

safe energy safe people

2003 - 2004 Annual Review

Annual Review of the Energy Safety Service for the period July 2003 - June 2004



energysafetyservice

te ratonga whakaruru pūngao

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Vision

safe energy safe people

Purpose

The Energy Safety Service is the government agency responsible for administering legislation in the management of safety, supply quality and measurement for electricity and gas, as well as petroleum fuel quality.

The ESS's role is to build an environment that:

- safeguards people and property from the dangers of electricity and gas
- requires safe electrical and gas appliances and installations, safe electricity and gas supply, and safe electricity generating systems
- delivers quality and accurate measurement in electricity and gas
- monitors quality in petroleum fuels.

The Energy Safety Service is a part of the Consumer Affairs branch which is an operating branch of the Ministry of Economic Development (MED).

Introduction

The Energy Safety Service: meeting safety challenges in a changing world

Over the past year, the Energy Safety Service (ESS) has responded to the challenge of being a modern, effective regulator in a fast-changing environment.

As an organisation, we have many roles to perform. The ESS contributes to the Government's wider aims of encouraging economic growth, innovation and investment. We are part of New Zealand's effort to become more connected with international markets, especially Australia, through trade and harmonised regulatory environments.

At the same time, we remain responsible for the very important task of administering the laws relating to energy safety in ways that achieve consumer safety and supply quality. This is our bread-and-butter work – compliance and enforcement; the development of standards and codes; research, monitoring and surveys; and providing information to the public and industry.

It is only by understanding the wider domestic and international dimensions of this core work, and by balancing our many roles, that we will remain relevant and effective as a regulator.

The past year has been a very active one for the ESS – for example, in international forums where we are driven by two main imperatives. First, we further the Government's aim to develop formal trading relationships with a growing number of countries. Secondly, we recognise that safety issues are increasingly addressed at an international level. As the number and diversity of electrical products entering the New Zealand market escalates, the safety regimes of other countries have a direct bearing on New Zealand consumers. It therefore makes sense for New Zealand to influence good international regulatory practice wherever it can.

A good example of how these two objectives can be pursued in tandem is in the proposed Free Trade Agreement with China. Negotiations were due to begin in late 2004, starting with the electrical products sector, but most of the preparatory work took place during the 2003/04 year. Obviously, the trade benefits of such an agreement with the world's largest consumer market are great. Not only does New Zealand import some \$450 million worth of electrical equipment from China, but many New Zealand manufacturers in the energy sector are establishing manufacturing bases there.

But a trade agreement with China also offers consumer safety advantages. China has become the dominant supplier of electrical equipment to New Zealand, after Australia. Through the negotiation process leading to the formal trade agreement, the ESS can influence the safety standards of those products and thereby better protect New Zealand consumers from risk.

It is the same rationale which has seen the ESS work closely with Australia to more closely align our regulatory regimes through performance-based standards, and our approaches to managing risk. Over the past year, we have continued to harmonise our electrical appliance regimes, and have begun to review the joint wiring rules.

Within New Zealand too, the environment is changing, requiring the ESS to take a fresh look at managing risk. A more competitive commercial environment is prompting some in the electrical and gas industries to 'cut corners' in their operations and maintenance. In the past year, we have identified several problem areas and worked with industry to overcome them.

Where necessary, we can use enforcement measures to change practices; however, it is far preferable for the industry to initiate change itself. In this respect, it was particularly pleasing to see voluntary industry partnerships established during the year to tackle public safety issues that are regularly highlighted in accident statistics.

For as much as the external environment may change, some things stay the same. Too many New Zealanders – electrical and gas workers, and the general public – are still dying in energy-related accidents. Poor work practices; poor maintenance of industry assets; a lack of understanding of risks; products that are of poor quality and badly maintained: these are perennial themes in the accident statistics.

In the past year, the need to change such behaviours has underlined the ESS's day-to-day business activities such as compliance, monitoring and administration of the regulatory regime. But we have also pursued change more proactively – through partnerships with industry, targeted public information campaigns, and by working with the international partners whose regulatory regimes increasingly shape our domestic safety environment.



Graham Boxall

Operations Manager, Energy Safety Service

Key Initiatives

Safety of LPG cabinet heaters investigated

LPG cabinet heaters have recently been implicated in several tragic accidents, including the deaths of twin girls in a 2003 house fire in Hastings. Over the past eight years, 44 accidents involving LPG heaters in homes have been reported.

In response to widespread concerns about the safety of these appliances, the Environmental Risk Management Authority (ERMA) commissioned a major report into their use in December 2003. It is expected that the report will be released in August 2004.

In winter 2004, the ESS joined forces with the LPG Association to ensure swing tags with safety information were attached to all LPG cylinders at the time of refilling.

Industry partnerships tackle safety

Over the past year, the ESS has been a catalyst in bringing together network operators and other industry groups in an unprecedented effort to tackle public safety issues relating to electricity networks.

Two main areas of attention reflected recent accident trends. First has been raising public awareness of the hazards around electricity networks, especially high voltage works. The other has been the need to prevent unauthorised access to electricity networks, with a particular emphasis on children's safety.

Some smaller campaigns targeted 'seasonal' safety issues. Backed primarily by funding from industry itself, with support from the ESS, working groups have commissioned advertisements and resource kits for schools. High-profile advertisements in print and electronic media and on billboards have ensured that these important safety messages hit home.

Tree arbitration underway

An important electrical safety milestone was reached in September 2003 with the passing of the Electrical (Hazard from Trees) Regulations.

This legislation replaced regulations that previously applied only to horticultural shelter belts; the idea that all trees should be included was first mooted 18 years ago. The new regulations address the safety problems caused by trees encroaching on overhead electricity lines, and set out a process whereby line owners and tree owners can keep trees clear of the lines. The Government fast-tracked the regulations following a high-

profile accident where a child was badly burned after touching high voltage power lines while climbing a tree.

Under the new regulations, three tree arbitrators have been appointed to resolve disputes.

Safety initiatives with Maori

In 2004, the ESS's energy safety awareness programme targeted at Maori in Taitokerau (Northland) entered its second and final year. Over the year, staff from Head Office and Auckland regional office provided several Maori organisations with information and training aimed at increasing their capacity to share and promote safety messages with the community.

A key achievement for the ESS was forming a valuable strategic relationship with the New Zealand Fire Service.

Through its Te Kotahitanga programme, the Fire Service trains long-term unemployed Maori as Fire Service Ambassadors responsible for delivering key fire safety messages to families and communities. The aims of the programme dovetail well with the ESS's objectives in Taitokerau, and the ESS has been invited to include its energy safety awareness programme as a module in the Fire Service Ambassadors' training programme. Support material for the Ambassadors and the public will be produced jointly by the ESS and the Fire Service over the coming year.

Case Study: Industrial LPG Portable Heater Gas Leak & Fire

A 'frost machine', a mobile industrial heater supplied by four LPG cylinders, was being towed behind a tractor in a vineyard to raise the temperature above the frost level on a cold morning. The ground was rough, and the trailer connection worked loose and separated it from the tractor. The trailer arm dropped, snapping the safety cord connected to the burner valve, but apparently turning it off. Seeing a small flame around the regulator, the operator attempted to turn off the gas at the regulator, not realising it was damaged.

The resulting unregulated flow of gas produced a large flame which caused burns. The injured man managed to turn off the cylinders and then called Occupational Safety and Health Service (OSH). The engineering design of the machine was unsatisfactory, and the operator's action in trying to turn it off at the regulator was incorrect.

Legislation, Codes and Standards

The progress through Parliament of the Energy Safety Review Bill – the legislative framework for EnergySafe, the new energy safety regime developed by the ESS and Occupational Safety and Health Service (OSH) with industry and consumers – was slower than anticipated. By the end of June 2004, the first draft had been completed with input from the EnergySafe Working Party. Once the Bill is tabled, there will be ample opportunity for more input from industry and other stakeholders through the select committee process.

Throughout the year, uncertainties surrounding the progress of the legislation prevented industry from implementing actions identified in PowerSafe, the electricity industry's Strategic Safety Plan launched in 2002.

Work continued on the principles and logistics of a proposed LPG Safety Levy during 2003/04. This proposal would see the introduction of a levy in the order of \$6 per tonne on LPG sales, replacing the government funding the ESS currently receives for its LPG monitoring activities. It is hoped that this proposal will be brought into force through the Energy Safety Review Bill.

Electricity

Refinement of Electrical Appliance Safety Regime

The regulatory regime in New Zealand continued to be fine-tuned over the past year. These refinements took place alongside the development of a 'blueprint' for a new trans-Tasman regulatory regime. This was aimed at increasing compliance, clarifying suppliers' responsibilities, and providing a greater level of responsiveness to market changes.

Electricity Standards

Supporting the development and refinement of safety standards for electrical networks, installations and products remained a major part of the ESS's work programme, with some 134 standards and amendments published in 2003/04.

Improving standards is an important way for the ESS to influence safety outcomes and change behaviour in New Zealand. With the growing 'internationalisation' of standards, the ESS is also working to influence the standards and conformance regimes of other countries in order to improve safety and promote New Zealand's trade interests.

Case Study: Electric Accident and Non-compliant Installation

The occupant of a caravan parked next to a house received an electric shock when he stepped outside. He was barefoot at the time, and when he touched the metal hand rail of the caravan, a severe electric shock threw him to the ground.

An investigation found that the supply from the house socket had caused the body of the caravan to become live. The socket outlet was old, with poor contact to the earth pin and a loose neutral pin, so there was little or no earth or neutral connection. The caravan was fitted with a 10 amp three pin flat pin plug, which was non-compliant. The socket outlet was replaced and an RCD fitted to the circuits.

The progressive harmonization of New Zealand's electricity standards with Australia's remained an important objective for the ESS in 2003/04. Following the adoption of the landmark joint Australia/New Zealand Standard AS/NZS 3000 Wiring Rules in 2003, a further amendment was introduced in January 2004. A revision of the Standard is due for completion in 2006. The ESS is taking a lead in the review process, seeking to introduce greater flexibility and thereby encourage technical innovation.

In the past, the ESS has focused particularly on developing standards that addressed the safety of new electrical installations and equipment. Over the past year, the focus began to shift to older electrical wiring and equipment. Work on refining the standards applying to existing installations and equipment continued.

During the year, the ESS also supported work on developing criteria for the supply of electricity to specialised equipment constructed to other safety philosophies – such as medical equipment and supplies to aircraft.

Codes of practice

The ESS updated two important electrical codes of practice during the year, both detailing how homeowners can do their own electrical work safely and legally.

The New Zealand Electrical Codes of Practice for Repair and Maintenance of Domestic Electrical Appliances by the Owner of the Appliance 2004 (NZECP 50:2004) and *Homeowner/Occupier's Electrical Wiring Work in Domestic Installations 2004* (NZECP 51:2004), were

updated to reflect changes that have occurred since their introduction in 1993, and to simplify the written language so as to be easily understood by those using the codes.

NZIECP 50:2004 covers the repair and maintenance of domestic electrical appliances by their owners, while NZIECP 51:2004 deals with electrical wiring work in domestic installations.

Both emphasise the value of seeking advice or basic training before undertaking any electrical work, and note that wiring work which is to be connected to the electricity supply must be checked, tested and certificated by a licensed electrical inspector.

These codes of practice will be promulgated in July 2004.

Gas

Gas appliance safety regime

Following the introduction of the new mandatory supplier declaration regime in late 2002, the ESS has worked closely with appliance importers, wholesalers and retailers over the past year to monitor its implementation.

Under the new regime, suppliers of gas appliances onto the New Zealand market must complete a supplier declaration demonstrating compliance with the appliance safety standard NZS 5262. Supplier declarations are lodged on the ESS website as a public record of compliance.

The ESS has found that while most parties are meeting the documentation requirements, the credibility of the appliance testing and assessment used to support supplier declarations can be questionable. New Zealand currently has no accredited gas appliance testing laboratories.

Case Study: Vandalised High Voltage Termination Cubicle

A 10 year old child received severe burns to his arm when he put his hand into a 11,000 volt cable termination on a berm type substation. The lid over the high voltage termination cubicle had been vandalised over a period of time until the rivets affixing it broke, allowing it to be raised slightly.

The public had been aware of the damage for some time but no one had reported it to the network company. Maintenance and periodic testing had been carried out six months before, when no physical damage was noted apart from graffiti.

Not only does this raise important safety issues locally, it also has implications for the move to greater compatibility with Australia's appliance safety regime currently being pursued under the Trans-Tasman Mutual Recognition Agreement. (TTMRA)

The ESS's monitoring over the past year has shown the need to find out more about the rigour and reliability of the assessment and testing that supplier declarations are based on. It hopes to investigate this area further over the coming year.

Standards

2003/04 was a busy year for gas standards development – part of the ongoing effort to introduce performance-based standards that also set appropriate compliance requirements. A further objective was to ensure New Zealand gas standards aligned more closely with international (especially Australian) standards, an increasingly important goal as markets become more globalised.

Three new standards became part of the Gas Regulations during the year. NZS 5258 concerns gas distribution networks: it contains changes which align it with the Australian standard for gas networks, and introduces the concept of safety management systems as are currently used in Australia. Safety issues relating to gas installations are dealt with in NZS 5261, while the latest version of NZS 5262 updates requirements for new gas appliances in line with the approach currently taken in Europe.

Other new gas standards introduced in 2003/04 were NZS 5259 (gas measurement), NZS 5263 (gas detection and odorization) and NZS 5257 (an audit protocol for the gas industry). An audit workbook covering gas appliance safety was also published.

International Relationships

Electricity

As a key participant at many international regulatory and trade forums, the ESS aims to ensure regulatory practices protect New Zealand's public safety and trade interests.

Imports of electrical appliances from Asia are growing steadily; China is now New Zealand's second-largest supplier of appliances after Australia. As the safety of New Zealanders is increasingly influenced by the standards and safety regimes of other countries, it makes good sense for New Zealand to do as much as it can to influence good global practices.

At the same time, there are strong economic arguments for the ESS to promote New Zealand's interests. Arrangements such as Mutual Recognition Agreements make it easier for local manufacturers to access overseas markets, and for electrical and gas workers to use their skills in other countries.

The ESS's contribution to the development of good international regulatory practice is greater than New Zealand's size and resources might suggest. This reflects both its willingness to take a full share of the workload, and the significant technical expertise it has to offer.

Under the Trans-Tasman Mutual Recognition Agreement (TTMRA), the ESS continued to pursue ongoing alignment with Australia's regulatory environment through mutually recognised standards and harmonised practices. The ESS chaired the electrical equipment group of the joint Electrical Regulatory Authorities Council (ERAC), the forum responsible for leading much of the fine-tuning of the joint appliance safety regime.

During the year, the ESS was closely involved in preparations for the Free Trade Agreement (FTA) to be negotiated between New Zealand and China, our largest potential trading partner. China is already having a major impact on New Zealand's electrical and electronic markets as a leading supplier, not only of appliances but also of electrical components in appliances manufactured in other countries. The FTA negotiations will intensify towards the end of 2004, with electrical goods the first sector for discussion.

During the year, New Zealand became one of three countries to become full signatories to the APEC Mutual Recognition Agreement on electrical and electronic products. Discussions on an arrangement with Taiwan, covering mutual recognition of electrical product test results and certification, had nearly been concluded by mid-2004. New Zealand's Mutual Recognition Agreement with the European Union – which covers seven sectors, including electrical and electronic equipment – continued to run smoothly, a fact that influenced China's willingness to enter into the FTA with this country.

Case Study: Work Accident Involving Live Low Voltage Lines

A line mechanic was working on a power pole in close proximity to live low voltage power lines. Changing position to reach some equipment, he grasped a street light bracket with one hand, put his other hand around the pole and touched a live low voltage conductor. He received an electric shock and fell back into his safety belt.

The company reviewed its procedure, as the line mechanic should have been wearing insulating gloves.

Gas

As part of a review of the TTMRA, the Australian Productivity Commission agreed that the current exemption covering gas appliances should remain in force for a further three years. This will allow New Zealand's new gas appliance regime, with its mandatory supplier declaration requirement, to properly 'bed in'.

The key area of difference between the two countries' approaches lies in New Zealand's willingness to accept supplier declarations, whereas Australia requires third party certification of compliance with standards. During the year, the ESS worked with the joint Australia-New Zealand Gas Technical Regulators Committee to address areas of concern, including the credibility of New Zealand's appliance testing and assessment systems. Both countries are committed to finding a common approach to gas appliance safety; which may draw significantly from the European Community's approach.

Compatibility with Australia was also an important focus of the ESS's work on gas standards during the year.

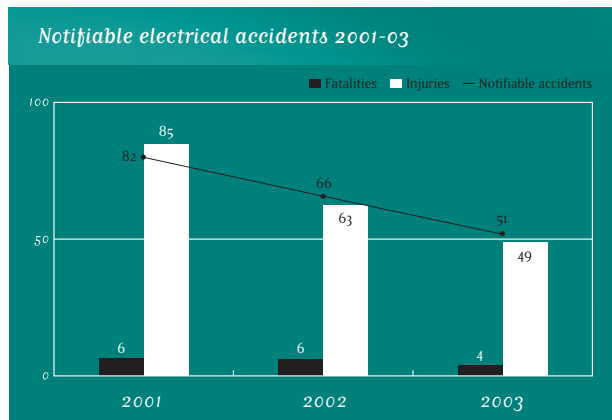
Research and Statistics

The ESS's annual *Summary of Reported Electrical and Gas Accidents* (1 January 2002 to 31 December 2002), published in June 2004, again made a useful contribution to public safety and better safety practices in the gas and electricity industries. Feedback from these industries shows that this publication is a valuable training tool.

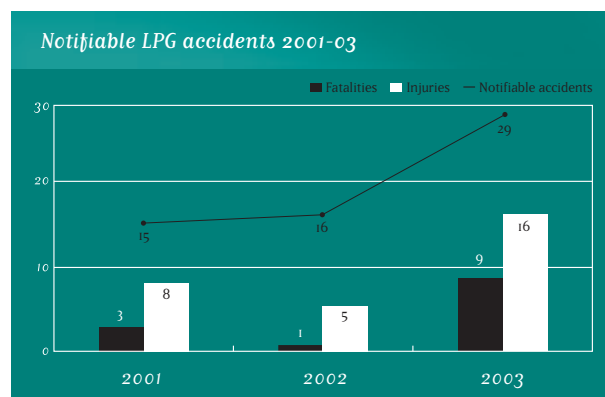
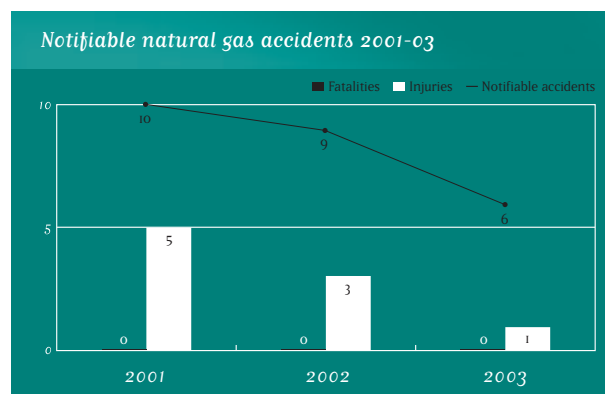
The ESS also continued to carry out targeted research in response to specific accident trends and issues of public concern. In 2004, a risk analysis of LPG cabinet heaters was undertaken following a fatal heater accident. The ESS reviewed accident data over the past eight years showing LPG heaters caused a total of 325 accidents/incidents, of which 44 were reportable under the Gas Act. Three fatalities were associated with LPG cabinet heaters. The study concluded that the risk of both serious and non-serious accidents with LPG heaters is somewhat higher than with heaters using other energy sources.

Another ESS study focused on the use of LPG for domestic heating and cooking, and the links between use and household income, ethnicity and geographical location. It showed the number of households using LPG heating had increased by 36% over the past five years across all income brackets, with the greatest increase among higher income households. Use of LPG for household heating was shown to be most prevalent in Christchurch.

Accident Statistics



In 2003, there were fewer electrical accidents reported to the ESS than at any other time in the past ten years. This decline was common to all groups: electrical workers, non-electrical workers and the general public. In the 51 reported accidents, 49 people were injured and four killed – the lowest number of fatalities since 2000.



2003 was the fourth consecutive year in which no fatalities resulted from natural gas accidents. The number of notifiable accidents (6) was the lowest recorded over ten years.

By contrast, it was a particularly bad year for LPG accidents. The number of notifiable accidents reported (29) was the highest since 1993, and nearly double what would be normally expected. There were nine LPG-related fatalities, the most ever recorded in a single year. Four were from carbon monoxide poisoning, three from LPG inhalation, and two people received fatal burns from a cabinet heater fire. Sixteen people were injured, the highest level of injury for six years.

Regional Development, Publicity, Media and Publications

Over the past year, the role of the ESS's regional offices developed significantly.

Offices in Auckland and Christchurch were originally established to strengthen the ESS's ability to work effectively with energy industries and the public nationwide. They have now been charged with building more proactive relationships with industry clients and consumers in their areas, facilitating better flow of information and feedback between those groups and the ESS. Head Office in Wellington will continue to be the focus for the ESS's involvement with many key industry clients (such as network operators). However, its day-to-day dealings with other public and industry groups will increasingly be driven from the regional offices. Instead of a regional office in the Wellington area, the needs of industry and consumers in the lower North Island are serviced out of Head Office.

This sharpening of the regional office role was reflected over the past year in the Auckland office's valuable work with Maori communities in Taitokerau (see page 2) and with the many appliance importers located in Auckland. Similarly, the Christchurch office continued to take a lead in the ESS's relationship with the electrical industry in the South Island.

Publicity, Media and Publications

The year saw a number of significant publications and issues being dealt with by the ESS.

The Electricity Amendment Regulations 2003 came into effect in January 2004 and a Business Note explaining the amendments was published distributed to industry in December 2003.

In December 2003 the Electricity Supply Industry Public Safety Education Working Party had its first meeting. The role of the working group is to develop a national strategy to raise public awareness of safety around electricity supply industry assets, through public education and information.

The ESS is part of this group which is co-ordinated by the Electricity Engineers' Association of NZ. Its members include electricity generators and retailers, a consumer representative, the Electricity Engineers'

Association of NZ and electricity network asset owners. During the year the working group developed seasonal safety messages for distribution to the media as well as focussing on communicating safety messages through advertising and the production of a resource kit for schools.

Also in December 2003 the ESS released a Discussion Paper on Proposed Electricity and Reticulated Gas Levies. The discussion paper reviewed the means used by the ESS to collect the electricity and reticulated gas levies and submissions closed at the end of February 2004. Work on the issues raised in the discussion paper is progressing.

Again this year an LPG winter safety campaign was carried out. This took place in May 2004 and was run in conjunction with the industry. 400,000 swing tags with safety messages were produced and distributed to service stations for attachment to gas cylinders when they were filled.

The *Summary of Reported Electrical and Accidents 1 January - 31 December 2002* was published in June 2004 and distributed to industry organisations.

The ESS was also involved in a number of media issues. These included: the house fire in Hastings that tragically claimed the lives of two young girls; issues related to the safety of gas and electrical appliances; and the enquiry by the Environmental Risk Management Authority (ERMA) into the use of LPG cylinders in indoor situations.

During the year a number of columns, focussing on energy safety issues, were produced and distributed to community newspapers. One focused on energy safety tips for summer and in winter 2004 a series of four fortnightly columns entitled Keeping Safe this Winter were produced. The topics covered in the columns included: safe use of clothes dryers; LPG cabinet heaters; safe use of heaters; and heating your bed. Specific media releases were distributed on the house fire in Hastings and the safe use of Christmas tree lights.

Website — www.ess.govt.nz

Over the course of the year a number of updates and upgrades were carried out to enlarge and improve the ESS website.

Information on a number of new electricity regulations and codes of practice was added to the site, along with a discussion paper on *Proposed Electricity and Reticulated Gas Levies - December 2003*, a new section on LPG Safety and a suite of presentations from the Electrical Appliance Forum held in Auckland on 11 June 2004.

Compliance

Electricity Accident and Incident Investigations

While the 70 reportable electricity injury accidents investigated in 2003/04 represented the lowest number of reported accidents in ten years, the accidents themselves were more serious. Four deaths were recorded, and 49 people were injured in the 2003 calendar year alone.

Electrical workers continued to figure prominently in accident statistics. Accidents involving electricity installations increased, reflecting a combination of bad work practices and failure to adequately test. To address these shortcomings, the ESS has worked to raise industry standards and awareness by several means, including contributing to the Electrical Workers Registration Board's examination process. The ESS also continues to assist with the training of electrical inspectors.

The number of accidents affecting members of the public also increased. Of particular concern were the many serious accidents involving people coming into contact with high voltage works. As a result, the electricity industry has voluntarily joined forces to deliver safety messages targeting particularly vulnerable groups, such as children and teenagers (see *Key Initiatives*, page 2 and *Publicity, Media and Publications*, page 7).

In addition, the ESS has worked with network companies to identify risk factors in the locations they service. Statistics show that incidents involving the public accessing high voltage works are particularly prevalent in neighbourhoods where young people are poorly supervised, bored and appear to have little respect for other's property.

As part of its compliance role, the ESS assisted the Occupational Safety and Health Service's (OSH) investigations into workplace safety and gave technical support for OSH prosecutions. The Fire Service and the Police also made use of the ESS's technical expertise on many occasions over the year.

Gas accidents and investigations

More gas-related accidents requiring ESS investigation were recorded in the 2003/04 year than in the previous year. Of the 130 accidents reported (notifiable and non-notifiable), 75 involved LPG and 55 involved natural gas.

The unacceptably high number of injuries and deaths associated with LPG (four fatalities from carbon monoxide poisoning and a double fatality in a fire) led to renewed scrutiny of the safety of LPG appliances, especially

cabinet heaters. The Environmental Risk Management Authority commissioned an independent enquiry in December 2003, and a multi-agency taskforce has been formed to further investigate the safety of LPG cabinet heaters. The ESS is taking a lead role in this work (see also *Key Initiatives*, page 2).

Work under the Hazardous Substances and New Organisms Act

Over the year, the ESS continued to work with territorial authorities to strengthen their ability to meet their responsibilities under the Hazardous Substances and New Organisms Act. The Act gives territorial authorities a limited role in providing enforcement functions. Increasingly, private contractors are being contracted to carry out this work on behalf of local authorities. The ESS seeks to ensure that these contractors, and the authorities themselves, have the capability to provide an adequate level of response.

Petroleum

The Petroleum Products Specifications Regulations, under which the ESS monitors the quality of petrol and diesel sold in New Zealand, were extensively revised in 2002. New specifications were set, with more to be progressively introduced by 2006. The aim is to give New Zealanders access to cleaner fuels with fewer adverse environmental and health effects, while at the same time ensuring fuels continue to match modern vehicle performance requirements.

In response, the ESS has been progressively adjusting its fuel monitoring programme as new specifications are introduced. In January 2004, these included, for petrol; new distillation parameters, tighter vapour pressure requirements, and the first ever controls on olefins (components associated with ozone formation and respiratory problems). Linked to this was a further lowering in the allowable levels of benzene, a known carcinogen. For diesel, the main changes were to cetane quality and density. These are primarily vehicle performance characteristics, although both have emission effects too.

The ESS was involved in preparations for a significant reduction in the level of sulphur in diesel, scheduled to come into effect in August 2004. Because of the possibility that some older diesel engines might not handle this change if not well-maintained, the ESS contributed technical advice for a public information campaign led by the Ministry for Economic Development.

Throughout 2003/04, 273 fuel sample sets were collected for testing at laboratories contracted to ESS. Test results showed the fuel industry's continued high level of compliance with the regulations.

Monitoring, Auditing and Survey Activities

Gas

Ten major commercial and industrial gas installations were audited during the year. Major problems were revealed in the area of maintenance: nine of the installations audited had no preventative maintenance programmes. While perceived cost was a factor, ignorance of the value of such programmes was the overwhelming reason.

During the year, the ESS also audited the methods some gas companies use to measure and charge for the gas they sell to consumers and industrial users. Shortcomings and discrepancies were identified in some companies' billing practices, and the ESS is working with them to remedy these problems.

Compliance audits of gas retailers also revealed shortcomings. Many had poor understanding of their obligations to consumers in areas including gas quality and emergency procedures. The ESS will continue to work with these retailers to improve their knowledge and service.

The ESS's audits of network operators, while finding generally good levels of compliance with requirements, again raised concerns about maintenance. Regular maintenance of critical equipment such as relief valves was not always satisfactory. The audits found diverging approaches to maintenance, with some operators taking a risk-based approach while others conducted periodic maintenance. Again, ESS and industry are working on ways to address these concerns.

These audits also looked at how network operators meet the requirement to continuously monitor gas quality. Again, some problems were revealed, especially in regard to odorisation – a key means of ensuring any quality failures are identified quickly. The ESS will work with the operators on improving performance in this area.

Electricity

Five projects were undertaken during the year into possible safety risks associated with older electric wiring. Electrical fire-related data was obtained from the New Zealand Fire Service, and evaluated to determine electrical fire risks in residential properties. In addition, electrical contractors and inspectors were surveyed to ascertain the type of electrical work being undertaken in residential buildings dating from the 1940s and 50s, chiefly in the main centres.

The ESS found that the fire risk from older wiring in such situations was very low compared with other electrical fire risks, and had not changed significantly over the past 18 years. It also found many instances of older wiring being progressively replaced.

A secondary issue that emerged was doubt over the effectiveness of earthing systems when metal pipes (for example, for water or gas) were replaced with plastic. The ESS is looking at introducing regulatory changes, and/or providing more information to electricians about the need to check for potential risks due to a lack of earthing and bonding.

Case Study: Domestic LPG Cooker Fire

A portable gas ring was in use for the first time since the LPG cylinder was last filled, heating a container of water outdoors. After 5-10 minutes, there was a loud hissing noise, then the cylinder was engulfed in flames and exploded, with a 10 metre plume of flame catching alight an adjacent tree. The owner attempted to turn off the cylinder, but only managed to kick it over so the jet of flame was directed into the ground. He then evacuated the house and called the Fire Service. Outdoor equipment in the yard was damaged. The adaptor was suspected to be faulty, with a cracked joint that came apart as the fire took hold.

Summary of Financial Performance

The safety supply quality and measurement services provided by the ESS are part of a Government appropriation, but funded largely by the electricity, gas and petroleum industries. Careful management of these resources is a priority for the ESS and an important part of its accountability to its stakeholders.

The following tables and graphs give a summary of financial performance for 2003/04, including a brief explanation of how funding was used in LPG safety, natural gas safety, electricity safety and petroleum monitoring.

Liquefied Petroleum Gas Safety

- This is currently fully funded by Crown Revenue. The introduction of a LPG levy is planned for 2004/05 with implementation during 2005/06.
- 57% (\$6,858) of LPG Operating expenses was spent on LPG safety publicity, promotions and associated printing.
- 29% (\$3,508) of LPG Operating expenses was spent on LPG safety investigations.

Natural Gas Safety

- There has been no change to the gas levy rate of 2 cents per gigajoule.
- The gas levy is paid by a total of three contributors.
- A total of \$58,860 of excess gas levy collected during the year will be refunded to levy payers.
- 40% (\$122,295) of gas Operating expenses was spent on contracts with Standards New Zealand for the revision of gas standards: NZS 5259 Gas Measurement; AS/NZS 5262 Gas Appliance Safety; NZS 5263 Gas Detection and NZS 5257 Gas Audit Protocol and Workbook.

- 21% (\$63,390) of gas Operating expenses was spent on gas safety investigations (technical services and domestic travel).
- 10% (\$31,700) of gas Operating expenses was spent on audits and surveys (technical services).
- 5% (\$15,600) of gas Operating expenses was spent on gas safety publicity, promotions and associated printing.

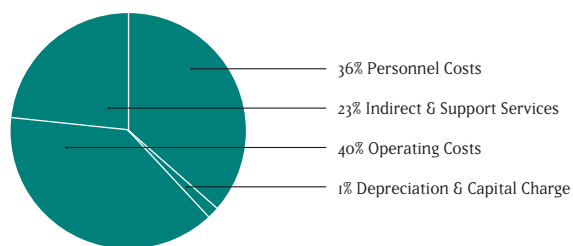
Electricity Safety

- The electricity levy rate remains the same as last year at 1.05 cents per 100kwh.
- The electricity levy was paid by 15 contributors. This is made up of the same 14 contributors as in previous years with the addition of one new contributor.
- A total of \$580,400 of excess electricity levy collected during the year will be refunded to levy payers.
- 51% (\$515,000) of electricity Operating expenses was spent on contracts with Standards New Zealand for the revision of electrical Standards.
- 14% (\$146,200) of electricity Operating expenses was spent on electrical safety investigations and safety awareness (technical services and travel, Maori Women's Welfare League contract).
- 4% (\$39,300) of electricity Operating expenses was spent on electrical safety publicity, promotions and associated printing.

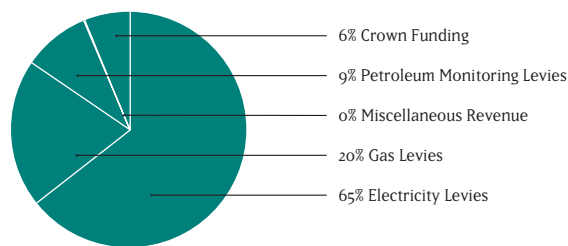
Petroleum monitoring

- Contract expenses totalling \$219,230 for the testing of petroleum products comprised 85% of the petroleum monitoring operational expenses.

ESS Expenses July 2003 - June 2004



ESS Revenue July 2003 - June 2004



Energy Safety Service Summarised Statement of Financial Performance for the year ended 30 June 2004

	2003/04 Actual \$	2003/04 Budget \$	2002/03 Actual \$
Revenue			
Revenue Crown (LPG)	244,807	249,000	220,250
Electricity Levies	2,655,106	2,681,744	2,754,002
Natural Gas Levies	836,970	841,000	795,560
Petroleum Monitoring Levies	366,004	367,000	319,756
Miscellaneous revenue	9,503	21,506	21,492
Total Revenue	4,112,390	4,160,250	4,111,060
Expenses			
Personnel expenses	1,496,986	1,458,884	1,513,438
Operating expenses	1,597,421	1,669,507	1,533,860
Depreciation	26,486	36,267	14,600
Capital charge	33,897	33,897	2,548
Indirect and Support services	957,600	909,447	1,046,614
Total Expenses	4,112,390	4,108,002	4,111,060
Surplus/(Deficit)	-	52,248	-

Liquefied Petroleum Gas Summarised Statement of Financial Performance for the year ended 30 June 2004

	2003/04 Actual \$	2003/04 Budget \$	2002/03 Actual \$
Revenue			
Revenue Crown	244,807	249,000	220,250
Miscellaneous revenue	5,595	21,506	21,516
Total Revenue	250,402	270,506	241,766
Expenses			
Personnel Expenses	168,917	179,256	111,159
Operating Expenses	12,103	3,641	57,819
Depreciation	62	71	1,023
Capital Charge	2,373	2,373	(1,894)
Indirect and Support Services	66,947	63,661	73,659
Total Expenses	250,402	249,002	241,766
Surplus/(Deficit)	-	21,504	-

Electricity Summarised Statement of Financial Performance for the year ended 30 June 2004

	2003/04 Actual \$	2003/04 Budget \$	2002/03 Actual \$
Revenue			
Electricity Levies	2,655,106	2,681,744	2,754,002
Miscellaneous revenue	3,046	-	(22)
Total Revenue	2,658,152	2,681,744	2,753,980

<i>Expenses</i>			
Personnel expenses	951,566	887,233	1,014,625
Operating expenses	1,019,542	1,104,388	1,024,524
Depreciation	22,528	32,338	9,786
Capital charge	22,711	22,711	3,403
Indirect and Support services	641,805	609,330	701,642
Total Expenses	2,658,152	2,656,000	2,753,980
Surplus/(Deficit)	-	25,744	-

Natural Gas Summarised Statement of Financial Performance for the year ended 30 June 2004

	2003/04 Actual \$	2003/04 Budget \$	2002/03 Actual \$
<i>Revenue</i>			
Natural Gas Levies	836,970	841,000	795,560
Miscellaneous revenue	737	-	(7)
Total Revenue	837,707	841,000	795,553
<i>Expenses</i>			
Personnel expenses	308,238	352,739	335,884
Operating expenses	307,598	272,909	225,607
Depreciation	3,827	3,817	3,209
Capital charge	7,457	7,457	879
Indirect and Support services	210,587	200,078	229,974
Total Expenses	837,707	837,000	795,553
Surplus/(Deficit)	-	4,000	-

Petroleum Monitoring Summarised Statement of Financial Performance for the year ended 30 June 2004

	2003/04 Actual \$	2003/04 Budget \$	2002/03 Actual \$
<i>Revenue</i>			
Petroleum Monitoring Levies	366,004	367,000	319,756
Miscellaneous revenue	125	-	5
Total Revenue	366,129	367,000	319,761
<i>Expenses</i>			
Personnel expenses	68,265	39,656	51,770
Operating expenses	258,178	288,569	225,910
Depreciation	69	41	582
Capital charge	1,356	1,356	160
Indirect and Support services	38,261	36,378	41,339
Total Expenses	366,129	366,000	319,761
Surplus/(Deficit)	-	1,000	-

<i>Head Office Operations</i>	<i>Regional Offices Operations</i>
<p><i>Manager Operations</i> Graham Boxall</p> <p><i>Principal Technical Advisors</i> Peter Morfee Mehdi Yassaie</p> <p><i>Senior Technical Advisors</i> Richard Davenport Bill Lowe Tony Smith</p> <p><i>Technical Advisors</i> Veerendra Bhim Bruce Mills Keith Rodgers Paul Stannard</p>	<p><i>Senior Technical Advisors</i> Segaren Pillay Auckland</p> <p>Colin Murphy Southern Region</p> <p><i>Technical Advisor</i> Miles Bonfield Southern Region</p>

Energy Safety Service

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