



**JUNE 2006**

## **LINE MECHANIC: OCCUPATIONAL SKILL SHORTAGE ASSESSMENT**

**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 indicate employers have had considerable difficulty in filling line mechanic positions in New Zealand. Only 10% of positions were filled within ten weeks of advertising and there was an average of only eight suitable applicants for every ten line mechanic vacancies. This report considers these survey results in the context of trends in the demand for and supply of line mechanics.

*Table 1: Employer Survey Indicators, 2005*

	Fill Rate	Average Number of Suitable Applicants
Line Mechanics	10%	0.8
All Trades Surveyed	37%	1.0

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

1.2 Employment of line mechanics decreased strongly (-3.5% per annum) between 1991 and 2001 as the electricity supply industry underwent significant reform and restructuring. However, in recent years evidence suggests there has been strong employment growth for line mechanics on the back of large scale investment in the industry. High investment levels in the electricity supply industry and strong projected demand for power indicates that there will be upwards pressure on the demand for line mechanics in the future.

1.3 In contrast to the rapid growth in demand for line mechanics in the 2000s, the growth in supply of line mechanics has been slower. In the early 2000s supply was potentially growing by substantially less than 1% per annum through training. In addition, net outward migration depleted the supply of line mechanics as many chase the highest wage, both domestically and internationally. In more recent years training rates have risen considerably.

- 1.4 Due to the on-going disparity between the levels of supply and demand, the Department of Labour has assessed the line mechanic occupation as experiencing a **genuine skill shortage**.
- 1.5 Even though supply has increased strongly in the last three years, demand is outstripping supply resulting in a severe shortage of line mechanics. In addition, strong demand for line mechanics is projected in the future. As New Zealand will have to compete for line mechanics on the global market, the Department of Labour believes the growth in supply will struggle to eliminate the current shortfall of line mechanics. The Department therefore predicts shortages to persist in the short-term, although high training rates should result in some easing.

## 2 Introduction

- 2.1 The purpose of this report is to investigate skill shortages for line mechanics 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 line mechanics as well as other information on their recruiting experiences. The next two sections investigate trends in the demand for, and supply of, line mechanics. 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 **Line Mechanics in New Zealand**

- 2.2.1 Line mechanics are referred to as linespersons in the New Zealand Standard Classification of Occupations (code 82923). They install, repair, and maintain overhead and underground electricity and communication lines.
- 2.4.2 The vast majority of line mechanics who work in New Zealand are registered and hold a current practicing licence. This licence must be renewed annually to ensure the holder is aware of current electrical legislation, codes of practices and

safe working procedures. The Department estimates that there were about 2,200 line mechanics employed in 2005. Census figures indicate that almost the entire line mechanic workforce is male (98%) and is employed full time (96%). It has a significant representation of Maori (28%) and Pacific people (4%).

### 3 Survey of Employers who have Recently Advertised

- 3.1 This section presents the key SERA findings of employers' experiences in recruiting line mechanics.
- 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 Line Mechanics and All Trades Surveyed, August 2005*

	Number of Employers	Number of Vacancies	Fill Rate <sup>1</sup>	Average Number of Suitable Applicants per Vacancy <sup>1</sup>
<b>Line Mechanics</b>	8	21	10%	0.8
<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 10% of line mechanic vacancies included in the survey were filled within ten weeks of being advertised (see Table 2). This was well below the fill rate for all surveyed trade occupations (37%). There was an average of only eight suitable applicants for every ten line mechanic vacancies compared with an average of 1.0 for all trade occupations surveyed.

### 4 Demand for Line Mechanics

- 4.1 This section investigates trends in the demand for line mechanics and the factors underlying these trends. Demand is measured by the number of line mechanics required by employers at current wage rates.
- 4.2 **Historical Demand**
- 4.2.1 Historically, the demand for electricity has been driven by population growth and economic growth. However, since the early 1990's the electricity supply industry has undergone significant reforms and restructuring. Many of these reforms were intended to make the markets for generation, distribution and retailing of electricity more dynamic and competitive. In this period, growth in the amount of

electricity produced slowed, the industry experienced declining investment in electricity assets, and the number of persons employed in the associated workforce decreased. There was also a large increase in the number of companies contracting out non-core services.

- 4.2.2 Accordingly, the Census measured a strong decline in the number of line mechanics employed (-3.5% per annum) between 1991 and 2001 (see Table 3). This was primarily caused by a strong decrease in the number of line mechanics between 1991 and 1996 during which time employment declined by 6.9% per annum. Between 1991 and 2001 employment growth for line mechanics declined more sharply than that for all trades (-0.2%) and was well below the growth rate for all occupations (2.1%).

*Table 3: Employment of Line Mechanics, 1991-2001*

	Annual Growth in Employment		
	1991-1996	1996-2001	1991-2001
<b>Line Mechanics</b>	-6.9%	-0.1%	-3.5%
<b>All Trades</b>	0%	-0.4%	-0.2%
<b>All Occupations</b>	3.1%	1.2%	2.1%

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

- 4.2.3 However, in recent years investment has increased considerably in the electricity supply industry. Between 2004 and 2005, spending on asset maintenance and capital investment for lines companies increased by 34%<sup>1</sup>. In addition, the demand for power has been high as the economy has performed strongly and there has been strong population growth driven by record net migration. Household Labour Force Survey (HLFS) data indicates strong employment growth amongst *assemblers* (the broad occupational group into which line mechanics fall) since 2001. The number employed grew by an average of 8.6% per annum in the four years to December 2005 (see Table 4). This was driven by strong employment growth in 2004 and 2005.

*Table 4: Annual Average Employment of Assemblers, 2001-2005, December Years (000's)*

	2001	2002	2003	2004	2005	Annual Growth in Employment
<b>Assemblers</b>	11.7	12.6	12.7	13.9	16.5	8.6%

Source: Household Labour Force Survey, Statistics New Zealand.

- 4.2.4 An annual University of Waikato study<sup>2</sup>, commissioned by the Electricity Supply Industry Training Organisation (ESITO), which analyses skills in the industry, provides additional evidence of strong employment growth for line mechanics. It

<sup>1</sup> University of Waikato, October 2005, 'Has the Skills Gap Increased? Long Term Planning and Strategy for Effective Training in the Electricity Supply Industry'.

<sup>2</sup> University of Waikato, October 2005, 'Has the Skills Gap Increased? Long Term Planning and Strategy for Effective Training in the Electricity Supply Industry'.

found that employment in ESITO-oriented technical trades had risen by 5.8% in 2004 and 9.1% in 2005.

#### 4.3 **Future Demand**

- 4.3.1 The electricity supply industry has experienced rising power prices and strong demand for power in recent years. Transpower, who owns and maintains the national electricity grid for New Zealand, has forecasted the demand for electricity to grow by 2.2% per annum till 2016<sup>3</sup>. Furthermore, investment levels have started to increase strongly over the last few years as distribution companies look to update their networks. Transpower have begun investing heavily in upgrading the national grid. In June 2004, Transpower indicated that \$1.5 billion of investment in the national grid was needed by 2010<sup>4</sup>. High investment levels in the electricity supply industry and strong projected demand for power indicate that there will be upward pressure on the demand for line mechanics.

### 5 **Supply of Line Mechanics**

- 5.1 This section investigates the various sources contributing to the supply of line mechanics. Supply is measured by the number of people willing and able to work as line mechanics 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* line mechanics through training. It considers the award of either the National Certificate in Electricity Supply (Line Mechanic Distribution) Level 4 or the National Certificate in Electricity Supply (Line Mechanic Transmission) Level 4 by ESITO. These are the nationally recognised qualifications for line mechanics which are designed by ESITO to meet the needs of employers of line mechanics in the electricity supply industry. On completion of the National Certificate in Electricity Supply (Line Mechanic Distribution or Transmission) Level 4 qualification, application can be made to the EWRB for registration as a line mechanic.
- 5.2.2 Table 5 shows that there has been a strong increase in the number of trainees achieving the National Certificate Level 4 qualifications. In 2005, 170 trainees achieved the National Certificate, up from 6 in 2002. There were no non-national certificate qualifications at the equivalent level of the National Certificate Level 4 awarded over this time period.

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<sup>3</sup> Bradshaw, Allan, 7-8 July 2005, 'Upper North Island's Electricity Needs – Keeping the Lights On', Presentation to the New Zealand Property Institute Annual Conference.

<sup>4</sup> Dr Craven, Ralph, 18 June 2004, 'Meeting New Zealand's Long Term Needs: Building a National Grid for the Future', Address to the EEA Conference.

*Table 5: Number of Trainees Achieving the National Certificate in Electricity Supply (Line Mechanic Distribution or Transmission) Level 4*

Year	National Certificate in Electricity Supply (Line Mechanic Distribution or Line Mechanic Transmission) Level 4 (ESITO)
2001	6
2002	5
2003	59
2004	65
2005	170

Source: Electricity Supply Industry Training Organisation.

- 5.2.3 The training rate for line mechanics is given in Table 6. This indicator provides an approximate measure of the rate at which the supply of fully qualified line mechanics 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 line mechanics is estimated to be 7.8% in 2005, a strong increase from 0.3% measured in 2002. It is noticeably higher than the average training rate of 3.3% for all trades analysed by the Department.

*Table 6: Training Rate for Line Mechanics, 2001-2005*

	Line Mechanics	All Trades <sup>5</sup>
2001	0.3%	2.0%
2002	0.3%	2.2%
2003	2.9%	2.2%
2004	3.2%	2.7%
2005	7.8%	3.3%

Source: Department of Labour.

### 5.3 Migration

- 5.3.1 New Zealand has experienced a net migratory outflow of 230 *assemblers* between 1998 and 2005. The net inflow experienced in 2002 was the only year since 1998 in which there was a net inflow, which can be attributed to the number of permanent and long-term departures decreasing in that year.

<sup>5</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.

Table 7: *Permanent and Long-term Arrivals, Departures and Net Migration of Assemblers, 1998-2005 December Year End*

	1998	1999	2000	2001	2002	2003	2004	2005
<b>Arrivals</b>	39	32	25	48	50	40	64	79
<b>Departures</b>	83	77	84	66	47	69	91	90
<b>Net Migration</b>	-44	-45	-59	-18	3	-29	-27	-11

Source: External Migration, Statistics New Zealand. This data is only available at the broad (3-digit) occupational level 'assemblers'. Line mechanics represented a little under a quarter (21% in the 2001).

- 5.3.2 Line mechanics only comprise around a quarter of *assemblers* making it difficult to measure the full effects of migration on the market for line mechanics. However, there is other evidence that a considerable number of line mechanics emigrate from New Zealand every year. Large international projects offering high wages are attracting many line mechanics, in particular live line workers, away from the New Zealand labour market. Transpower found their maintenance contractors have lost up to 25% of their line mechanics to countries such as Ireland and Australia<sup>6</sup>. In 2003, ESITO reported up to 20% of New Zealand's live line workers are now working in Ireland<sup>7</sup>.
- 5.3.3 Overseas pay rates are a major cause of the large numbers of line mechanics migrating overseas. Many countries are experiencing widespread skill shortages for line mechanics and as a result, salaries are being driven upwards. Some countries, such as the USA, Australia and Ireland, have actively recruited from the New Zealand electricity supply labour market, offering better pay rates. There are anecdotal reports of pay rates for line mechanics in Ireland and USA being up to three times those offered in New Zealand<sup>8</sup>.
- 5.3.4 However, the University of Waikato report also found that some New Zealanders who work overseas do come back. In 2005, about 14% of the current electricity supply workforce indicated they had worked overseas at some time in the electricity industry, up from 10% in 2004. The report also reveals there has been an influx in the number of international electricity supply trades workers into New Zealand between 2004 and 2005. It indicates anywhere from 25% to 33% of all new employees in the industry are from foreign countries.
- 5.3.5 The report also found that interest in overseas jobs for the New Zealand electricity supply technical trades workforce was high, with higher pay being the most positive aspect of an overseas job. It found that 32% of workers had been approached by overseas recruiters, up from 24% in 2004. In-depth interviews of the workforce found 'pay' was the aspect of the job that most needed improvement in New Zealand to increase job satisfaction.

<sup>6</sup> Dr Craven, Ralph, 18 June 2004, 'Meeting New Zealand's Long Term Needs: Building a National Grid for the Future', Address to the EEA Conference.

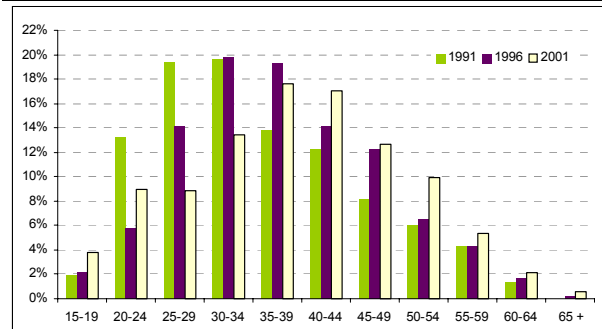
<sup>7</sup> Stirling, Pamela, December 13-19 2003, 'Hot jobs', New Zealand Listener, Vol 191, No 3318.

<sup>8</sup> Ibid.

## 5.4 Retirements

5.4.1 Based on 2001 Census data, it is estimated that approximately 0.5% of the line mechanic workforce retires each year (assuming a retirement age of 65). This equates to about ten line mechanics per annum. This is lower than the average retirement rate for all trade occupations (1.3%). Census data shows an ageing of line mechanics occurred between 1991 and 2001 (see Figure 1).

Figure 1: Age Profile of Line Mechanics, 1991-2001



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

The percentage of line mechanics under 30 years of age decreased from 35% in 1991 to 22% in 2001, while the proportion in all age groups over 40 increased. By 2001 nearly half of all line mechanics were 40 years of age or older and the average age was 39, up from 35 in 1991. As the line mechanic workforce ages, the number of line mechanics retiring each year will increase, especially in a trade where the physical demands of the job mean many often leave the job before 65.

## 5.5 Registration

5.5.1 The majority of line mechanics who work in New Zealand are registered with the EWRB. Once registered, those line mechanics seeking to practice must obtain a practising licence on an annual basis from the EWRB. The registration data may slightly underestimate the total line mechanic workforce as some non-registered line mechanics are covered under the employer licence regime. There were 1,776 practising line mechanics in 2005, according to the EWRB.

5.5.2 The number of annual practising licences issued for line mechanics has grown at an average of 17% per annum in the two years to 2005. This was after a period where the number of annual practising licences issued declined between 1999 and 2003. The strong growth is backed up by the HLFS which showed that employment of *assemblers* grew by 14% per annum in the two years to 2005.

Table 8: Registration of Line Mechanics, 1999-2005

Year	Total Number of Annual Practising Licences Issued	Growth in Number of Practising Licences Issued	Number of Registrations	New Registrations
1999	1,354	-	2,136	43
2000	1,308	-46	2,174	68
2001	1,293	-15	2,242	68
2002	1,324	31	2,282	40
2003	1,292	-32	2,355	73
2004	1,434	142	2,435	80
2005	1,776	342	2,519	84

Source: Electrical Workers Registration Board.

## 5.6 **Occupational Detachment**<sup>9</sup>

- 5.6.1 Table 8 shows the number of new registrations each year between 1999 and 2003 has remained relatively constant. By registering, these individuals have presented themselves as potential additions to the supply of line mechanics in New Zealand. The sources of these new registrations include recent graduates and new migrants. However, the number of annual practising licences issued declined between 1999 and 2003. The fact that the total number of line mechanics with annual practising licences declined during a period in which an average of nearly 60 new line mechanics registered each year indicates that a significant number of line mechanics left the occupation over this period.
- 5.6.2 In 2004 and 2005, however, the growth in annual practising licences issued (an increase of 484) has considerably outstripped the number of new registrations (an increase of 164). This suggests that many line mechanics who had previously detached themselves from the New Zealand line mechanic market have returned to practise in the last two years. The number of line mechanics who had registered at some point in time but did not apply for an annual practising licence in 2005 was 743, down from 1063 in 2003 (a decrease of 30%).

## 6 **Matching of Supply and Demand**

- 6.1 This section considers some of the issues that arise from the labour market matching of the supply of line mechanics with the demand for line mechanics.
- 6.2 **Salaries**
- 6.2.1 Line mechanic wages are similar to the average for all trades. The Labour Cost Index (LCI) measured an average hourly wage of \$20.34 for line mechanics compared with an average wage for all trades workers of \$19.81 (see Table 9). According to the LCI, wages of line mechanics have increased by 6.7% in the twelve months to June 2005, compared with 4.8% in all trades.

*Table 9: Average Hourly Wage Rates for Line Mechanics*<sup>10</sup>

	June 2004	June 2005
<b>Line Mechanics</b>	\$19.07	\$20.34
<b>All Trades</b>	\$18.90	\$19.81

Source: Labour Cost Index, Statistics New Zealand.

<sup>9</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).

<sup>10</sup> The data shown from the LCI are unadjusted mean hourly rates. Caution should be taken with interpreting this information due to the relatively small sample sizes, particularly at the occupational level. Furthermore, the LCI is designed to measure changes in, rather than the actual level of, wage and salary rates.

### 6.3 **Other Assessments of Supply and Demand**

- 6.3.1 The annual University of Waikato report which analyses skills in the industry, and is commissioned by ESITO, has estimated that in 2005, there was a shortage of between 183 and 231 line mechanics and cable jointers in New Zealand<sup>11</sup>. The shortage in 2005, as measured by the study, is about the same size as the shortage measured in 2004.

## 7 **Assessment**

- 7.1 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 line mechanics and the type of shortage. A short-term outlook for the shortage situation is also offered.
- 7.2 After a long period of decline, New Zealand's electricity supply industry is growing again. High levels of investment and strong demand for electricity has rapidly increased the demand for line mechanics. In contrast to the growth in demand, the growth in supply of line mechanics has been slower. In the early 2000s supply was potentially growing by considerably less than 1% through training. In addition, net outward migration has depleted the supply of line mechanics as many chase the highest wage, both domestically and internationally. Although supply through training has increased substantially in 2005, demand has outgrown supply resulting in a severe shortage of line mechanics. This is confirmed by an extremely low fill rate of 10%. As demand growth has exceeded supply growth the Department describes this situation as a **genuine skill shortage** (see Box 1 for definition).
- 7.3 High investment levels in the electricity supply industry and strong projected demand for power indicate that there will be upwards pressure on the demand for line mechanics. In addition, New Zealand will have to compete with other countries for line mechanics as there is a high demand for them globally. However, many non-practising registered line mechanics are returning to the workforce as wage growth is strong and there may also be a lagged effect from migration inflows in the past two years (given that it takes time for migrants to reach New Zealand registration standards). While there has also been strong growth in the number of trainees achieving the relevant National Certificate qualification, supply will struggle to eliminate the current shortfall of line mechanics. The Department therefore predicts shortages to persist in the short-term, although high training rates should result in some easing.

#### **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.

<sup>11</sup> It must be noted that cable jointers are also included in this estimate; however, in the 2001 Census, line mechanics represented 92% of line mechanics and cable jointers.

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