site temporary and semi-permanent accommodation provided by caravan and holiday parks will continue to be exempted from mandatory fitting requirements.

Option 5 - Pros	Option 5 - Cons
<ul style="list-style-type: none"> <li>• No additional cost to owners of domestic use properties.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintains inequitable levels of electrical safety of Queensland residents and visitors.</li> <li>• Level of electrical safety continues to be dictated by age of electrical installation.</li> <li>• Will not address fatality risk already identified within current arrangements.</li> <li>• Inconsistent with ESO's public safety warnings, and Ministerial Notices on the installation of ceiling insulation.</li> <li>• Absence of government response to acknowledged electrical safety risks.</li> <li>• The failure to regulate for the removal of safety switch bypass switches will result in continuing exposure to a proven electrocution risk of residents in affected premises.</li> <li>• Failure to mandate safety switches on all newly constructed homes and residential accommodation will maintain the current selective application of safety switch protection and fail to ensure comprehensive electrical safety coverage.</li> </ul>

### ***Additional amendment proposals***

Irrespective of which of the options is implemented, it is proposed to introduce a regulatory provision requiring the removal from existing installations of any electrical equipment designed to prevent the operation of a safety switch (typically a bypass switch). Bypass switches are not widely used, however some were installed by a number of licensed electrical contractors, mainly in North Queensland prior to 1992 in the early days of voluntary safety switch take-up. Their purpose was to address possible unwanted 'nuisance' tripping of early types of safety switches, caused by some older electrical appliances during periods of heavy rainfall and when the householder was absent from the premises for extended periods. Improvements in the design of both safety switches and electrical appliances have since largely addressed concerns over nuisance tripping. Refrigerators and freezers are now connected to safety switch protected circuits as a matter of course in new homes, without attendant tripping issues.

The requirement for the mandatory removal of bypass switches will align with requirements of the Wiring Rules and remove the potential for fatality in circumstances where such a bypass switch has been activated. There has already been one such fatality identified as a result of a bypass switch. With a suitable phase-in period, the work required to remove such devices will be able to be performed at negligible cost by a licensed electrical contractor at the time of undertaking other elective or maintenance work on householders' installations.

It is also proposed to introduce, as soon as is practicable, a requirement for the mandatory fitting of safety switches on all safety switch capable circuits in all new domestic and temporary accommodation places at the time of construction. Currently, the Wiring Rules do not mandate the fitting of safety switch protection on circuits other than lighting and power in new homes. The ESO and the Electrical Regulatory Authorities Council have written to Standards Australia requesting that safety switch requirements in the Wiring Rules be extended to cover all capable circuits in new homes. The procedure for revision of a standard is laborious and involves significant consultation, therefore any change will be subject to lengthy consideration.

The cost of fitting the additional safety switches at the time of the initial wiring and fit-out of a building will be negligible as the use of purpose-built products incorporating combination safety switch / over-current protection devices are now available. These devices reduce the time involved in installation and, as a result, largely offset any small, additional equipment cost. The introduction of this provision will mean that all newly-constructed dwellings and temporary accommodation premises will be constructed with comprehensive safety switch protection and, in doing so, would provide a cut-off in the number of new dwellings requiring retrofitting in the future to comply with Options 1, 2, 3 and 4 above.

### ***Discussion***

The ESO has been active in promoting the retrospective fitting of safety switches in domestic properties since 2002. The incidence of at least one safety switch in Queensland homes is estimated to be up to 83%,<sup>3</sup> which is significantly higher than in any other jurisdiction. By comparison, Victoria has at least one safety switch in up to 75% of homes, New South Wales in up to 76% and the Australian Capital Territory in up to 79%.<sup>4</sup>

In 2009-10 four fatalities were recorded in relation to domestic premises, all of which could have been prevented by a safety switch. Of those fatalities which could have been prevented by a safety switch over the past 10 years, 82% could have been prevented with a safety switch on power and lighting sub-circuits and 18% could have been prevented with a safety switch on a sub-circuit other than power and lighting (such as stove and hot water).

This provides a compelling case to strengthen the regulatory approach and to continue the safety switch marketing campaign to promote the changed requirements for safety switches in residential premises over an extended phase in period.

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<sup>3</sup> Derived from entity meter reader data June 2010

<sup>4</sup> ABS 4818.0.55.001 Household Preparedness for Emergencies

### ***Jurisdictional Legislative Comparison***

All states and territories in Australia mandate the fitting of safety switches in accordance with the Wiring Rules. Of all the states and territories in Australia and New Zealand, only Queensland and Western Australia require a higher standard of safety with respect to the retrospective fitting of safety switches in residences. The relatively high electrocution rates and more stringent safety switch requirements in Queensland and Western Australia appear to be counter-intuitive; however this is mainly due to the high fatality rates prevailing in these states prior to the introduction of their respective safety switch legislation.

In addition to the Wiring Rules, Western Australia now requires (since 9 August 2009) that safety switches be fitted to power and lighting circuits in residences on sale, transfer, lease or hire of the premises. Implementation of Option 2 would bring Queensland into line with Western Australian safety switch requirements, which are currently the most comprehensive in Australia and New Zealand.

The introduction of the requirements proposed under Options 3 or 4 will provide Queensland householders with the most comprehensive protection against death and injury from electric shock of the residents of any jurisdiction in Australia and New Zealand.

Options 1, 2, 3 and 4 would consolidate existing safety switch legislation by extending the current requirements to include owners of temporary accommodation and pre-1992 homes that have not been sold or leased since 1 March 2008 and 1 September 2002 (respectively) and by requiring all electrical sub-circuits to be protected. The community, business and government will be impacted by Options 1, 2, 3 and 4.

Compliance costs associated with the provision of accommodation where it forms part of a business or undertaking are a business expense and as such are likely to be tax deductible by the business owner.

### **4. IMPACT ASSESSMENT**

The cost of an electrician fitting a single safety switch is estimated to cost approximately \$205<sup>5</sup>, including call-out charges and set-up costs, and assuming major rewiring or a new switchboard is not required. In a few instances this additional work will be necessary and significant additional costs may be involved, although it is likely that such work would have been necessary in any case in order to maintain a functioning electrical installation over time. This outcome is likely to be confined to pre-1970's houses. Options 1, 2, 3 and 4 will simply bring forward the need for major electrical maintenance work in these instances.

The cost of fitting additional safety switches at the same time as the first safety switch will be cheaper, an estimated \$75 per unit, as a call-out fee and set-up time will not be required. The cost of fitting five safety switches is approximately \$505 with MEA estimating that the cost in some cases may be up to \$600.

Up to 3,822 temporary accommodation businesses, 1,291,500 residential dwellings, 420,000 privately rented dwellings covered by a residential tenancy agreement<sup>6</sup>, and 6,573 government-owned dwellings (public and staff housing), are estimated as needing to have one or more safety switches installed under Options 1, 2, 3 and 4.

There will be a positive economic impact as up to 7,800<sup>7</sup> licensed electrical contracting businesses will benefit from the additional work that Options 1, 2, 3 and 4 will provide.

The costs associated with each option are expressed in net present value (NPV) terms.

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<sup>5</sup> Based on Master Electricians Association (MEA) and ESO estimates, includes labour, call-out fee and single pole safety switch.

<sup>6</sup> Business, owner-occupied and rented dwelling numbers derived from Census 2006 data and OESR Census information briefs

<sup>7</sup> ESO Licensing database as at 26 August 2010

## ***Impact Assessment for Option 1***

Estimated Cost - \$292.5M – (NPV) over five years.

Estimated Benefits – a minimum of 42 lives saved and 7,589 potentially harmful electrical shocks prevented over 30 years post implementation, based on projection of the numbers of deaths and electrical shocks occurring within the period 2000-10.

### ***Business***

Temporary accommodation businesses are estimated to incur overall NPV costs of \$2.3 million over a period of two years. The overall economic effect of this will be wholly offset by the income received by electrical contracting businesses undertaking the work. It is expected that the funds will stay largely within Queensland due to the local nature of electrical services. In addition, owners of all forms of rental accommodation will have a capacity to mitigate installation costs as these represent a business expense.

Upward pressure on skilled labour should be moderated by Queensland's legislated reciprocal electrical licence recognition framework which allows interstate electricians to operate in Queensland, as well as the extended phase-in periods.

Temporary accommodation businesses include establishments such as short-term holiday accommodation, hostels, boarding houses, hotels, motels, on-site temporary and semi-permanent accommodation provided by caravan and holiday parks. It is expected that temporary accommodation businesses will vary substantially in terms of size and configuration and therefore in the number of safety switches required. In the absence of available data, it is assumed that some establishments such as hostels, boarding houses and caravan parks have fewer dedicated-use electrical sub-circuits on average than domestic dwellings; there will be fewer stoves and individual hot water systems, for example. This may not be the case for all hotels; for example, serviced apartments will have similar safety switch requirements as domestic residences.

There is a risk management imperative, especially within the hotel/motel sector, which is likely to see significant voluntary fitting of safety switches on both power and lighting. Typically, this sector uses shared hot water facilities, which in many cases are gas systems, and no in-room cooking facilities: therefore the numbers of safety switches required are estimated at two per room. However, in some cases there may be additional safety switches required. This sector is also likely to have contract maintenance arrangements, including electrical maintenance, and is therefore not subject to individual call-out fees.

The backpacker/hostel sector is closely regulated for fire and occupant emergency safety systems due to the higher risk associated with this type of accommodation. In many cases this will have extended to include the voluntary fitting of safety switches. This sector typically features shared cooking and bathing facilities, in many cases gas powered, which reduces the number of safety switches required per establishment.

### ***Community***

Up to 1,291,500 owner-occupiers and 420,000 owners of rental dwellings subject of a residential tenancy agreement will be affected by Option 1.

It is estimated that it will cost the community an NPV of \$291 million over a period of five years, or \$170 per dwelling. This amount reflects the segmentation of the Queensland housing stock by age and by the impacts of versions of the Wiring Rules and the Regulation over time with respect to safety switches.

The effect of Option 1 will be lessened by an estimated 21,500 householders likely to opt for the fitting of safety switches over removal of ceiling insulation under the federal Government's Foil Insulation Safety Program. Further reductions will come from the estimated 33% of Queensland households that use gas for heating or cooking; the estimated 42% of Queensland households that do not have air conditioning installed; and the estimated 1% that have already voluntarily installed safety switches to all sub-circuits.

### *Government*

As a result of previously funded initiatives, more than 90% of Queensland's public housing stock has already been fitted with safety switches to all capable circuits. Option 1 is expected to cost the Queensland Government \$1.5 million in NPV terms over a period of five years (costs correct as at November 2010) in respect to retrofitting of safety switches in government employee housing. The costs associated with the fitting of safety switches in Department of Communities' public housing are already being met through ongoing funded programs.

### ***Economic, Social and Environmental Analysis for Option 1:***

#### *Business*

The safety switch outlay required of temporary accommodation will be proportional to the size of the business (e.g. the more rooms/units, the more safety switches will be required). The outlay required for the fitting of safety switches is modest on average and the phase-in period of two years provides capacity for compliance within planned maintenance arrangements and is not therefore expected to result in otherwise viable businesses leaving the market. The increased demand for the fitting of safety switches by licensed electrical contractors may have a short to mid-term expansionary impact on the Queensland economy due to the economic multiplier effect.

From a social perspective, it is expected there will be fewer deaths (17), and fewer potentially harmful electric shocks (2,015), over a period of 30 years following implementation. Additional potential flow-on benefits which have not been quantified are cheaper insurance costs for labour (WorkCover premiums) and property, and a reduction in the number of fires relating to faulty electrical equipment.

#### *Community*

More employment opportunities are expected to be created in the electrical industry as a result of Option 1. In addition, less property and environmental damage caused by electrical fires which potentially could have been prevented by a safety switch (albeit a small number) is expected.

The social benefit derived from Option 1 is significant with an expected 25 lives saved and 5,574 potentially harmful electrical shock incidents prevented over 30 years following implementation.

#### *Government*

A short to mid-term economic expansion in the Queensland economy will be created by increased demand for the fitting of safety switches. Employment opportunities will increase for electrical workers, and more GST revenue will be generated.

### ***Impact assessment for Option 2***

This option delivers the same benefits to business, community and government as Option 2 and impacts the same cohort of residential premises and temporary accommodation businesses. Option 1 costs are accrued in five years and the bulk of compliance costs have been projected to occur in the fifth year.

The significant difference between Options 1 and 2 is that the costs and benefits of the latter option are derived over a longer period of 13.2 years. Therefore the effect resulting from the application of Nett Present Value discounting on the cost over this period results in a notional lower cost for this option.

**Summary of Net Impacts for Options 1 and 2:**

<b>Options 1 and 2</b>	<b>Costs</b>		<b>Benefits</b>
<b>Phase 1</b>	<b>Option 1</b>	<b>Option 2</b>	
Business	nil	nil	Cheaper business insurance (WorkCover, property), fewer deaths (2), fewer fires, fewer potentially harmful electrical shocks (242) over 30 years post implementation.
Community	\$51.4M pa	\$54.5M pa	11 lives saved, 2,424 potentially harmful electrical shock incidents prevented over 30 years post implementation, less environmental damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
<b>Phase 2</b>			
Business	nil	nil	Cheaper business insurance (WorkCover, property), fewer deaths (15), fewer fires caused by electrical faults, fewer potentially harmful electrical shocks (1,773), over 30 years post implementation.
Community	\$6.1M pa	\$6.1M pa	97 potentially harmful electrical shock incidents prevented over 30 years post implementation, less environmental damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
<b>Phase 3</b>			
Community	\$188.5M	Nil	14 lives saved, potentially harmful 3,053 electrical shock incidents prevented over 30 years post implementation, less environmental damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
Government	\$1.7M	\$1.7M	Economic stimulus and increased electrical protection for public and government employees. Reduction in the burden on the Queensland health system. Maintenance of a healthy workforce.
<b>Total</b>			
Business	nil	nil	Cheaper business insurance (WorkCover, property), fewer deaths (17), fewer fires, fewer potentially harmful electrical shocks (2,015), over 30 years post implementation.
Community	\$291M (NPV)	\$268.5M (NPV)	25 lives saved, 5,574 potentially harmful electrical shock incidents prevented over 30 years post implementation, less property damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
Government	\$1.5M (NPV)	\$1.5M (NPV)	Economic stimulus and increased electrical protection for public and government employees. Reduction in the burden on the Queensland health system. Maintenance of a healthy workforce.

### **Impact Assessment for Option 3**

Estimated Cost - \$544.1M (NPV) over five years.

Estimated Benefits – a minimum of 51 lives saved and 9,212 potentially harmful electrical shocks prevented over 30 years post implementation.

#### *Business*

The estimated net financial cost to business is nil for this option. It is expected that the \$6.6 million cost to temporary accommodation businesses will be wholly offset by the financial gain to electrical businesses operating in Queensland. In addition, owners of residential rental accommodation businesses will have a capacity to mitigate installation costs as these represent a business expense.

#### *Community*

The net financial cost to the community will be \$539.1 million or \$315 per dwelling for this option. The costs will be spread over 1,711,500 home owners and owners of rental properties subject of a residential tenancy agreement over a period of five years and two years respectively.

The effect of Option 3 will be lessened by an estimated 21,500 householders likely to opt for the fitting of safety switches over removal of ceiling insulation under the federal government's Foil Insulation Safety Program. Further reductions will come from the estimated 33% of Queensland households that use gas for heating or cooking; the estimated 42% of Queensland households that do not have air conditioning installed; and the estimated 1% that have already voluntarily installed safety switches to all sub-circuits.

#### *Government*

The NPV cost to government will be \$4.9 million for this option

### **Economic, Social and Environmental Analysis for Option 3:**

#### *Business*

The financial costs borne by temporary accommodation businesses will be offset completely as they are fed back into the business community via electrical tradespersons, creating a short to mid-term expansionary effect on the Queensland economy (economic multiplier effect). There will be fewer deaths (21), fewer fires caused by electrical faults (small number), and fewer potentially harmful electrical shocks (2,448), at businesses over 30 years following implementation. Additional potential flow-on benefits which have not been quantified are; cheaper insurance costs for labour (WorkCover premiums) and property.

#### *Community*

More employment opportunities are expected in the electrical industry and in the economy in general as a result of Option 3. This option would also result in less environmental and property damage from electrically-caused fires which could have been prevented by a safety switch (small number). Approximately 30 lives will be saved and 6,764 potentially harmful electrical shock incidents prevented over 30 years following implementation.

#### *Government*

A short to mid-term economic stimulus will be created by increased demand for the fitting of safety switches in the Queensland economy. Employment opportunities will increase for electrical workers and greater GST revenue will be generated. There will be reduced costs to the health system in dealing with the health effects of electric shock and burns victims.

**Summary of Net Impacts for Option 3:**

<b>Option 3</b>	<b>Costs</b>	<b>Benefits</b>
<b>Phase 1</b>		
Business	nil	Cheaper insurance premiums (WorkCover, property), fewer deaths (3), fewer fires, fewer potentially harmful electrical shocks (294), over 30 years post implementation, more employment opportunities (including apprenticeships) for electrical workers
Community	\$96.8M pa	13 lives saved, 2,998 potentially harmful electrical shock incidents prevented over 30 years post implementation, less environmental damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
<b>Phase 2</b>		
Business	nil	Cheaper business insurance (WorkCover, property), fewer deaths (18), fewer fires, fewer potentially harmful electrical shocks (2,154), over 30 years post implementation, more employment opportunities (including apprenticeships) for electrical workers
Community	\$11.7M pa	1 lives saved, 125 potentially harmful electrical shock incidents prevented over 30 years post implementation, less environmental damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
<b>Phase 3</b>		
Community	\$345.6M	16 lives saved, 3,641 potentially harmful electrical shock incidents prevented over 30 years post implementation, less environmental damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
Government	\$5.6M	Economic stimulus and increased electrical protection for public and government employees. Reduction in the burden on the Queensland health system. Maintenance of a healthy workforce.
<b>Total</b>		
Business	nil	Cheaper business insurance (WorkCover, property), fewer deaths (21), fewer fires caused by electrical faults, fewer potentially harmful electrical shocks (2,448), over 30 years post implementation, more employment opportunities (including apprenticeships) for electrical workers
Community	\$539.1M (NPV)	30 lives saved, 6,764 potentially harmful electrical shock incidents prevented over 30 years post implementation, less environmental damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
Government	\$4.9M (NPV)	Economic stimulus and increased electrical protection for public and government employees. Reduction in the burden on the Queensland health system. Maintenance of a healthy workforce.

## ***Impact Assessment for Option 4***

Estimated Cost - \$502.4M (NPV) over 13.2 years.

Estimated Benefits – a minimum of 51 lives saved and 9,212 potentially harmful electrical shocks prevented over 30 years post implementation.

### *Business*

This option is identical to Option 3 from a business perspective.

### *Community*

The only difference to Option 3 is the undefined period of time that home-owners have to install safety switches. The net financial cost to the community will be \$498 million for this option. The costs will be spread across 1,711,500<sup>8</sup> home owners at an estimated \$291 per dwelling over an estimated 13.2 year period and owners of rental properties subject of a residential tenancy agreement over two years.

The effect of Option 4 will be lessened by an estimated 21,500 householders likely to opt for the fitting of safety switches over removal of ceiling insulation under the federal government's Foil Insulation Safety Program. Further reductions will come from the estimated 33% of Queensland households that use gas for heating or cooking; the estimated 42% of Queensland households that do not have air conditioning installed; and the estimated 1% that have already voluntarily installed safety switches to all sub-circuits.

Owner-occupiers who fit safety switches when they have significant electrical work done are expected to have smaller relative costs due to economies of scale. For example, the call-out fee and the cost of the electrician setting up will be attributable to more than just the fitting of the safety switches.

ABS data<sup>9</sup> suggests that electrical repair and maintenance work on properties is carried out on average every 4.4 years. Safety switches must be installed during significant electrical work or following the sale or transfer of the property. This option assumes that almost all homeowners will have safety switches installed on all capable circuits by the end of 13.2 years (three times the average electrical work maintenance cycle of 4.4 years).

### *Government*

The NPV cost to government for this Option is estimated to be \$4.4 million<sup>10</sup>.

## ***Economic, Social and Environmental Analysis for Option 4:***

### *Business*

This option is identical to Option 3 from a business perspective.

### *Community*

In addition to the analysis provided for Option 3, there is a social benefit of facilitating a spreading of the costs of fitting safety switches for home owners, with compliance achieved after an estimated 13.2 years.

### *Government*

This option is identical to Option 3 from a government perspective.

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<sup>8</sup> This comprises 1,291,500 domestic, employer and government provided housing and 420,000 RTA leases derived from ABS data.

<sup>9</sup> ABS 4130.0.55.002 *Housing Mobility and Conditions, 2007-08* – repairs and maintenance (electrical work).

<sup>10</sup> This assumes that Government will be compliant within 10 years.

### Summary of Net Impacts for Option 4:

Option 4	Costs	Benefits
<b>Phase 1</b>		
Business	Same as Option 2	
Community	\$96.8M pa	13 lives saved, 2,998 potentially harmful electrical shock incidents prevented over 30 years post implementation, less environmental damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
<b>Phase 2</b>		
Business	Same as Option 2	
Community	\$11.7M pa	1 lives saved, 125 potentially harmful electrical shock incidents prevented over 30 years post implementation, less environmental damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
<b>Phase 3</b>		
Community	\$458.5M	16 lives saved, 3,641 potentially harmful electrical shock incidents prevented over 30 years post implementation, less environmental damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
Government	\$5.6M	Economic stimulus and increased electrical protection for public and government employees.
<b>Total</b>		
Business	Same as Option 2	
Community	\$498M (NPV)	30 lives saved, 6,764 potentially harmful electrical shock incidents prevented over 30 years post implementation, less environmental damage caused by electrical fires, more employment opportunities and apprenticeships in the electrical industry. Maintenance of a population of productive and participative community members.
Government	\$4.4M (NPV)	Economic stimulus and increased electrical protection for public and government employees.

### Impact Assessment for Option 5

Maintaining the status quo will not impact upon business, community or government.

#### Additional Amendments

With a suitable phase-in period, the work required to remove bypass switches will be able to be performed at negligible cost by an electrical contractor at the time of undertaking other elective or maintenance work on respective householders' installations. This will reduce the risk of electrocution to Queenslanders.

A requirement for the mandatory fitting of safety switches on all safety switch capable circuits in all new domestic dwellings and temporary accommodation at the time of construction will be able to be performed at negligible cost. Purpose-built products incorporating combination safety switch and over-current protection devices are now available. These devices reduce the time involved in installation and, as a result, largely offset any additional equipment cost.

The introduction of this provision will mean that all newly-constructed domestic and temporary accommodation premises will be built with comprehensive safety switch protection and, in doing so, would provide a cap on the number of houses for inclusion in the ongoing retrofitting program contained in Options 1, 2, 3 and 4 above.

## CONSULTATION

A discussion paper titled *'Safety Switches Save Lives: Proposals for mandatory fitting of safety switches on all residential electrical installations in Queensland'* was released by the ESO via website publication and mail-out on 6 November 2009. Stakeholders were given almost four months (until 26 February 2010) to provide feedback.

Some 50 stakeholder representative bodies made up of industry and consumer associations, government agencies, retailers associations, industry and employee representative peak bodies, real estate interests and electricity entities were consulted.

The Electrical Safety Commissioner and members of the Electrical Safety Board endorsed the discussion paper for release. The Electrical Safety Board includes employer, worker and community representatives.

Eleven stakeholder responses were received during the consultation period. The discussion paper addressed all relevant issues, however, its scope was at that time limited to proposals for fitting of safety switches on power and lighting circuits only.

During the time the discussion paper was out for consultation, three deaths associated with the installation of ceiling insulation occurred in circumstances which were not addressed in the discussion paper, driving a revision of the options presented. Options 3 and 4 of this Regulatory Assessment Statement (RAS) address these circumstances.

There was limited feedback given the scope of Queenslanders potentially affected by the policy proposal in the discussion paper. However, the feedback received was broadly supportive of the extension of safety switch penetration in Queensland residences, particularly using a phase-in approach. Concerns were raised over the following issues:

1. That the use of bypass switches be banned. This is addressed by the additional amendment discussed in Part 3 "Options and Alternatives" of this RAS.
2. Education was suggested on the regulatory changes and for the use and maintenance of safety switches. A specific communication strategy building on existing initiatives will be devised for any regulatory changes and an ongoing safety switch campaign managed by the ESO addresses education on safety switches. Part 8 of this RAS details the support strategy.
3. That the seller of a property bears the impost of the regulation and not the buyer, in line with smoke alarm requirements. This has not been addressed by the proposal as it is inconsistent with current safety switch requirements.
4. That a two-year phase-in process be used in conjunction with a six month lead time before the regulation is to take effect. Options 1, 2, 3 and 4 have a two year phase-in approach for landlords of domestic premises and temporary accommodation; all other domestic, government and employer-supplied residences have a five year (Options 1 and 3) and an estimated 13.2 year (Options 2 and 4) phased approach.
5. That the proposal goes beyond power and lighting circuits only. Options 3 and 4 propose the fitting of safety switches to all electrical sub-circuits.
6. That it be acknowledged that the nominal cost for installation of one safety switch is a general estimate and there may be instances where the cost will be greater. The impact analysis addresses this.
7. That compliance measures be strengthened. Part 8 of this RAS details the compliance support strategy.

## 5. PREFERRED OPTION

**Option 4 is the preferred option.** Option 4 delivers the maximum benefits of comprehensive safety switch protection for all Queensland residents while minimising the impact on business, community and government by spreading the costs and economic demand for skilled labour over an extended implementation period. While it is acknowledged that the same benefits will be realised earlier for Option 3, **Option 4 is preferable** as it is the more practical of the two while delivering the same longer term benefits.

Under the preferred Option 4 there are a number of triggers that would initiate the mandatory retrospective fitting of safety switches to all safety switch capable circuits for temporary accommodation properties, rental properties (subject to a residential tenancy agreement) and all other domestic residential properties. These triggers are as follows:

- Within three months of sale or transfer.
- When significant electrical work modifying the electrical installation, as listed below, is undertaken. (This does not include electrical equipment repair or replacement; e.g. replacing an existing light fitting or ceiling fan.)
  - rewiring of an existing domestic installation;
  - replacement of switchboard, unless the replacement is undertaken by, or on behalf of, an electricity distribution entity;
  - initial installation of electric stove or hot water system (e.g. conversion from gas);
  - installation of a new air-conditioning circuit;
  - additions to existing power, lighting, air-conditioning or ancillary circuits, other than for the purposes of solar hot water or solar power generation;
  - all work requiring installation of safety switches under the Wiring Rules as varied from time to time.
- Within three months of the signing of a new or continuing lease; or otherwise within two years for properties subject of a residential tenancy agreement.
- Within two years for temporary accommodation.

The total combined financial cost to community and government is \$38.1M annually, averaged over an estimated 13.2 years, with a total cost of \$502.4M (net present value). While the costs are finite, the benefits are ongoing as the life of a safety switch is expected to be in excess of 30 years. The average cost per household is estimated at \$291. Fitting the first safety switch is estimated at \$205 and comprises of labour, call-out fee and safety switch costs. The cost of fitting additional safety switches at the same time as the first safety switch will be cheaper, an estimated \$75 per unit, as a call-out fee and set-up time will not be required. The cost of fitting five safety switches is \$505, with MEA estimating that the cost in some cases may be up to \$600.

Over a 30-year period, the expected benefits estimated conservatively over the 30 years post implementation include the saving of 51 lives, prevention of 9,212 potentially harmful electric shock incidents with an attendant reduction in fires and environmental damage caused by electrical fault. Benefits also include a contribution to economic growth and improved employment outcomes in the short to medium-term, with long term increases in the supply of skilled electrical labour force through an increased uptake of electrical apprenticeships related to a sustained increase in demand.

The comprehensive approach to fitting safety switches on all sub-circuits (Options 3 and 4) provides maximum protection to all Queensland residents not provided by Options 1, 2 and 5. The phase-in period for all other domestic residential properties, including government and employer-provided accommodation (Option 4), is longer than that provided by Option 3 and allows the economy greater capacity to adjust to increased demand on skilled electrical labour by spreading the excess demand over a longer period and by increasing the uptake of electrical trade apprenticeships. Option 4 also allows those affected to spread associated costs over an extended period.

## **6. CONSISTENCY WITH OTHER POLICIES AND REGULATION**

The safety switch options and additional amendments proposed will not restrict competition and are a logical and consistent extension of the installation requirements of Part 5, Division 4 of the Regulation. They are also consistent with the policy objectives detailed previously in Section 2 of this RAS. The proposals are consistent with the federal Government's response to electrical safety risks associated with electrically conductive ceiling insulation. Further, the proposals are also consistent with legislative requirements introduced on 9 March 2010 for safety switch protection of all capable circuits whenever electrically conductive ceiling insulation material is to be fitted into a building.

### *Other jurisdictions:*

All states and territories in Australia mandate the fitting of safety switches in accordance with the Wiring Rules. Of all the states and territories in Australia and New Zealand, only Queensland and Western Australia require a higher standard of safety than the Wiring Rules with respect to the retrospective fitting of safety switches in residences. Implementation of Option 2 would bring Queensland into line with Western Australian safety switch standards, which are currently the most comprehensive in Australia and New Zealand.

The implementation of Option 4 would place Queensland as the leading jurisdiction in Australia and New Zealand in respect of comprehensive regulatory requirements for the retrofitting of safety switch protection in residential accommodation. This recognises Queensland's disproportionate burden of risk exposed by the three insulation deaths and the expected increase in electrical risk posed by growth in amenities and services involving work in ceilings.

## **7. IMPLEMENTATION, EVALUATION AND COMPLIANCE SUPPORT STRATEGY**

### ***Implementation***

- Implementation will be framed around a communication and media strategy involving multi-media information dissemination.
- Targeted advertising of requirements via brochure drop in electricity accounts will be investigated.
- Targeted seminars for the temporary accommodation industry.

### ***Evaluation***

The impact of the option implemented will be evaluated as follows:

- Reduction in the rate electrocution deaths and reported serious electrical incidents and dangerous electrical events in the domestic and temporary accommodation sectors, measured against national benchmarks.
- Penetration as assessed by Queensland's Office of Economic and Social Research, and electricity meter reader surveys.

### ***Compliance***

A dynamic compliance strategy underpins electrical safety enforcement which entails the focusing of resources according to on a risk based model. Resourcing requirements will be accommodated within existing funding arrangements over the phased rollout periods proposed.

Current compliance arrangements will provide the basis of future strategies. These include:

1. Monitoring of mandatory reporting records in accordance with existing legislated requirements on sale or transfer of property.
2. Review of Residential Tenancies Authority lease records pursuant to the requirement to fit safety switches within 3 months of lease.
3. Audit of take-up using meter readers survey data.
4. Audit of a sample of commercial temporary accommodation premises.