

energy

Bulletin

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Electricity network safety and reliability improvements

Readers will be aware that during the last 18 months some significant concerns emerged in relation to the safety and reliability of Western Power's interconnected electricity supply network across the south west corner of the State.

I am pleased to advise that Western Power is currently taking positive steps to address these concerns. The measures include:

- erecting some 650 intermediate poles into excessively long high voltage conductor spans identified in the south west and great southern rural areas, to reduce the likelihood of another Mt Barker or Tenterden type of fire due to conductors clashing;
- surveying other parts of the rural network to identify excessively long bays so that a further program of remedial work can be undertaken;
- addressing the frequency of pole top fires and their effect on reliability by coating existing insulators with silicone grease and replacing deteriorated wooden cross arms with steel equivalents and better insulators; and

- investigating the wider future use of concrete poles to replace timber poles.

In addition, the Bremer Bay township has already been converted to local generation to improve reliability of supply.

Western Power is now in the first year of its 4-year Rural Power Improvement Program, which will result in \$48m of extra expenditure to deal with other priority electricity supply reliability problems identified in rural areas.

All of the above actions have been either initiated or influenced by the outcomes of regulatory investigations carried out by Energy Safety, to protect the community. I believe this demonstrates the value of the regulatory framework. Energy Safety also acknowledges the good cooperation it has received from Western Power in respect of the remedial actions required.



ALBERT KOENIG
DIRECTOR OF ENERGY SAFETY

Unflued gas space heaters

In response to recent publicity about health concerns associated with emissions from unflued gas space heaters, Energy Safety is working closely with other Government departments and other States' regulators to develop a strategy for the best way to deal with the concerns.

In the meantime:

- the installation of gas 'bayonet points' needs to be carried out in strict compliance with the *Gas Standards (Gasfitting and Consumer Installations) Regulations 1999*;
- ventilation arrangements need to comply (refer to Gas Focus No 32 – July 2004 and additional important information in the enclosed Gas Focus of this edition); and
- consumers should be advised to use the appliances prudently, have the appliances serviced regularly (2-yearly) and ensure that the rooms in which they are being used are adequately ventilated.

Energy Safety



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Report on Activities 2003-04

This report on activities overviews the work of Energy Safety during the financial year 2003-04.

On 1 January 2004, Energy Safety ceased to be a "Directorate" of the Department of Consumer & Employment Protection and became the Energy Safety Division of the Department.

Subsequently, Energy Safety was restructured to provide better integration of its policy and operational roles for more effective delivery of services to industry and the wider community. The new structure improves the external visibility of the Division, from its customers' perspective, and allows Energy Safety to deliver better services in accordance with the State Government's high level strategic goals.

Energy Safety has three Directorates:

- (1) Electricity
- (2) Gas & Emergency Management
- (3) Regulatory Services.

Albert Koenig is the Executive Director of the Division and retains the statutory function of Director of Energy Safety. The Director Electricity is Kevan McGill and the Director Gas & Emergency Management is Geoff Wood.

The Director Regulatory Services is yet to be appointed.

Energy Safety's functions are unchanged and include:

- administering electricity and gas technical and safety legislation and providing policy and legislative advice to Government;
- setting and enforcing safety standards for electricity and gas networks;
- monitoring reliability and quality of energy supplies and investigating consumers' related complaints;

- setting and enforcing safety standards for consumers' electrical and gas installations;
- setting and enforcing safety and energy efficiency standards for consumers' electrical and gas appliances;
- licensing electrical contractors, electrical workers and gas fitters and carrying out accident investigations; and
- managing liquid fuel and gas supply emergencies and promoting energy infrastructure security and resilience.

Major policy work

Gas and electricity safety legislation amendment bill

Amendments to gas and electricity safety legislation were introduced into Parliament in October 2003.

The proposals had been the subject of two years of consultation and development. The key improvements proposed are increased order-making powers for Energy Safety inspectors in relation to dealing with electricity and gas network deficiencies and an increase in maximum penalties under the *Gas Standards Act 1972* from \$2,000 to \$20,000 for individuals and \$100,000 for corporations.

Electricity (Licensing) Regulations 1991

Energy Safety continued consulting with industry on proposed general changes to the *Electricity (Licensing) Regulations 1991*. The regulations cover the licensing of electricians, restricted electrical workers and electrical contractors, the regulation of standards of electrical work and the establishment of the Electrical Licensing Board.

The proposed amendments are close to finalisation and submission to Executive Council. It is expected that the amended regulations will be in force in 2005.

Safety of electricity networks

The safety of Western Power's 800,000 wood poles has been under scrutiny by Energy Safety during the year. Tenders were called for a consulting engineering company to assist Energy Safety with its planned compliance audit of Western Power's wood pole management systems.

Both the public and Energy Safety are concerned that Western Power meets its obligations in respect of the structural safety of these wood poles, as an increasing incidence of pole failures has been recorded, especially in country areas. Pole failures carry great risks for the community, through possible fatal electric shock from live, low wires and the risk of wildfires from wires clashing or touching the ground, trees or shrubs.



South-west electricity network improvements

In June 2003, Energy Safety released a report on its investigations of more than 270 complaints about frequent or extended power outages from electricity consumers in the Toodyay, Bremer Bay, Koorda, Naremben and Corrigin areas of the rural south-west of Western Australia.

Energy Safety provided a further report in September 2003 setting out recommendations to Western Power for dealing with the problems, together with related comments to help put the recommendations into an appropriate context.

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In May 2004, the Government announced a major increase in Western Power's network expenditure during the coming years, to deal with the types of problems that had been identified. Additionally, a special "Rural Power Improvement Program" was established, with special funding of \$49M over 4 years, to combat country area reliability concerns.

Quality and reliability of electricity supply

During the year, Energy Safety received 212 complaints regarding the quality or reliability of electricity supply. Based on a population of approximately 867,000 customers of electricity supplied through the Western Power electricity supply system, the 212 complaints received in total represent less than 0.1 per cent of all electricity customers.

Investigations into wildfires

Energy Safety investigated several major wildfires suspected of being caused by power line failures and released reports on its findings. Western Power is now undertaking an urgent remedial action program in the Great Southern and South Coastal Regions to prevent a reoccurrence of the disastrous Tenterden fire of December 2003.

Electrical appliance energy efficiency labelling and minimum energy performance standards

Energy Safety is actively involved in developing and enforcing legislation for Electrical Appliance Energy Efficiency Labelling and Minimum Energy Performance Standards and strengthening existing legislation. These activities are aligned with those of other States and Territories to capture the advantage of national uniformity in reducing greenhouse gas emissions from the use of electrical appliances and equipment.

Safety of gas installations

Energy Safety commenced a major audit of the consumer installation safety inspection practices of Alinta in October 2003. Like other gas suppliers, Alinta is required to monitor the standards of work of gas fitters through inspections and these provide assurance of safety for consumers. The audit was completed in June 2004 and covered metropolitan and country operations on a sample basis. A number of improvements that need to be undertaken were identified, including the need for Alinta's inspectors to be better supervised to ensure effective inspection practices.

Quality of gas

A total of 219 samples of Liquid Petroleum Gas (LP Gas) and natural gas were tested. Of these, 212 were found to comply with the gas quality specifications.

The quality of natural gas entering reticulation systems is monitored for quality against specifications contained within the *Gas Standards (Gas Supply and System Safety) Regulations 2000*. Monitoring programs include gas within the Dampier to Bunbury Gas Pipeline and Parmelia Pipeline, which both supply gas to the south west of the State, and the Goldfields Pipeline, which supplies Kalgoorlie. Insufficient natural gas odorant levels were found in four out of 139 samples.

A result for the quality of Autogas and heating grade LP Gas was obtained by taking 40 samples from service stations and LP Gas reticulation systems. Samples were assessed for compliance of the gas composition and odorant level requirements contained within the *Gas Standards (Gas Supply and System Safety) Regulations 2000*. Of the 40 samples taken, all were found to comply with the quality specifications and only three were found to contain insufficient levels of odorant.

General activities

Electrical and gas safety messages

Energy Safety developed several electrical and gas safety messages that were advertised on community radio stations. The safety messages alerted the general public to their personal safety responsibilities when using electricity or gas.

Electricity safety awards 2003

Energy Safety, in conjunction with the Electrical Contractors Association and Siemens, conducted its annual Electrical Safety Awards. The awards recognise electrical contracting companies that have excellent safety management processes that deliver very good safe work outcomes.

The 2003 winners of the awards were:

- ECA Systems P/L – in the category of less than ten employees
- Downer RML P/L – in the category of ten or more employees



Pictured at the Awards of Excellence 2003 are, from left to right, Terry Doyle of Siemens (co-sponsor of the Electrical Safety Awards), Graeme Scaddan of ECA Systems P/L (winner of the Category 1 Electrical Safety Award 2003), Bob Hatherley of Downer RML P/L (winner of the Category 2 Electrical Safety Award 2003), Rod Hale of the Electrical Contractors Association and Kevin Roshier of Energy Safety

Gas safety awards 2003

Energy Safety presented its annual Gasfitting Awards for the most outstanding apprentice in gasfitting. This award is held in conjunction with the Master Plumbers and Gasfitters Association's plumbing industry awards.

The 2003 winner was Alan Hall who went on to win the WA Apprentice of the Year award.



Kevan McGill, Deputy Director Energy Safety (right) presents Alan Hall with his Gasfitting Award.

Inspectorate recognised by Fire and Emergency Services Authority

Energy Safety's Gas and Electrical Inspectorates were recognised at the Fire and Emergency Services Authority of WA Community Safety Awards in 2003. Community Safety Meritorious Certificates were presented for "outstanding efforts in supporting and promoting community safety in Western Australia".

Energy supply security

Energy Safety continues its work at national level to improve capabilities including representation on National Oil Supplies Emergency Committee and the Energy Infrastructure Assurance Advisory Committee. These committees deal with measures to safeguard the operation of key services (liquid fuel, gas, electricity) in the face of threats and shortages (eg terrorism).

The Director of Energy Safety was appointed the Western Australian representative on the national Energy Infrastructure Assurance Advisory

Investigations and inspections

Investigations carried out by the Electrical Inspection Branch

Electricity Utilities – equipment and practice	22
Accidents – including fatalities	39
Breaches – Electricity Act and Regulations	269
Audits – contractor / refrig & aircond / appliance retailers	34
Appliances – prescribed and non prescribed appliances	36
Incidents – supply and community	55
Licensing – workers and contractors	9
Miscellaneous	263

Regulatory enforcement activities

Prosecutions completed:	
Licensed persons	46
Unlicensed persons	21
Warnings issued:	
Licensed persons	83
Unlicensed persons	48

Installation inspections

(Note: Most installation inspections are carried out by electricity network operators)

Investigations carried out by the Gas Inspection Branch

Network operators	13
Gas suppliers	4
Investigations (including fires)	107
Audits – appliances	49
Audits – appliance retailers	72
Audits – hire/camping companies	0
Appliance approvals – Type A	306
Appliance approvals – Type B	31
Mine sites	10
Authorisation holders	8
Regional inspections	42
Caravans/campervans	16
Autogas installations	43
Mobile food vending vans	67
Marine	6

Regulatory enforcement Activities

Prosecutions completed:	
Licensed Persons	9
Unlicensed Persons	4
Warnings completed:	
Licensed Persons	43
Unlicensed Persons	0

Installation inspections

Number of Notices of Defect issued on gas installations	14
Number of Inspector's Orders written where gas installations required maintenance or repair	24

Group, which is responsible for coordinating the activities of the various States and developing strategies to improve the resilience of critical energy infrastructure to withstand generic risks and threats.

National uniformity committees

Energy Safety participates in the Electricity Regulatory Authorities Council and the Gas Technical Regulators Committee, which comprise technical and safety

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regulators from all States and Territories of Australia and from New Zealand. These bodies seek to ensure uniformity in regulatory measures covering electricity or gas networks, consumers' installations, appliances and the licensing of industry personnel.

New areas of gas work

Energy Safety develops regulatory processes in line with advances in technology. The growing popularity of hydrocarbon as a refrigerant is one such new area of progress. Other areas of progress include the use of Liquefied Natural Gas and hydrogen to fuel vehicles and large isolated fixed installations. Gas fitters working on any of these systems need to do so in compliance with agreed codes and standards under a specific licence from Energy Safety.

Serious accidents and fatalities

The following information shows a downward trend in the number of serious electrical and gas accidents and fatalities. However, the numbers are still unacceptably high. Energy Safety intends to alert the community to this fact through an electrical and gas safety awareness program, provided adequate funding is made available.

Related to electricity

The following were reported to Energy Safety during the year:

Electric shocks:	1031
Serious electrical accidents:	29
Fatalities:	3

Briefly, the three fatalities were:

- An electrician was electrocuted while attempting to reconnect sub mains cables to the bottom of a circuit breaker and made contact with LIVE terminals.
- A refrigeration mechanic was electrocuted while replacing an evaporative air conditioner on a roof. He was using stainless

steel multigrips which came into contact with LIVE conductors.

- An electrician was electrocuted while attempting to rectify a fault in the damper controls of an air conditioner damper in a roof space. He made contact with LIVE terminals.

Serious electricity related accidents notified per 1,000,000 (million) population (not including wilful incidents)

Year	Number	Five year average
1993-94	28	24
1994-95	27	24
1995-96	21	24
1996-97	15	23
1997-98	11	20
1998-99	22	19
1999-00	15	17
2000-01	12	15
2001-02	11	14
2002-03	19	16
2003-04	15	14

Energy Safety obtains results by monitoring the number of reported accidents involving electricity within Western Australia. Regulation 63(1) of the *Electricity (Licensing) Regulations 1991* requires every member of the community, consumer or industry to report electricity caused accidents that have resulted in or are likely to cause danger to life or property, to the Director of Energy Safety and the relevant supply authority.

The electrical accident rate for the reporting period was 15 accidents per one million population, a decrease from 19 per million in the previous year, but still unacceptably high.

It is recognised that an expectation of no accidents is idealistic. Energy Safety therefore endeavours to achieve a downward trend, which shows the 5-year average at 14. The Western Australian population,

as reported by the Australia Bureau of Statistics for the December 2003 quarter was 1,969,000.

Related to gas

The following were reported to Energy Safety during the year:

Incidents:	107
Accidents (persons injured):	14
Fatalities:	1

The fatality involved an elderly resident who died when a gas fired space heater was accidentally knocked over and set fire to her residence.

Gas related accidents notified per 1,000,000 (million) population (not including wilful incidents)

Year	Number	Five year average
1993-94	9	12
1994-95	5	10
1995-96	20	8
1996-97	4	8
1997-98	6	7
1998-99	5	6
1999-00	3	6
2000-01	7	5
2001-02	8	6
2002-03	9	6
2003-04	7	7

Regulation 42 (1) of the *Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999* requires any incident involving gas that causes or is likely to cause injury to a person or damage to property to be reported to the Director of Energy Safety or gas supplier. Such accidents are defined as those resulting in injury and assessed as having gas as the primary cause.

The gas accident rate for the reporting period was seven accidents per one million population, a decrease from nine per million in the previous year.

While Energy Safety endeavours to achieve a result of nil, this

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expectation of no accidents is idealistic. Performance during 2003-2004 has resulted in the 5 year average of 7 injuries per million. The Western Australian population, as reported by the Australia Bureau of Statistics for the December 2003 quarter was 1,969,000.

Licensing of industry operatives

Electrical licensing

At 30 June 2004, there were **25,425** electrical workers, **3,119** electrical contractors and **235** in-house licence holders registered.

The Electrical Licensing Board grants licences to eligible electrical operatives and conducts formal disciplinary proceedings against errant operatives.

Members of the Electrical Licensing Board as at 30 June 2004 were:

- Mr P Jensen – Chairman
- Mr J Murie – Representing the interests of electrical workers
- Mr J Sweeting – Representing the interests of electrical contractors
- Mr R Butterworth – Representing the interests of electrical workers with restricted licences
- Mr G Brundish – Representing the interests of large businesses, who are consumers of electrical services
- Mr R Forrest – Representing the interests of small businesses, who are consumers of electrical services
- Ms Valdene Buckley – A residential consumer of electrical services
- Mr K Rosher – Nominated by the Director of Energy Safety



Members of the Electrical Board (standing, left to right) Jim Murie, Rod Butterworth, Kevin Rosher, John Sweeting, Gerry Brundish, Ian George (Acting Executive Officer) and Robert Forrest and (seated, left to right) Peter Jensen (Chairman) and Valdene Buckley

The Electrical Licensing Board met **20** times during the year. The Board also conducted **18** investigations including **two** formal disciplinary proceedings. The outcomes were:

Electrical contractor licences cancelled	1
Electrical worker licences cancelled	2
Electrical contractor licences suspended	6
Electrical worker licences suspended	8
Operatives required to undertake a competency assessment	10
Operatives censured	2
Operatives required to undertake further training	7

Gas licensing

At 30 June 2004, there were **5,985** persons registered for gasfitting work.

The Gas Licensing Committee, operating under the delegated authority of the Director of Energy Safety, interviewed **3** gas fitters. This resulted in two formal inquiries which were conducted under the delegated authority of the Director of Energy Safety. The outcomes were:

Permits cancelled	0
Permits suspended	1
Certificates of Competency suspended	1
Certificates of Competency cancelled	0
Gas fitters required to undertake further training	1
Conditions placed on licence	1

The following table provides a summary of prosecution action for breaches of the *Gas Standards Act 1972* and *Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999*:

Breach	Number of Offences	Fines (\$)	Court Costs (\$)
Section 13A(2)	6	4,609.70	1,750.80
Regulation 8	1 (multiple offence)		
Regulation 13A(2)	2	900.00	862.70
Regulations 26 & 28	11	7,200.00	1,143.10
Regulation 30(1)	1	2,150.00	555.40
Totals		14,859.70	4,312.00

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The following table provides a summary of prosecution action for breaches of the *Electricity Act 1945 and Electricity (Licensing) Regulations 1991*:

Breach	Number of Offences	Fines (\$)	Court Costs (\$)
Section 33B(2)	2	6,300.00	665.20
Section 33F	3	15,000.00	2,015.40
Regulation 19(1)	9	6,900.00	2,934.30
Regulation 33(1)	5	2,850.00	833.45
Regulation 49(1)	5	3,750.00	1,416.38
Regulation 50A	3	1,450.00	1,933.34
Regulation 50(1)	2	1,250.00	1,000.00
Regulation 52(1)	4	3,050.00	1,361.31
Regulation 52(3)	6	5,100.00	2,926.47
Regulation 53(2)	4	5,000.00	3,103.85
Regulation 62(1)	1	375.00	700.00
Regulation 63	3	1,125.00	1,301.95
Totals		52,150.00	20,191.65

Other policy work

Energy Safety is significantly involved in a number of national regulatory coordination and technical standards bodies, including:

- National Regulatory Coordination Bodies
 - Electrical Regulatory Authorities Council (ERAC)
 - Gas Technical Regulators Committee (GTRC)
 - National Appliance and Equipment Energy Efficiency Committee (NAEEEC)
 - National Oil Supply Emergency Committee (NOSEC)
- National Standards Councils, Boards and Committees
 - Council of Standards Australia (representing the Government of WA)
 - Standards Accreditation Board
 - Electrotechnology Sector Standards Policy Board
 - Gas Technical Standards Council
 - AG6 Gas Installations
 - AG9 Natural Gas Vehicle Technical Standards
 - AG10 Specification for Natural Gas Quality
 - AG11 Gas Component & Industrial Equipment Standards Committee
 - CH-038 Liquefied Petroleum Gas
 - EL1 Wiring Rules and related sub-committees
 - EL2 Electrical Appliance Safety
 - EL4 Electrical Accessory Safety
 - EL11 Electricity Metering
 - EL42 Renewable Energy Power Supply Systems
 - EL43 High Voltage Electrical Installations
 - ME46 Gas Fuel Systems for Vehicle Engines.

Legislation administered

The Director of Energy Safety and Energy Safety assist the Minister for Energy to administer the following Acts of Parliament and associated regulations:

Electricity Act 1945 – covers the powers and obligations of supply authorities, certain powers of inspection, the safety and energy efficiency of electrical appliances and extensive regulation-making powers.

Energy Co-ordination Act 1994 – provides for the statutory office of the Director of Energy Safety and determines the powers of Inspectors.

Fuel, Energy and Power

Resources Act 1972 – provides for the conservation and utilisation of the present and future sources and supplies of fuel, energy and power in and to Western Australia.

Gas Standards Act 1972 – deals with the standards of purity, pressure and safety of gas supplied, the inspection of gas installations, the regulation of the practice of gasfitting (including licensing), the approval of gas appliances and extensive regulation-making powers.

Electricity (Licensing) Regulations 1991 – provides for the licensing of electrical operatives and standards of electrical installing work.

Electricity (Supply Standards and System Safety) Regulations 2001 – covers the quality of supply of electricity to consumers and apply to supply authorities.

Electricity Regulations 1947 – covers the safety of electrical appliances

Gas Standards (Gasfitting and Consumer Gas installations) Regulations 1999 – provides for the licensing of operatives and standards of gas installation work.

Gas Standards (Gas Supply and System Safety) Regulations 2000 – covers gas supply quality.

International hydrogen fuel cell bus project arrives in Perth

The Perth Fuel Cell Bus Trial has commenced with three hydrogen fuel cell buses being trialled on normal service routes for two years (see previous article in Energy Bulletin No. 28 – July 2003).

Energy Safety has been working with the Department for Planning and Infrastructure to ensure that the fuel cell installations of the trial buses meet regulatory requirements.

The Western Australian Government through the Department for Planning and Infrastructure owns the three fuel cell buses. Path Transit is operating them as part of the Transperth public transport system.

BP is supplying the hydrogen fuel for the trial, produced from their refinery at Kwinana.

The buses are to be fuelled with approximately 44 kg (1,890 L) of hydrogen in nine cylinders stored on the roof. The fuel cell modules generate electrical power (205 kW)



as a result of electrochemical reaction between the hydrogen and oxygen in the air that flows through the fuel cell. The fuel cell engine and nearly all of the associated plant is located on the roof of the bus. The electrical power is used to drive the electric motor at the rear of the bus. The buses are reputed to produce no greenhouse gases or smog-creating emissions.

Safety tests performed for the United States Department of Energy have found that the technologies being developed for storing hydrogen in a fuel cell vehicle are actually safer than storage of petrol.

Further details of this trial are available on DPI's website <http://www.gov.au>.

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