

February 2005

SKILL SHORTAGE ASSESSMENT OCCUPATION: AUTOMOTIVE ELECTRICIAN

Current situation: Skill shortage

Short term outlook: Skill shortage

Executive summary

- 1 The Survey of Employers who have Recently Advertised (SERA) has shown that there is currently an acute shortage of automotive electricians. Only 15% of vacancies included in the survey were filled within six weeks of being advertised. This is far lower than the average for all trades surveyed. This report considers these survey results in the context of trends in the demand for and supply of automotive electricians.

Table 1: employer survey indicators, 2004

	Fill rate	Average number of suitable applicants
Automotive electricians	15%	0.4
All trades surveyed	41%	0.7

Source: Department of Labour, SERA

- 2 Employment of automotive electricians increased by 1.4% per annum between 1991 and 2001 due to growth in the number of registered cars and the increasing electronic installation, maintenance and repair requirements of vehicles. These factors are expected to continue driving growth in demand for automotive electricians over the short term. However, this may not translate into increased employment due to severe constraints on the supply of automotive electricians.
- 3 Between 2001 and 2003, fewer than 30 trainees each year have achieved the level 4 national certificate and equivalent qualifications for the automotive electrician trade. A comparison of this level of training with the number of employed automotive electricians yields a training rate of 2.0%. This is slightly higher than the New Zealand average for all trades surveyed in the SERA but far short of the rate (4.6%) measured in NSW, Australia. This level of training is adequate to cope with retirements from the occupation (which occur at a rate of 0.7% per annum) but not sufficient to deal with growing demand and existing shortages.
- 4 The current shortage of automotive electricians is expected to persist in the short term because the current level of training is inadequate to cope with new demand from job creation and replacement demand arising from retirements and occupational wastage. Nor is training likely to make an impact on existing unfilled vacancies.

Introduction

The purpose of this report is to investigate shortages of automotive electricians in New Zealand. This report aims to provide an assessment of whether or not there is a shortage of automotive electricians, the factors contributing to this situation and the outlook for shortages.

Automotive electricians are skilled tradespeople who install, maintain and repair electrical wiring and electrical/electronic components and systems in vehicles. Electrical/electronic component and system faults account for the majority of malfunctions in modern vehicles¹. While motor mechanics (automotive technicians) undertake some general electrical and electronic work, the more complex and specialised electrical and electronic installation, maintenance and repair work is done by automotive electricians who have access (in their specialised workshops) to the sophisticated computer testing equipment required to diagnose electrical and electronic problems. Automotive electricians are classified in the New Zealand Standard Classification of Occupations (NZSCO) as transport electricians (NZSCO code 71312). The Department of Labour (DoL) estimates that there were approximately 1,400 automotive electricians employed in New Zealand in 2003.

A background and technical note to this report is available from DoL. The note provides an overview of the broader Job Vacancy Monitoring Programme, of which this report is an output. It also provides a brief description of the employer survey conducted for this report and explanations of indicators and definitions used in the report.

Demand for automotive electricians

Historical demand

Employment of automotive electricians grew by 1.4% per annum over the 1991 – 2001 period² (table 2). This contrasts with a decline of 1% per annum for motor mechanics over the same period, and an overall decline of 0.4% per annum across all trades.

Table 2: employment growth of automotive electricians 1991-2001

	Annual growth in employment		
	1991-1996	1996-2001	1991-2001
Auto electricians	-0.5%	1.9%	1.4%
Motor mechanics	-0.9%	-1.1%	-1.0%
All trades	0.0%	-0.4%	-0.2%
Total	3.2%	1.2%	2.2%

Source: Statistics New Zealand, Census of Population and Dwellings 1991, 1996 and 2001

¹ Automotive electrician job outline, KiwiCareers website www.kiwicareers.govt.nz

² Employment data post 2001 is only available for the broader *Electricians* minor group (NZSCO 713) from Household Labour Force Survey (HLFS). Automotive electricians are included in this group together with electricians and appliance electricians. As there is not a close association between the constituent occupations in the 3-digit category, HLFS data is not suitable to describe employment trends of automotive electricians since 2001.

Demand for automotive electricians is linked to the number of registered cars and the increasing electrical and electronic sophistication in the installation, maintenance and repair requirements of vehicles.

Data from the (then) Land Transport Safety Authority (LTSA) shows a steady increase in the number of cars in New Zealand (figure 1). The number of registered cars has increased by 3% per annum since 1998.

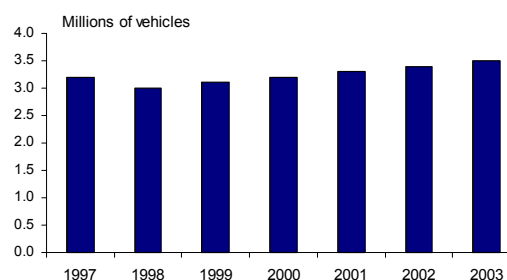
Vehicles, and in particular European models, are becoming technologically more sophisticated as the use of air conditioning and other electronic equipment in vehicles increases. An employer interviewed in the SERA noted that 85% of all breakdowns for a leading European brand of vehicle are electronic.

Together these factors have increased the demand for automotive electricians.

Growing employment for automotive electricians during a period when employment of motor mechanics declined

is reflective of the increasing need for electrical and electronic diagnostic, installation, maintenance and repair skills by automotive businesses.

Figure 1: number of cars in total New Zealand fleet, 1998 – 2004



Source: LTSA

Future demand

Demand for automotive electricians is likely to grow over the short term. The main factors influencing this growth include:

- Increasing motor vehicle sales (driven by the strong New Zealand dollar), robust economic growth and an increasing number of people in paid employment.
- Continuing technological developments, which will increase the electrical and electronic components and systems in vehicles.

Technological improvements to vehicles, which reduce maintenance and repair requirements, will act to offset this growth somewhat.

The extent to which this demand translates into employment growth will depend on the availability of skilled automotive electricians, and the commitment of employers to recruit and train apprentices.

Summary

Employment of automotive electricians increased by 1.4% per annum between 1991 and 2001 due to growth in the number of registered cars and the increasing electrical and electronic installation, maintenance and repair requirements of vehicles. These factors are expected to continue driving growth in demand for automotive electricians over the short term. However, this may not translate into increased employment because, currently, the supply of automotive electricians is severely constrained.

Supply of automotive electricians

Training – National certificate (Level 4) qualifications and equivalent

This section investigates the growth in supply of *fully qualified* automotive electricians through training. It considers three sources of supply:

1. The award of the National Certificate in Motor Industry (Automotive Electrical Engineering) Level 4 by the Motor Industry Training Organisation (MITO). This is the nationally recognised qualification for automotive electricians which is designed by MITO to meet the needs of employers of automotive electricians. It takes trainees an average of three years to attain the qualification.
2. The award of the National Certificate in Motor Industry (Automotive Electrical Engineering) Level 4 by other providers such as polytechnics.
3. The award of qualifications apart from national certificates which are deemed to be equivalent to the national certificate in terms of level and number of credits.

Table 3 shows that the national certificate awarded by MITO account for the vast majority of qualifications awarded at this level. The number of trainees achieving the National certificate level 4 is low but has increased marginally between 2001 and 2003 (see table 3). New enrolments have also increased since 2001 (table 4) which suggests that the number of qualification achievements should grow in the future.

There were no non-national certificate qualifications at the equivalent level of the national certificate awarded over this time period. A list of national certificate level 4 and equivalent qualifications and the proportion of trainees enrolled for these qualifications is provided in Appendix 1.

Table 3: number of trainees achieving the National Certificate in Motor Industry (automotive electrical engineering) level 4 and other equivalent qualifications

	National Certificate in Motor Industry (Automotive Electrical Engineering) Level 4 (MITO)	National Certificate in Motor Industry (Automotive Electrical Engineering) Level 4 (Other providers)	Total
2001	20	Not available	
2002	20	1	21
2003	27	1	28

Source: Motor Industry Training Organisation (MITO)

Table 4: number of trainees enrolled for the National Certificate in Motor Industry (automotive electrical engineering) level 4 and other equivalent qualifications

		National Certificate in Motor Industry (Automotive Electrical Engineering) Level 4 (MITO)	National Certificate in Motor Industry (Automotive Electrical Engineering) Level 4 (Other providers)	Total
2001	Total enrolled	228	Not available	
	New enrolments	67	Not available	
2002	Total enrolled	222	Not available	
	New enrolments	72	Not available	
2003	Total enrolled	211	17	228
	New enrolments	86	Not available	

Source: Motor Industry Training Organisation (MITO)

Training rate indicators are given in table 5. A comparison of the number of trainees achieving the National Certificate (level 4) with the number of automotive electricians employed yields a training rate (NC level 4) of 2.0% for automotive electricians. This

indicator provides a crude measure of the rate at which the supply of fully qualified automotive electricians can potentially grow through training¹. While this training rate is slightly higher than the average training rate of 1.8% for all trades analysed by Department of Labour, it is well below the 2003 training rate for automotive electricians in New South Wales (NSW), Australia (4.6%).

An alternative measure of training levels is the enrolment rate (NC level 4) which compares the number of trainees enrolled for the national certificate with the number of automotive electricians employed. The enrolment rate for automotive electricians was 16.5% in 2003.

Training – Other related qualifications and courses

While the level 4 national certificate and equivalent non-national certificates may be regarded as the qualification required to be a *fully qualified* automotive electrician, there are other lower level qualifications available in automotive engineering (such National Certificate in Motor Industry: Entry into Motor Trades). These qualifications may be regarded as adequate to some employers of automotive electricians, especially during times of acute skill shortages. They are also of significance as these qualifications may staircase trainees towards the national certificate level 4 qualifications. Credits obtained in these qualifications may be recognised towards a national certificate level 4, should the trainee later wish to become a fully qualified tradesperson. A list of these qualifications and the number of trainees enrolled in courses leading to these qualifications is provided in Appendix 1.

Training in these courses is reflected in the training enrolment rate (all related training) which compares the number of trainees enrolled in all automotive electrician-related training with the number of employed automotive electricians. The enrolment rate (all related training) is measured at 14.1% for 2003 (table 5).

Table 5: training rates for Automotive electricians

Indicator	Explanation	Automotive electrician (NZ)	All SERA trades surveyed (NZ)	Automotive electrician (NSW, Australia)	All trades (NSW, Australia)
Training rate (national certificate L4 and equivalent)	Number of trainees achieving relevant national certificates (level 4) and equivalent non-national certificate qualifications expressed as a percentage of employment in that occupation.	2.0%	1.8%	4.6%	2.8%
Training enrolment rate (national certificate L4 and equivalent)	Number of trainees enrolled for relevant national certificates (level 4) and equivalent non-national certificate qualifications expressed as a percentage of employment in that occupation.	16.6%	16.3%		
Training enrolment rate (all related training)	Number of trainees enrolled in all relevant courses expressed as a percentage of employment in that occupation.	19.1%	30.5%		

Source: Department of Labour (New Zealand), Department of Employment and Workplace Relations (Australia)

¹ This assumes that there is full employment of automotive electricians. This is a reasonable assumption in the current environment of low unemployment and skill shortages.

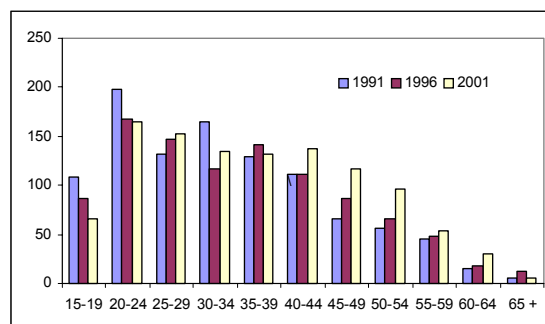
³ Enrolments in these programmes are not included in the training enrolment rate (all related training).

A number of other government-funded vocational educational and training programmes (including Training Opportunities, Youth Training and Skill Enhancement Training) offer trades related training which lead to credit achievement on the National Qualifications Framework. A further 36 people were enrolled for this training in 2003 (see Appendix 1)³.

Training – employer perceptions

Employers confirmed the low training rate for automotive electricians, reporting that there were limited numbers of young people entering the occupation despite the perception that the automotive electrician trade was more favourably perceived by young people than other trades. Figure 2 shows an age profile of automotive electricians. The number employed in the younger age categories declined between 1991 and 2001. The proportion of auto electricians aged 15 to 19 years declined from 11% in 1991 to 6% in 2001. The proportion aged 20 to 24 years declined from 19% to 15%.

Figure 2: age profile for auto electricians



Source: Statistics New Zealand, Census

Retirement

It is estimated that approximately 0.7% of the automotive electrician workforce retires each year. This amounts to an annual loss of between 10 and 20 workers. The automotive electrician workforce is ageing and the number of retirements will increase in the future. In 1991, 12% of the automotive electrician workforce was over 50 years of age. By 2001, the proportion had increased to 17%.

Summary

Between 2001 and 2003, fewer than 30 trainees each year have achieved the level 4 national certificate and equivalent qualifications for the automotive electrician trade. This translates into a national certificate level 4 training rate of 2.0%, which is slightly higher than the New Zealand average for all trades surveyed in the SERA but far short of the rate (4.6%) measured in NSW, Australia. This level of training is adequate to cope with retirements from the occupation (which occur at a rate of 0.7% per annum) but not sufficient to deal with growing demand and existing shortages.

Employer recruiting experiences

Is there a shortage of automotive electricians?

The SERA results suggest that there is a severe shortage of automotive electricians in New Zealand. Only 15% of vacancies included in the survey were filled within six weeks of being advertised¹. This was the lowest fill rate recorded across all the trades surveyed. The shortage of automotive electricians was further illustrated by the fact that there were, on average, only four suitable applicants for every 10 vacancies. The fill rate and number of suitable applicant indicators are substantially lower than the averages all trades surveyed.

¹ Although only 10 employers were surveyed, these 10 represent all automotive electrician advertisements in the print and internet media in May and June 2004.

Table 5: SERA results for automotive electricians

	Number of employers	Number of Positions	Positions filled	Fill rate	Suitable applicants	Average number of suitable applicants
Automotive Electrician	10	13	2	15%	5	0.4
All trades surveyed	240	453	186	41%	337	0.7

Source: Department of Labour, SERA

Employers reported that they were finding it very difficult to recruit qualified auto electricians with the requisite skills. They were coping with the shortages by making use of overtime, having managers return to the shop floor, taking on junior staff and training. Many employers reported that business expansion was being constrained by a lack of skilled staff.

What are employers paying?

Table 6 shows that the automotive electrician wage rates offered by employers included in the SERA were close to the average wage for all trade occupations in the survey. This indicates that wage rates for automotive electricians are relatively competitive.

Table 6: automotive electrician average hourly wage rates

	Mean
Automotive electrician	\$20.44
All trades surveyed	\$20.60

Source: Department of Labour, SERA

Changes in market conditions

Employers included in SERA were asked whether it was harder or easier to fill their recent vacancies for automotive electricians compared with twelve months earlier. A net 50%¹ of employers felt that it was harder. This suggests that recruiting conditions have become considerably more difficult for employers of automotive electricians during the past year.

¹ The net estimate is calculated by subtracting the percentage of employers who found it harder to fill the vacancy from the percentage of employers who found it easier to fill the vacancy. This sum is then divided by one less the percentage of employers who did not answer this question.

Outlook

There is an acute shortage of automotive electricians in New Zealand and the situation is expected to persist. Demand has been growing and will continue to do so in line with increasing electrical and electronic installation, maintenance and repair requirements of vehicles. The current level of training is inadequate to cope with new demand and replacement demand arising from retirements. Nor is it likely to make an impact on existing shortages.

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APPENDIX 1. TRAINING ENROLMENTS FOR AUTO ELECTRICIAN TRADE: 2003

Enrolments in National Certificate Level 4 and equivalent qualifications: 2003

Qualification Title	Qualification Code	Provider Name	Level	Credits	Share of Enrolments (%)
NC in Automotive Electrical Engineering	NC5340	Motor ITO	4	244	88.0%
NC in Motor Industry (Automotive Electrical Engineering)	NC5340	Unitec New Zealand	4	244	12.0%
Total					100.0%

Enrolments in other qualifications

Qualification Title	Qualification Code	Provider Name	Level	Credits	Share of Enrolments (%)
LCP - Automotive Electrical Engineering "A" Grade	na	Motor ITO	na	na	100.0%
Total					100.0%

Enrolments in Training Opportunities Programme, Youth Training and Skill Enhancement Training related to the auto electrician trade

Course name	Programme type	Share of Enrolments (%)
Building/ Automotive Kerikeri	TOP	3.9%
Panelbeating/Automotive/WBT	YOUTH	6.1%
NC Employment Skills Auto	YOUTH	2.5%
NC Employment Skills Auto	YOUTH	6.1%
Career Towards Auto Trades	YOUTH	1.2%
Automotive Options	TOP	4.7%
Automotive Options	TOP	4.8%
Automotive Trades Training	YOUTH	6.1%
Automotive Trades Training	SE	1.3%
N.C.E.A & Emp Skills - Auto	YOUTH	1.7%
N.C.E.A & Emp Skills - Auto	TOP	0.3%
Auto, Retail or Web Design	YOUTH	5.3%
Automotive and Hospitality	TOP	4.2%
Automotive Trade Training	YOUTH	1.7%

NC in Automotive Trades	YOUTH	3.0%
Automotive Trades - Wang	TOP	2.7%
Intro to Automotive - PN	YOUTH	1.9%
NC Entry Auto Trades	YOUTH	2.1%
Entry to Automotive Trades	YOUTH	2.6%
Entry to Automotive Trades	YOUTH	2.1%
Primary & Automotive Trades	TOP	5.1%
Primary & Automotive Trades	YOUTH	6.3%
Intro to Auto Trades & Welding	YOUTH	1.7%
Heavy Auto/Civil Construction	TOP	0.8%
Heavy Auto/Civil Construct	YOUTH	1.5%
Pre Apprenticeship Motor	YOUTH	0.5%
Automotive Trade	YOUTH	1.5%
Automotive Trade	YOUTH	1.6%
Prep for the Automotive Trade	TOP	1.4%
Prep for the Automotive Trade	TOP	2.1%
Automotive Trades and Services	TOP	0.5%
Intro To Automotive	YOUTH	0.3%
Automotive Training	YOUTH	1.7%
Automotive Training	YOUTH	1.4%
Automotive Training	YOUTH	1.8%
Automotive Training	YOUTH	1.5%
Pre Apprenticeship Motor	TOP	0.2%
Automotive	TOP	1.8%
Automotive Trades	TOP	1.7%
NCEA & Emp Skills - Auto	YOUTH	2.3%
Pre-apprenticeship Automotive	SE	0.2%
		100.0%