

GUIDELINE ON ELECTRICAL **SAFETY** MANAGEMENT PLAN AND PROGRAMME



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1.0 INTRODUCTION

Electrical safety management system is a framework of processes and procedures developed and applied to ensure that an organisation can fulfil all tasks required to achieve continuous improvement in electrical safety performance.

The Electricity Supply (Amendment) Act 2015 (Act A1501) was gazetted on the 5th of November 2015, and came into force on the 1st of January 2016 and among the main objectives for the amendment is to enhance the safety of consumers and industry personnel through the implementation of safety management systems to control electrical risks at electricity supply infrastructure and consumer installations.

Amongst others, Act A1501 requires a licensee who operates and maintains electricity supply infrastructure to prepare and comply with a safety management plan while a non-domestic electrical installation owner or operator, licensee for retail and licensee for private installation to prepare and comply with a safety management programme.

2.0 OBJECTIVE

- 2.1 To serve as a guide for licensees, owners, tenants, management, operators and contractors in the preparation of safety management plans or programmes as required under subsection 33A(2) and subsection 33B(2) of Electricity Supply (Amendment) Act 2015.
- 2.2 To ensure that the safety management plans or programmes that are prepared by licensees, owners, tenants, management, operators and contractors address all elements of an effective electrical safety management system namely policy, organising, planning and implementation, risk control measures, performance evaluation and action for improvement.
- 2.3 To ensure that electrical safety management plans or programmes are suitably and systematically developed and structured for the control of electrical risks of electricity supply infrastructure or non-domestic electrical installations.
- 2.4 To assist in assessing the level of performance and compliance with respect to the electrical safety management plan or programme of licensees, owners, tenants, management, operators and contractors as prescribed under Act A1501.



3.0 DEFINITION

In this Guideline, unless the context otherwise requires: -

- * **“electrical infrastructure safety code”** means a code developed, issued and registered by the Commission under section 50A on safety requirements, appropriate safety and technical standards, operation, maintenance and protection of the electrical system and other related matters for electricity supply infrastructure;
- * **“licensee”** does not include licensee for retail and a licensee for a private installation;
- * **“non-domestic electrical installation”** means a set of wires and associated fittings, equipment and accessories that is installed in a place for the conveyance, control or use of electricity that is, or is to be, or has been, supplied for consumption in the place, but does not include—
 - (a) any electricity supply infrastructure owned or operated by a licensee;
 - (b) any wires, fittings, equipment or accessories connected to and beyond any electrical outlet at which fixed wiring terminates, other than any such outlet used to connect sections of fixed wiring; or
 - (c) private dwelling premises.
- * **“non-domestic electrical installation owner or operator”** means a person who owns, uses, works or operates a non-domestic electrical installation;
- * **“non-domestic electrical installation safety code”** means a code developed, issued and registered by the Commission under section 50A on safety requirements, appropriate safety and technical standards, operation, maintenance and protection of the electrical system and other related matters for non-domestic electrical installation;
- * **“safety management plan”** means the safety, reliability, maintenance and technical management plan in respect of electricity supply infrastructure;
- * **“safety management programme”** means the safety, reliability, maintenance and technical management programme in respect of non-domestic electrical installation.

4.0 REGULATORY REQUIREMENTS

The respective provisions that need to be complied with under the Electricity Supply (Amendment) Act 2015 (Act A1501) are as follows: -

Subsection 33A.(1) "A licensee who operates and maintains any electricity supply infrastructure shall comply with any regulations made under this Act, the electrical infrastructure safety code or in the absence of such regulations or code, with standards and prudent utility practices as may be determined by the Commission."

Subsection 33A.(2) "A licensee shall prepare a safety management plan dealing with matters as may be prescribed in the electrical infrastructure safety code or in the absence of such code, with standards and prudent utility practices as may be determined by the Commission."

Subsection 33A.(3) "Any licensee who fails to prepare a safety management plan referred to in subsection (2) commits an offence and shall, on conviction, be liable to a fine not exceeding one hundred thousand ringgit or to imprisonment for a term not exceeding two years or to both."

Subsection 33B.(1) "A non-domestic electrical installation owner or operator registered under this Act, licensee for retail and licensee for a private installation shall comply with the non-domestic electrical installation safety code and the safety management programme, or in the absence of such code or programme, with standards and prudent industry practices as may be determined by the Commission."

Subsection 33B.(2) "A non-domestic electrical installation owner or operator registered under this Act, licensee for retail and licensee for a private installation shall prepare a safety management programme within such time as may be directed by the Commission."

Subsection 33B.(3) "The safety management programme referred to in subsection (2) shall provide for matters as may be prescribed in the non-domestic electrical installation safety code, or in the absence of such code, with standards and prudent industry practices as may be determined by the Commission."

Subsection 33B.(4) "A non-domestic electrical installation owner or operator registered under this Act, licensee for retail and licensee for a private installation who fails to prepare the safety management programme referred to in subsection (2) commits an offence and shall, on conviction, be liable to a fine not exceeding one hundred thousand ringgit or to imprisonment for a term not exceeding two years or to both."



5.0 WHO ARE RESPONSIBLE

This guideline is intended to assist the following responsible parties in fulfilling their safety responsibilities under Act A1501 with respect to the preparation and implementation of electrical safety management plan and programme.

- 5.1 Electricity Supply Infrastructure Licensees;
- 5.2 Retail Licensees;
- 5.3 Private Installation Licensees;
- 5.4 Owners, Tenants, Competent Persons and Operators of Non-Domestic Electrical Installations;
- 5.5 Owners, Management, Competent Persons and Operators of Electrical Infrastructure Assets; and
- 5.6 Electrical Contractors, Competent Persons and Workers working on Electrical Infrastructure Assets and Electrical Installations.

6.0 ELEMENTS OF SAFETY MANAGEMENT PLAN AND PROGRAMME

A Safety Management Plan for Electricity Supply Infrastructure and a Safety Management Programme for Non-Domestic Electrical Installation required for managing electrical risks should incorporate essential management elements of an effective safety management system as follows. However, the specific plan or programme may vary in their details depending on the nature of the electrical works and risks at the particular infrastructure or installation.

6.1 POLICY, PLAN AND PROGRAMME

6.1.1 Electrical Safety Policy, Plan/Programme:

The licensee/installation has a written policy, plan/programme to ensure electrical safety. The policy, signed by the top management, reflects management commitment to implement the plan/programme for the protection of employees and others who may be affected by the electrical installation. The objectives, responsibilities and arrangements for electrical safety management are spelled out.

6.1.2 Documentation:

Documents related to the electrical safety management system of the licensee/installation are maintained and readily accessible to employees and contractors. The documents contain information on electrical safety policy, plan/programme, risks identification and control measures, legal and regulatory requirements, and other relevant internal guidelines.

6.2 ORGANISING

6.2.1 Responsibility:

The top management of the licensee/installation demonstrates leadership for electrical safety plan/programmes and activities, and clearly assigns duties responsibility for electrical safety management to line management.

6.2.2 Competence:

Licensee's/installation's workers and contractors who are exposed to electrical risks are given adequate training and information on electrical safety. The company complies with the requirements under the Electricity Supply Act 1990 and Electricity Regulations 1994 pertaining to the need to engage registered electrical competent persons and contractors to perform electrical works according to their categories of competency.

6.2.3 Communication:

There is a communication programme to disseminate information on electrical risks and control measures to employees and others who may be affected by the risks. Warning signs are used to identify, warn and advise on electrical risks. Suitable administrative arrangements are in place for management to receive and follow up on suggestions and complaints on electrical safety matters.

6.3 PLANNING AND IMPLEMENTATION

6.3.1 Planning and Implementation:

The licensee's/installation's electrical safety management plan/programme supports:

- a. compliance with the Electricity Supply Act 1990, Regulations, Codes and Guidelines;
- b. implementation of all elements of the electrical safety management system;
- c. continual improvement in electrical safety performance.

The plan/programme provides details on programmes and activities to be implemented and the responsible personnel/units, budgets and targets in efforts to eliminate, minimize and control electrical risks at the installation.

6.4 RISK CONTROL MEASURES

6.4.1 Identification, Evaluation and Control of Risks:

Hazards and risks to workers and public are identified, evaluated and controlled on an ongoing basis. ('Hazard' is a potential source of harm or adverse health effect on a person or persons. 'Risk' is the likelihood that a person may be harmed or suffers adverse health effects if exposed to a hazard). Implementation of preventive and corrective control measures for hazards/risks are done according to the hierarchy of risk control as follows:



- a. elimination (completely eliminate the hazard/risk at source);
- b. substitution (substitute the hazardous activity, process or equipment with a less hazardous one);
- c. engineering controls (isolate the hazard from people who could be harmed);
- d. administrative controls (change the way people work or prevent people's exposure to hazards/risks such as by implementing a permit-to-work system);
- e. personal protective equipment (PPE) (provide PPE to cover and protect an individual person from hazards. PPE can be used as a temporary control measure until more effective control measures are provided. In most cases, a combination of other control measures and PPE can effectively control the risks).

6.4.2 Permit-To-Work System:

A written Permit-To-Work (PTW) system with suitable lock-out/tag-out procedures is effectively implemented for high risk electrical works that involves working with live equipment and systems. (A 'permit-to-work' is a formal, written, safe system of work to control potentially hazardous activities. It aims to remove both unsafe conditions and human error by imposing a formal system which requires formal action. The permit details the work to be done and the precautions to be taken. It should state safety precautions to be taken before work can start and the authorising person should only sign and date the permit when he is satisfied that all precautionary measures have been taken. It should only be in place for a limited duration, be clearly dated and with specific conditions attached. Permits should be issued, checked and signed off as being completed by someone competent to do so, and who is not involved in undertaking the work).

6.4.3 Emergency Preparedness:

A written emergency preparedness plan/programme for the licensee/installation is available and made known to employees and regularly rehearsed. The Plan details how the licensee/installation and its employees deal with or manage electrical emergencies. It spells out preparedness, response and recovery activities and clarifies emergency management roles and responsibilities, strategies and procedures to manage electrical emergencies at the installation.

6.5 PERFORMANCE EVALUATION

6.5.1 Investigation of Electrical-related Accidents and Incidents:

Investigations of the direct causes and indirect causes of electrical-related accidents and near-miss incidents are carried out by competent persons, with the appropriate participation of management and workers. Contributing factors arising out of any shortcomings or failures in the electrical safety management system are identified and documented. Recommendations for improvement are communicated to the top management for follow-up corrective actions.

6.5.2 Performance Monitoring and Review:

A system for licensee's/installation's management to regularly monitor electrical safety performance is established. Records and statistics of electrical accidents and near-miss incidents are kept and analysed, and root causes of accidents and incidents are addressed via short-term and long-term measures. Periodic internal audits of each of the elements of the electrical safety management system are carried out to identify the strengths and weaknesses of the system and to put in place improvement measures. Management reviews are conducted periodically to evaluate the overall strategy of the electrical safety management system.

6.6 ACTION FOR IMPROVEMENT

6.6.1 Preventive and Corrective Action:

Arrangements for preventive and corrective actions are established and updated based on the outcome of the ongoing electrical safety performance monitoring and review programme. When the evaluation of the electrical safety management system shows that preventive and protective measures are ineffective, corrective measures are addressed according to the hierarchy of risk control (refer 6.4.1) in a timely manner. Directives and notices issued by the Energy Commission are acted upon promptly and effectively.

6.6.2 Continual Improvement:

Plan/programmes and procedures are established for the continual improvement of the electrical safety management system. These take into account the results of risk assessments, performance measurements, investigations, audits, and changes in Electricity Supply Act 1990, Regulations, Codes and Guidelines, technical or administrative changes in the electrical installation, and the results of electrical safety protection and promotion plan/programmes. The electrical safety procedures, and performance of the electrical installation are benchmarked with other similar organisations to improve electrical safety performance.



7.0 AUDIT CHECKLIST

7.1 An electrical safety management system audit checklist based on the above management system elements is included in section 7.2. It is recommended that the checklist be used as a guide or benchmark by the responsible parties under the Act for assessing and gauging the level of effectiveness and compliance as well as the improvement measures that are required for the preparation and implementation of the effective electrical safety management plan and programme for each supply infrastructure and non-domestic electrical installation.

7.2 ELECTRICAL SAFETY MANAGEMENT AUDIT CHECKLIST

Name of Licensee/Installation : _____

Address of Licensee/Installation : _____

Competent Person/Manager In-Charge : _____

NO.	DESCRIPTION	Need to start	Need to improve	Effective
1.	POLICY, PLAN AND PROGRAMME			
1.1	Electrical Safety Policy, Plan/Programme: The licensee/installation has a written policy, plan/programme to ensure electrical safety. The policy, signed by the top management, reflects management commitment to implement the plan/programme for the protection of employees and others who may be affected by the electrical installation. The objectives, responsibilities and arrangements for electrical safety management are spelled out.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2	Documentation: Documents related to the electrical safety management system of the licensee/installation are maintained and readily accessible to employees and contractors. The documents contain information on electrical safety policy, plan, programme, risks identification and control measures, legal and regulatory requirements, and other relevant internal guidelines.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	ORGANISING			
2.1	Responsibility: The top management of the licensee/installation demonstrates leadership for electrical safety programmes and activities, and clearly assigns duties responsibility for electrical safety management to line management.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2	Competence: Licensee/installation workers and contractors who are exposed to electrical risks are given adequate training and information on electrical safety. The company complies with the requirements under the Electricity Supply Act 1990 and Regulations pertaining to the need to engage registered electrical competent persons and contractors to perform electrical works according to their categories of competency.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NO.	DESCRIPTION	Need to start	Need to improve	Effective
2.3	Communication:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	There is a communication programme to disseminate information on electrical risks and control measures to employees and others who may be affected by the risks. Warning signs are used to identify, warn and advise on electrical risks. Suitable administrative arrangements are in place for management to receive and follow up on suggestions and complaints on electrical safety matters.			
3.	PLANNING AND IMPLEMENTATION			
3.1	Planning and Implementation:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<p>The licensee's/installation's electrical safety management plan/programme supports:</p> <ol style="list-style-type: none"> compliance with the Electricity Supply Act 1990, Regulations, Codes and Guidelines; implementation of all elements of the electrical safety management system; continual improvement in electrical safety performance. <p>The plan/programme provides details on programmes and activities to be implemented and the responsible personnel/units, budgets and targets in efforts to eliminate, minimise and control electrical risks at the installation.</p>			
4.	RISK CONTROL MEASURES			
4.1	Identification, Evaluation and Control of risks:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<p>Hazards and risks to workers and public are identified, evaluated and controlled on an ongoing basis. ('Hazard' is a potential source of harm or adverse health effect on a person or persons. 'Risk' is the likelihood that a person may be harmed or suffers adverse health effects if exposed to a hazard.) Implementation of preventive and corrective control measures for hazards/risks are done according to the hierarchy of risk control as follows:</p> <ol style="list-style-type: none"> elimination (completely eliminate the hazard/risk at source); substitution (substitute the hazardous activity, process or equipment with a less hazardous one); engineering controls (isolate the hazard from people who could be harmed); administrative controls (change the way people work or prevent people's exposure to hazards/risks such as by implementing a permit-to-work system); personal protective equipment (PPE) (provide PPE to cover and protect an individual person from hazards. PPE can be used as a temporary control measure until more effective control measures are provided. In most cases, a combination of other control measures and PPE can effectively control the risks). 			



NO.	DESCRIPTION	Need to start	Need to improve	Effective
4.2	Permit-To-Work System:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<p>A written Permit-To-Work (PTW) system with suitable lock-out/tag-out procedures is effectively implemented for high risk electrical works that involves working with live equipment and systems.</p> <p>(A 'permit-to-work' is a formal, written, safe system of work to control potentially hazardous activities. It aims to remove both unsafe conditions and human error by imposing a formal system which requires formal action. The permit details the work to be done and the precautions to be taken. It should state safety precautions to be taken before work can start and the authorising person should only sign and date the permit when he is satisfied that all precautionary measures have been taken. It should only be in place for a limited duration, be clearly dated and with specific conditions attached. Permits should be issued, checked and signed off as being completed by someone competent to do so, and who is not involved in undertaking the work)</p>			
4.3	Emergency Preparedness:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<p>A written emergency preparedness plan for the licensee/installation is available and made known to employees and regularly rehearsed. The Plan details how the licensee/installation and its employees deal with or manage electrical emergencies. It spells out preparedness, response and recovery activities and clarifies emergency management roles and responsibilities, strategies and procedures to manage electrical emergencies at the installation.</p>			
5.	PERFORMANCE EVALUATION			
5.1	Investigation of Electrical-related Accidents and Incidents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<p>Investigations of the direct causes and indirect causes of electrical-related accidents and near-miss incidents are carried out by competent persons, with the appropriate participation of management and workers. Contributing factors arising out of any shortcomings or failures in the electrical safety management system are identified and documented. Recommendations for improvement are communicated to the top management for follow-up corrective actions.</p>			
5.2	Performance Monitoring and review:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<p>A system for licensee's/installation's management to regularly monitor electrical safety performance are established. Records and statistics of electrical accidents and near-miss incidents are kept and analysed, and root causes of accidents and incidents are addressed via short-term and long-term measures. Periodic internal audits of each of the elements of the electrical safety management system are carried out to identify the strengths and weaknesses of the system and to put in place improvement measures. Management reviews are conducted periodically to evaluate the overall strategy of the electrical safety management system.</p>			

NO.	DESCRIPTION	Need to start	Need to improve	Effective
6.	ACTION FOR IMPROVEMENT			
6.1	Preventive and Corrective Action:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Arrangements for preventive and corrective actions are established and updated based on the outcome of the ongoing electrical safety performance monitoring and review programme. When the evaluation of the electrical safety management system shows that preventive and protective measures are ineffective, corrective measures are addressed according to the hierarchy of risk control (refer 4.1) in a timely manner. Directives and notices issued by the Energy Commission are acted upon promptly and effectively.			
6.2	Continual Improvement:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Programmes and procedures are established for the continual improvement of the electrical safety management system. These take into account the results of risk assessments, performance measurements, investigations, audits, and changes in Electricity Supply Act 1990, Regulations, Codes and Guidelines. technical or administrative changes in the electrical installation, and the results of electrical safety protection and promotion programmes. The electrical safety procedures, and performance of the electrical installation are benchmarked with other similar organisations to improve electrical safety performance.			

7.	STATUS OF COMPLIANCE	YES	NO	REMARKS
7.1	Licence (Electricity supply activity at the installation has a valid licence)	<input type="checkbox"/>	<input type="checkbox"/>	
7.2	Registration (If required, the installation has a valid Certificate of Registration)	<input type="checkbox"/>	<input type="checkbox"/>	
7.3	Competent Persons (The company complies with the competency requirements as stipulated in the Regulations for the electrical works carried out at the installation)	<input type="checkbox"/>	<input type="checkbox"/>	
7.4	Safety Management Plan (The licensee has a satisfactory Safety Management Plan as required by the Electricity Supply Act 1990 and Electrical Infrastructure Safety Code)	<input type="checkbox"/>	<input type="checkbox"/>	
7.5	Safety Management Programme (The installation has a satisfactory Safety Management Programme as required by the Electricity Supply Act 1990 and Non-Domestic Electrical Installation Safety Code)	<input type="checkbox"/>	<input type="checkbox"/>	
7.6	Other related requirements under the Electricity Supply Act 1990 and Regulations, Codes, Guidelines and Directives	<input type="checkbox"/>	<input type="checkbox"/>	

		Need to start	Need to improve	Effective
8.	OVERALL EVALUATION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



9.	REMARKS (Areas for improvement, status of compliance with legal requirements, and follow-up actions to be taken):
SAMPLE	

Signature of Responsible Officer : _____

Name of Responsible Officer : _____

Organisation : _____

Date of Audit : _____

NOTE:

The audit process should include the review of relevant documents, random interviewing of personnel and inspection of infrastructure or installation. Below are the standards for grading the performance of the organization for each of the good practice:

GRADING	DESCRIPTION
Need to start	: The good practice described is not yet in place or if it in place, it is not implemented.
Need to improve	: The good practice is partially in place or partially implemented. There is room for improvement.
Effective	: The good practice is in place and effectively implemented.

8.0 ENERGY COMMISSION OFFICES

MAIN OFFICE ADDRESS: -

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62100, Putrajaya.

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Regional Office (Perak)	Tingkat 1, Bangunan KWSP, Jalan Greentown, 30450 Ipoh, PERAK	Tel: 05 - 253 5413 Fax : 05 - 255 3525
Regional Office (Kelantan & Terengganu)	Tingkat 6, Bangunan KWSP, Jalan Padang Garong, 15000 Kota Bharu, KELANTAN	Tel: 09 - 748 7390 Fax : 09 - 744 5498
Regional Office (Pahang)	Tingkat 7, Kompleks Teruntum, Jalan Mahkota, 25000 Kuantan, PAHANG	Tel: 09 - 514 2803 Fax : 09 - 514 2804
Regional Office (Selangor, Kuala Lumpur Putrajaya)	Tingkat 10, Menara PKNS, No. 17, Jalan Yong Shook Lin, 46050 Petaling Jaya, SELANGOR	Tel: 03 - 7955 8930 Fax : 03 - 7955 8939
Regional Office (Johor)	Suite 18A, Aras 18, Menara ANSAR, 65 Jalan Trus, 80000 Johor Bharu, JOHOR	Tel: 07 - 224 8861 Fax : 07 - 224 9410
Regional Office (West Coast of Sabah)	Tingkat 7, Bangunan BSN, Jalan Kemajuan, 88000 Kota Kinabalu, SABAH	Tel: 088 - 232 447 Fax : 088-232 444
Regional Office (East Coast of Sabah)	Tingkat 3, Wisma Saban, KM12, W.D.T., No. 25, 90500 Sandakan, SABAH	Tel: 089 - 666 695 Fax : 089-660 279
Regional Office (Negeri Sembilan & Melaka)	Tingkat 3, Wisma Perkeso, Jalan Persekutuan, MITC, 75450 Ayer Keroh, MELAKA	Tel: 06 - 231 9594 Fax : 06 - 231 9620



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