



**JUNE 2006**

## **AUTOMOTIVE ELECTRICIAN: OCCUPATIONAL SKILL SHORTAGE ASSESSMENT**

**2004 Situation:** Genuine skill shortage

**Current Situation:** Genuine skill shortage

**Short-term Outlook:** Genuine skill shortage

### **1 Executive Summary**

1.1 Results from the 2005 Survey of Employers who have Recently Advertised suggest employers have had considerable difficulty in filling automotive electrician positions in New Zealand. Only 29% of positions were filled within ten weeks of advertising and there was an average of 1.4 suitable applicants per automotive electrician vacancy. 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, 2005*

	Fill Rate	Average Number of Suitable Applicants
Automotive Electricians	29%	1.4
All Trades Surveyed	37%	1.0

Source: Survey of Employers who have Recently Advertised, Department of Labour.

1.2 Demand (as measured by employment) for automotive electricians grew by 1.9% per annum between 1996 and 2001, in a period where negative growth was recorded for motor mechanics and all trades. Growth in the demand for automotive electricians has been driven by a number of factors including: growth in the number of registered cars, ageing of the vehicle fleet, and an increase in the use and sophistication of electronic equipment in vehicles. These factors are likely to have resulted in continued growth in demand since 2001.

1.3 The supply of newly qualified automotive electricians has increased from 21 in 2001 to 51 in 2005. This equates to a training rate of 3.5% in 2005 which is higher than the New Zealand average for all trades surveyed (3.3%). New enrolments have increased from 72 in 2001 to 126 in 2005, suggesting a likely increase in future numbers of trainees achieving the automotive electrician qualification. About ten automotive electricians retire each year.

- 1.4 Due to the on-going disparity between the levels of supply and demand, the Department of Labour has assessed the auto electrician occupation as experiencing a **genuine skill shortage**.
- 1.5 Demand for automotive electricians will continue to grow over the next few years on the back of strong growth in the number of cars being registered and the increasing electrical and electronic sophistication in the installation, maintenance and repair requirements of vehicles. While the number of trainees achieving the relevant National Certificate qualifications has been increasing over the last few years, supply through training and migration will struggle to eliminate the current shortfall of automotive electricians. The Department therefore foresees shortages persisting over the short-term, although higher training rates should result in some easing.

## 2 Introduction

- 2.1 The purpose of this report is to investigate skill shortages for automotive electricians in New Zealand.
- 2.2 The following section presents key findings from the Department of Labour's (the Department's) *Survey of Employers who have Recently Advertised* (SERA). This survey provides an indication of employer's success in filling advertised vacancies for automotive electricians as well as other information on their recruiting experiences. The next two sections investigate trends in the demand for, and supply of, automotive electricians. The penultimate section presents some of the issues that arise from the matching of demand and supply in the labour market, such as wage rates. Finally, the 'Assessment' section considers all the information presented in the report and provides a view on whether the occupation is in shortage, and if so, the type of shortage being experienced. A short-term outlook for the shortage situation is also offered.



- 2.3 Further background to this occupational report, including a discussion of the methodology; a glossary of terms; and an overview of the Department of Labour's (the Department's) *Survey of Employers who have Recently Advertised* (SERA), including the survey questionnaire, can be found in the 'Background and technical note' at <http://www.dol.govt.nz/publications/jvm/trades/2005/background.asp>.

### 2.4 ***Automotive Electricians in New Zealand***

- 2.4.1 Automotive electricians are classified as transport electricians (code 71312 in the New Zealand Standard Classification of Occupations). They install, maintain and repair electrical wiring and electrical/electronic components and systems in vehicles.
- 2.4.2 The Department estimates that there were approximately 1,470 automotive electricians employed in New Zealand in 2005. Census figures indicate that

almost the entire automotive electrician workforce is male (99%) and is employed full time (99%).

## 2.5 **Note on Occupational Classification**

- 2.5.1 Household Labour Force Survey and External Migration data from Statistics New Zealand are only available at the 3-digit occupational level, with automotive electricians falling in the 3-digit category 'Electricians'. As automotive electricians comprise only a very small proportion of this broader group (9% in the 2001 Census), trends in employment and migration cannot be assessed through these sources.

## 3 **Survey of Employers who have Recently Advertised**

- 3.1 This section presents the key SERA findings of employers' experiences in recruiting automotive electricians.
- 3.2 The SERA allows the Department to gain insights into skill shortages by investigating how difficult it is for employers to fill vacancies. A 'fill rate' is calculated for each occupation – this being the proportion of vacancies included in the SERA sample which were filled with an adequately qualified and experienced person within ten weeks of advertising. Occupations with fill rates lower than 80% are typically regarded as being in shortage, while fill rates lower than 40% usually indicate that the occupation is in acute shortage.

*Table 2: SERA Results for Automotive Electricians and All Trades Surveyed, August 2005*

	<b>Number of Employers</b>	<b>Number of Vacancies</b>	<b>Fill Rate<sup>1</sup></b>	<b>Average Number of Suitable Applicants per Vacancy<sup>1</sup></b>
<b>Automotive Electricians</b>	17	21	29%	1.4
<b>All Trades Surveyed</b>	885	1480	37%	1.0

Source: Survey of Employers who have Recently Advertised, Department of Labour.

1 The 'All Trades Surveyed' fill rate and average number of suitable applicants per vacancy figures were both weighted to compensate for any under or over sampling of individual trade worker occupations in the 2005 survey.

- 3.3 Results from the 2005 SERA show that only 29% of automotive electrician vacancies included in the survey were filled within ten weeks of being advertised. While the fill rate for automotive electricians has increased from 15% in 2004, it still remains very low, and is below the fill rate for all surveyed trade occupations (37%). There was an average of 1.4 suitable applicants for each automotive electrician vacancy compared with an average of 1.0 for all trade occupations surveyed.

## 4 Demand for Automotive Electricians

4.1 This section investigates trends in the demand for automotive electricians and the factors underlying these trends. Demand is measured by the number of automotive electricians required by employers at current wage rates.

### 4.2 *Historical Demand*

4.2.1 Employment of automotive electricians grew by 0.7% per annum between 1991 and 2001 according to the Census (see Table 3). This contrasts with negative employment growth for motor mechanics (-1.0% per annum) and all trades (-0.2% per annum) over the same period. Between 1996 and 2001, employment of automotive electricians grew by 1.9% per annum which was higher than the average for all occupations (1.2%).

*Table 3: Employment of Automotive Electricians, 1991-2001*

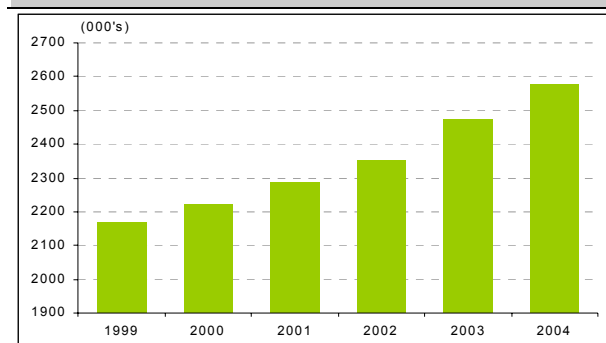
	Annual Growth in Employment		
	1991-1996	1996-2001	1991-2001
<b>Automotive Electricians</b>	-0.5%	1.9%	0.7%
<b>Motor Mechanics</b>	-0.9%	-1.1%	-1.0%
<b>All Trades</b>	0.0%	-0.4%	-0.2%
<b>All Occupations</b>	3.1%	1.2%	2.1%

Source: Census of Population and Dwellings, Statistics New Zealand.

4.2.2 The demand for automotive electricians is closely linked to the number of registered cars, the age of these cars, and the increasing electrical and electronic sophistication of vehicles (which will thus require greater installation, maintenance and repair).

4.2.3 Data from Land Transport New Zealand (LTNZ) shows a steady increase in the number of cars in New Zealand (see Figure 1). The number of registered cars has increased on average by 3.6% per annum since 1999. LTNZ data also shows cars on New Zealand roads are becoming older with the average age of cars increasing to 11.8 years in 2004, up from 11.3 years in 1999.

*Figure 1: Total Number of Cars in New Zealand Fleet*



Source: Land Transport New Zealand.

4.2.4 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.

### 4.3 **Future Demand**

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

- An increasing number of people in paid employment and strong economic growth has led to an increasing number of vehicles on the road – motor vehicle sales have grown by 7% per annum between 2000 and 2005<sup>1</sup>; and
- Continuing technological developments, which will increase the electrical and electronic components and systems in vehicles. Electronic equipment affects all areas of a vehicle's operation and increasingly there will be greater reliance on electronic management systems.

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

## 5 **Supply of Automotive Electricians**

5.1 This section investigates the various sources contributing to the supply of automotive electricians. Supply is measured by the number of people willing and able to work as automotive electricians at current wage rates.

### 5.2 **Training - National Certificate (Level 4) Qualifications and Equivalent**

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

1. The award of the National Certificate in Motor Industry (Automotive Electrical Engineering) Level 4 by the New Zealand Motor Industry Training Organisation Incorporated (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.

There were no non-national certificate qualifications at the equivalent level of the National Certificate Level 4 awarded over this time period.

5.2.2 Table 5 shows that the vast majority of the National Certificate Level 4 qualifications are awarded by MITO. The number of trainees achieving the National Certificate was 51 in 2005, an increase of 30 since 2001. Table 4 shows that new enrolments for this qualification have increased steadily from 72 to 126 between 2001 and 2005 suggesting an increase in future achievements of the National Certificate is likely.

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<sup>1</sup> Motor Industry Association, Monthly Sales Data.

*Table 4: Number of Trainees Enrolled for the National Certificate in Motor Industry (Automotive Electrical Engineering) Level 4*

	National Certificate in Motor Industry (Automotive Electrical Engineering) Level 4 (MITO)		National Certificate in Motor Industry (Automotive Electrical Engineering) Level 4 (Other Providers)		Total	
	Total Enrolled	New Enrolments	Total Enrolled	New Enrolments	Total Enrolled	New Enrolments
<b>2001</b>	222	70	6	2	228	72
<b>2002</b>	207	72	21	8	228	80
<b>2003</b>	204	84	29	13	233	97
<b>2004</b>	238	85	38	16	276	101
<b>2005</b>	213	98	49	28	262	126

Source: New Zealand Motor Industry Training Organisation (Inc.); Tertiary Education Commission. Some figures were estimated by the Department.

*Table 5: 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	
	Total Enrolled	New Enrolments	Total Enrolled	New Enrolments	Total Enrolled	New Enrolments
<b>2001</b>	20		1		21	
<b>2002</b>	20		3		23	
<b>2003</b>	27		4		31	
<b>2004</b>	36		6		42	
<b>2005</b>	45		6		51	

Source: New Zealand Motor Industry Training Organisation (Inc.); Tertiary Education Commission. Some figures were estimated by the Department.

5.2.3 The training rate for automotive electricians is given in Table 6. This indicator provides an approximate measure of the rate at which the supply of fully qualified automotive electricians can potentially grow through training. The training rate is calculated by expressing the number of trainees achieving the relevant qualification as a percentage of total employment in that occupation. The training rate for automotive electricians has increased in the last three years from 1.5% in 2002 to 3.5% in 2005. The training rate for automotive electricians is higher than the average training rate of 3.3% for all trades analysed by the Department. By way of comparison, the average training rate for automotive electricians in New South Wales, Australia<sup>2</sup> in the three years to June 2005 was 4.3% - higher than the training rate in New Zealand over the last three years.

<sup>2</sup> Australian national level estimates of training rates are not available.

Table 6: Training Rate for Automotive Electricians, 2001-2005

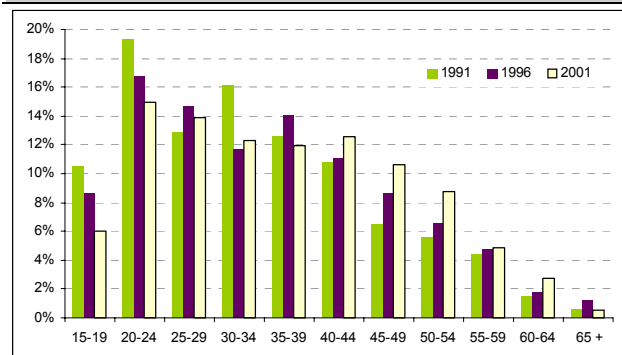
	Automotive Electricians	All Trades <sup>3</sup>
2001	1.5%	2.0%
2002	1.5%	2.2%
2003	2.2%	2.2%
2004	3.0%	2.7%
2005	3.5%	3.3%

Source: Department of Labour.

### 5.3 Retirements

5.3.1 Based on 2001 Census data, it is estimated that approximately 0.7% of the automotive electrician workforce retires each year (assuming a retirement age of 65). This equates to about ten automotive electricians per annum. This is lower than the average retirement rate for all trade occupations (1.3%). Census data shows an ageing of automotive electricians occurred between 1991 and 2001 (see Figure 2).

Figure 2: Age Profile of Automotive Electricians, 1991-2001



Source: Census of Population and Dwellings, Statistics New Zealand.

The percentage of automotive electricians under 35 years of age decreased from 59% in 1991 to 47% in 2001, while the percentage of automotive electricians over 40 increased to 40% in 2001, up from 29% in 1991. As the automotive electrician workforce ages, the number of automotive electricians retiring each year will increase.

### 5.4 Occupational Detachment<sup>4</sup>

5.4.1 Employers were asked if they thought automotive electricians left the occupation to go and do something different more or less than in other occupations. Of the 13 employers who answered this question, six thought they left at about the same rate as in other occupations, four thought they left at a higher rate, and three thought they left at a lower rate.

5.4.2 This suggests that occupational detachment may have an impact on supply for this occupation, with some employers saying this may be because of factors such as dirty working conditions.

<sup>3</sup> The training rates for 'all trades' were calculated for the 14 trade occupations that were examined in-depth using data from the SERA Intensive 2005. As the composition of occupations being examined changes from year-to-year, so will the training rates.

<sup>4</sup> 'Occupational detachment' refers to individuals who choose not to continue practising in their occupation but retain a connection to the occupation (e.g. move into a management or supervisory role, or retain professional registration), or who leave the occupation entirely (e.g. by changing occupation or withdrawing from the labour market).

## 6 Assessment

6.1 This section considers all the information presented in this report on employers' recruiting experiences, supply and demand trends, and matching issues and offers a view on whether there is a shortage of automotive electricians and the type of shortage. A short-term outlook for the shortage situation is also offered.

6.2 Demand for automotive electricians has grown moderately in recent years due to growth in the number of registered cars, a rising average age for cars and an increase in the use and sophistication of electronic equipment in vehicles. In contrast to the growth in demand, the supply of automotive electricians has grown slowly. In the early 2000's supply through training was potentially growing by less than 2%, although this had risen to 3.5% by 2005. Supply was probably complemented by a small amount of net inward migration but occupational detachment would have resulted in a loss of supply. As demand growth has exceeded supply growth, an acute shortage of automotive electricians has resulted. This is reflected by the low fill rate of 29%. This disparity that has developed as demand has outgrown supply indicates that the automotive electrician shortage is a **genuine skill shortage** (see Box 1 for definition).

### Box 1: Skill Shortage Definitions

#### Genuine Skill Shortage

Occurs when employers have difficulties filling their job vacancies because there are not enough individuals with the required skills in the potential labour market to fill the positions on offer.

#### Recruitment and Retention Difficulty

Occurs when there is a considerable supply of individuals with the required skills in the potential labour market but they are unwilling to take up employment at current levels of remuneration and conditions of employment. Retention problems are often a major contributor to this condition.

6.3 Demand for automotive electricians will continue to grow over the next few years on the back of strong growth in the number of cars being registered and the increasing electrical and electronic sophistication of vehicles. While the number of trainees achieving the relevant National Certificate qualifications has been increasing over the last few years, supply through training and migration will struggle to eliminate the current shortfall of automotive electricians. The Department therefore foresees shortages persisting over the short-term, although higher training rates should result in some easing.

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