Final Report:
Situational Analysis of the Powerline Trade in Canada

April 2008
ABOUT THE ELECTRICITY SECTOR COUNCIL

The Electricity Sector Council is an independent, not-for-profit organization funded by the Government of Canada’s Sector Council Program with support from participating sector communities of business, labour organizations, educators and stakeholder associations.

The Council provides human resource and workplace development support to workers employed by the electricity, renewable energy industries and related cogeneration, energy efficiency, and manufacturing and service/consulting industries. Through its research and work with industry employers, the Council is resolving issues such as recruiting and retaining workers, facilitating school-to-work transitions and developing sector and career awareness strategies.

This report is also available in French and can be obtained electronically at www.brightfutures.ca.
SCOPE OF THE PROJECT

Project Objectives

- Enable industry partners to provide long term pro-active workforce development for the powerline trade;
- Complete an initial review of existing literature;
- Assess the current workforce;
- Implement a needs/gap assessment of training and working conditions based on focus group input;
- Provide an overview of regional and provincial differences in apprenticeship development;
- Identify a national industry symposium to review the findings of the work and to provide a forum for industry stakeholders to learn about the recommendations of the project.

Project Deliverables

- A review of existing published literature related to the occupation in Canada focusing on apprenticeship development, Journey level qualification and working conditions related to this trade;
- A panned Canadian survey of key employers (public and private, small and large) and training organizations, as well as the Directors of Apprenticeship, to identify the criteria for provincial/territorial certification and to identify common training blocks in the Apprenticeship Program for this trade;
- A matrix of similarities and differences in certification and training between provincial jurisdictions;
- A survey of usage of Red Seal, barriers to apprenticeship completions, and Red Seal completions within the Powerline Technician (PLT) trade within the identified organizations.
EXECUTIVE SUMMARY

Key Drivers of the Powerline Technician Trade

Apprenticeship Programs
- Apprentice registrations
- Withdrawal rates
- Apprenticeship training
- Employer sponsorships of Powerline Technician Apprenticeships

Education and Training
- Mandatory entry criteria across provinces
- Math and physics competency
- Apprenticeship term
- Education/entrance requirements
- Prior Learning Assessment and Recognition
- Training delivery methods
- Curriculum resources
- Assessment/examination resources

Occupational Standards
- Trade names
- Aptitude of the classification
- Scope of the occupation
- Occupational observations
- Safety standards
- Occupational standards by province

Market Conditions
- Apprentice registrations per year
- Regional trends in Apprenticeship registrations
- Size of the Powerline Technician trade
- Gender related trends in the trade
- Income range for Powerline Journeypersons
- Growth in annual registrations by age

Regional Differences
- Challenges and priorities
- Regional differences in the powerline trade
  - Western Canada
  - Central Canada
  - Atlantic Canada
- Attitudes of Powerline Journeypersons

Red Seal Program
- Competence assessment
- Qualification of Journeypersons
- Attitudes to Red Seal
- Red Seal certifications
- Red Seal completion rates

Key Findings

Apprentice registrations for the Powerline Technician trade have grown since 2001.

The number of apprentice registrations per year for the Powerline Technician trade has grown from 1,205 in 2001 to 1,790 in 2005 (an increase of 585 apprentices). The number of apprentices entering the trade has been increasing by approximately 12 per cent a year since 2001. In addition, the general trend of Powerline Technician registrations across age groups is upward, primarily driven by growth in Ontario and Alberta. The 20 to 24 and 25 to 29 age groups have the largest number of registrations for Powerline Technicians.

The withdrawal rate of the powerline apprenticeship has remained low at about five to nine per cent a year. This can be attributed to the profile of apprentices who enter the apprenticeships. They tend to have a relative or acquaintance in the trade who provides them with a good overview of the challenges apprentices will face in the trade. The low withdrawal rate helps to stabilize the transition rates from apprenticeship to Journeyperson status. Apprenticeship training related challenges are substantial. Inconsistent training policies across provinces hinder seamless sharing of best practices and improvements in the course content.
The Powerline apprenticeship system is male-dominated.

Currently, there is approximately one female in Powerline Apprentice Programs in each province. On one hand, it is perhaps not surprising that the apprenticeship system is male-dominated, given that trades in general are also male dominated. However, apprenticeship remains an important point of entry for females into the trades and could thus play a crucial role in decreasing gender inequality. This is particularly important within the broader context of redressing gender wage differentials for women who choose not to pursue a university or college education.

Gender equity is mentioned often as a significant challenge. The scope of work is not positioned in a particularly attractive way to women. Most of the equipment is considered to be designed for men.

The number of employer sponsorships of Powerline Technician apprenticeships has risen.

There has been a substantial increase in employer sponsorships of Powerline Technician apprenticeships, while sponsorship by unions has remained relatively low. Powerline Technician certification is required in some provinces and is available but voluntary in most other provinces and territories. Even where certification is voluntary, it is still recommended by the provincial government.

The number of Journeypersons leaving or retiring from the trade has increased.

The growth in apprentices has to be viewed in context of well documented fact that there is an increase in Journeypersons leaving or retiring from the powerline trade. According to the Occupation – National Occupational Classification for Statistics 2006, the number of Journeypersons in the Powerline Technician trade in Canada is estimated at 11,953. An analysis of the ratio of the population of each province to Journeypersons provides a perspective on the range of the ratio of 1,618 (Saskatchewan) and 4,145 (Ontario). While the ratio may not reflect the actual shortage of Powerline Technicians in each province due to different economic conditions, it could provide a norm for comparing data across several years.

When analysed by region, there are clear trends in the Powerline Technician trade across regions in Canada.

Trends in powerline apprentice registrations confirm diverse challenges across provinces, especially in Atlantic and Western Canada. Atlantic Canada has seen a dramatic drop of 24 per cent in apprenticeship registrations since 2001; Ontario and Western Canada have witnessed increases in registrations during the same period. Ontario and Quebec have over half the Journeypersons (56 per cent) while Atlantic Canada has 10 per cent and Western Canada has 34 per cent of the total number of Journeypersons.

The annual salaries for Powerline Journeypersons could account for this percentage spread: the incomes range from $38,055 in Prince Edward Island to $71,400 in Saskatchewan. It is important to also note that Manitoba offers a considerably lower salary compared with the three other western provinces. This significant difference may have a serious long term impact on the base of Journeypersons in Manitoba as younger Journeypersons are more likely to be influenced by the difference in incomes across provinces.
Priorities and concerns for respondents in the powerline trade varied according to region.

There are distinct characteristics in the trade in Western, Central and Atlantic Canada. In each region, provinces have diverse challenges and face different economic and workforce challenges.

Western Canada
The most important concerns for respondents in Western Canada are the following:
1. PLTs from other provinces who work in Western Canada tend to have short career spans;
2. There are inadequate resources to train apprentices to maintain the current ratio of Journeypersons to apprentices;
3. Career path visibility is lacking for potential powerline apprentices;
4. There is a low consistency in incumbent capabilities and low math/physics skills;
5. Low awareness and lack of a positive image of the trade is prevalent, especially among students.

Central Canada
The most important priorities for respondents in Ontario and Quebec are:
1. Improving the quality of PLT applicants (stronger knowledge of math and physics);
2. Addressing the lack of trade education related activity at the high school level;
3. Increasing the low awareness of the trade and lack of a positive image;
4. Improving the lack of trade education related activity at the high school level;
5. Streamlining the inconsistent and infrequent ongoing training of Journeypersons.

Atlantic Canada
The most important priorities for respondents in Atlantic Canada are:
1. Upgrading the training system and bringing a new process of best practices around training;
2. Improving the inadequate refresher training after apprentices complete their Apprenticeship Program;
3. Increasing the low awareness of the trade and lack of a positive image.

Regional differences in the powerline trade confirm the need for extensive restructuring and consolidation of training and assessment practices across provinces.

In Western Canada, experienced Powerline Technicians mention a trend towards university educated professionals in management and supervisory positions related to the Powerline Technician trade. They would like to see more trades-oriented people back into management to stay competitive. This also stems from concern about their career advancement prospects into supervisory and management positions. Respondents mentioned that managing consistency in incumbent Journeyperson profiles is a challenge. Both employers and other stakeholders suggest that a closer link between curriculum in secondary schools and trades work is desirable. Practical dimensions of training are critical to strengthen the appreciation and awareness of the trades.

 Respondents from Ontario and Quebec noted the key barrier to attracting people into the skilled trades is the lack of trade education related activity at the high school level. As a result, young people tend to know less about the trades and are inclined to pursue university degrees. Students at the high school level, even those that would be attracted to trades have very few options to get into a trade and technical program. In addition, limited access to training in local communities may be a barrier to growth of the PLT trade. HydroOne is the primary provider of apprenticeships in Ontario and access to training is limited in communities where the 86 local utilities are located in the province. (HydroOne trains apprentices on behalf of 86 local utilities.)
Task-skills, which is training and certification based on specific tasks and skills rather than on the occupation, is a polarizing topic in Ontario. Most PLTs and Union representatives feel it erodes the flexibility of the trade and increases the risk of redundancies. For example, specialization of Linesmen for underground and overhead operations would lead to imbalances in resources if demand increases in one of the areas.

Another concern from Central Canada was the infrequent and inconsistent ongoing training of experienced Journeypersons. Respondents stated that there seems to be a gap in the expectation and commitment of Journeypersons and employers in investing time and resources in training. A lack of resources and high replacement costs are often mentioned as reasons for low levels of ongoing training.

In Atlantic Canada, a shrinking pool of experienced Journeypersons to train new Journeypersons was identified as a concern. The gap between the people who are going to be retiring and the new people coming into the trade has also accelerated the decline. As a result of the culture gap, younger people do not get to learn about the trade from people who are closer to their age and hence, they do not adequately relate to the trade.

The learning process also lacks adequate simulation and seems to be inconsistent. Both employers and PLTs expressed concern about the consistency of training. They would like to see a more consistent level of instruction to ensure apprentices have an in-depth understanding of safety, technical information and practices. There has been a substantial increase in new technologies in the PLT trade.

Powerline Technicians from Atlantic Canada with over 15 years of experience are concerned about the lack of junior apprentices and Journeypersons. Most respondents mentioned that utilities across Canada stopped investing in apprenticeships in the 1980s. As a result, the trade has a disproportionate number of people with over 20 years experience and less than six or seven years experience. Instructors mentioned this “demographic time-bomb” that is impacting the trade.

The characteristics of Powerline Technicians differ by level of experience.

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<th>1-5 years experience</th>
<th>6-15 years experience</th>
<th>15+ years experience</th>
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<td>- High expectations from training</td>
<td>- Tendency to be over confident about skills</td>
<td>- Not as technology savvy</td>
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<td>- Familiar with computers and technology</td>
<td>- Transitioning to family with children</td>
<td>- Concerned about change in value of the trade (e.g., importance of wages versus team work)</td>
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<td>- More mobile and likely to move across provinces</td>
<td>- Less likely to be open to a move if a dual income household</td>
<td>- Strong commitment to safety</td>
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<td>- More flexible in terms of working in rural/urban areas</td>
<td>- Monetary benefits become increasingly important</td>
<td>- Concerned about competency levels of new recruits</td>
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<td>- Prefer specialised training and task-skilling</td>
<td>- Work environment influences choices</td>
<td>- Prefer comprehensive training (not task-skilling)</td>
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<td>- Prefer specialised training and task-skilling</td>
<td>- Advancement is a concern – growing need for certification to transition to supervisory and manager positions</td>
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Source: In-depth interviews with Powerline Technicians
The education and training criteria for the Powerline Technician trade vary according to region.

Most provinces have a minimum for Journeyperson certification of 1,800 hours based on recognition of experience, education and relevant skills. The apprenticeship term seems to be consistent across provinces. Mandatory entry criteria across provinces vary depending on structure of apprentice training, sponsorship, employer involvement and assessment criteria. A common commitment identified is a need to strengthen math and physics competency levels of apprentices. The aptitude of Powerline Technician classification and education/entrance requirements differ across provinces. Prior learning assessment and recognition practices (PLAR) could be strengthened to broaden the pool of apprentices. Training delivery methods vary depending on course content and specific needs in each province.

The curriculum resources available across provinces are mostly based on the national occupational analysis. However, Ontario follows a mix of national and provincial occupational analysis. There are inconsistencies in practices regarding the skills profile chart, Apprentice Program outlines, Journeyperson course outline and Modularized Learning Resource Materials. For example, none of the provinces, except Newfoundland has a Journeyperson course outline.

Occupational standards of the Powerline Technician trade are inconsistent across Canada.

One of the visible inconsistencies of the trade is the terminology used to describe Powerline Technicians. There are over five descriptors used across provinces, with only four provinces using the term “Powerline Technician” and Quebec using two names to describe the trade: Monteur de lignes sous tension and Technicien(ne) de lignes d’énergie électrique. While the scope of the occupation is largely consistent across provinces, smaller yet important differences exist. Occupational observations indicate a high commitment to safety standards; however, trends such as assigning inexperienced Journeypersons to positions that require a high knowledge of safety processes may be eroding safety standards in some provinces.

Red Seal certifications have grown dramatically since 2001.

Red Seal certifications in the powerline trade have grown at about five times the rate of powerline apprenticeship registrations in Canada during 2001 to 2005. The growth is driven by heightened interest in mobility among younger Journeypersons, mandatory Red Seal certifications as part of apprenticeships and active promotion of the Red Seal program.

The number of Red Seal certifications granted, as a share of apprenticeship registrations, has grown from four per cent in 2001 to eight per cent in 2005. The number of Red Seal certifications has tripled during the same period. However, numerous barriers still remain. A concern among employers is that Red Seal designations may increase the probability that PLTs may move from one employer to another. Younger PLTs consider the Red Seal to be a “generic test” that does not reflect the specific needs in each province. There is a perceived gap in the relevance of the Red Seal in practical application and competence enhancement on the job. PLTs with over 10 years experience are less likely to take the Red Seal examination because they tend to be less mobile due to family and other related commitments.
Recommendations

Economic conditions, investment in infrastructure, and provincial skilled trade policies over the past three decades have had a significant impact on the current dynamics of supply and demand of Powerline Technicians in each province. A concerted effort to address specific situations in each province while working towards a national strategy will address the challenges in the powerline trade.

A critical step to address these challenges will be to increase enrolments of apprentices in the Powerline Technician trade. To achieve the objective of higher enrolments, several strategies would need to be explored. Some of the possible solutions to the challenges are:

1) **Develop a national best practice course and training schedule model for ongoing skills development.**

   **Initiatives:**
   1. Enhance access to, and participation in, Journeyperson’s ongoing training programs, especially safety process compliance;
   2. Develop an engagement strategy to strengthen loyalty and interest in continuing in the trade to offset transitioning to management positions;
   3. Minimize the culture gap: younger people currently do not learn about the trade from people who are closer to their age and hence do not adequately relate to the trade.

2) **Strengthen standardized qualifications for instructors.**

   **Initiatives:**
   1. Explore relevance of Certificate in Adult Education (CAE) and Certificate in Adult and Continuing Education (CACE) in each province;
   2. Strengthen training skills of instructors to motivate and excite apprentices and younger Journeypersons;
   3. Ensure standardized qualifications are required for instructors. The Canadian Electrical Association is working towards creating a standard in adult education with the CAE and CACE programs that are offered at community.

3) **Develop a well-defined pathway into the trade.**

   **Initiatives:**
   1. Improve the availability and accessibility of education, training, upgrading and recognition of prior learning through solutions such as trades discovery, job shadowing and prior learning assessment and recognition (PLAR) processes;
   2. Provide access to ‘turn key’ solutions - step by step guide, from deciding to applying, pre-apprenticeship training and employment;
   3. Streamline quality and consistency of academic programs across provinces - assessment process, PLAR, training delivery methods;
   4. Continue to facilitate a national dialogue on program content and best-practice standards.
4) Create pilots of a new technical curriculum.

Initiatives:
1. Implement a “laddered,” or integrated PLT apprenticeship system into the post-secondary system to improve the potential advancement of apprentices and the flexibility of their credentials;
2. Draw higher quality apprentices and encourage employer investment through a laddered PLT apprenticeship system;
3. Integrate skilled trade content into the post secondary system to give students a better appreciation of the trade and possibly broaden the pool of applicants interested in the trade by increasing student exposure to different post-secondary opportunities.

5) Increase enrollment with higher engagement.

Initiatives:
1. Facilitate access to information, especially within the high school system (grade nine onwards) with information and guidance at the right time and place;
2. Create a clearer career pathway for potential apprentices to manage long term career expectations;
3. Provide more labour market information about expected earnings and employment opportunities;
4. Provide clearer institutional signals to potential apprentices about the level of skills required to prepare them for the trade.

6) Implement an outreach program to engage women, Aboriginals and new Canadians.

Initiatives:
1. Make the trade relevant and talk to their needs and concerns. Look at best practices within the trades of other industries. Review best practices of the fire service and infantry on overcoming similar challenges;
2. Create an Employment Support Model for the powerline trade that would prepare Aboriginal apprentices for the workplace and continue to support them through their Apprenticeship Program.

7) Determine value of task-skills with empirical data.

Initiatives:
1. Analyse rationale for opposition (task-skills is a polarizing topic across provinces) and support for task-skilling;
2. Identify in-market evidence of concerns related to erosion of skills.

8) Promote a deeper integration of Red Seal in the Powerline Apprenticeship Certification process.

Initiatives:
1. Provide a seamless Red Seal certification process following the completion of a powerline apprenticeship;
2. Target new skilled trade professionals who may consider getting a Red Seal certification after graduation. According to Red Seal, currently just eight per cent of powerline apprentices attain the Red Seal certification;
3. Assess local barriers in each province. Interest in Red Seal certification grows significantly with higher awareness and understanding of the benefits of the program;
4. Promote Red Seal certification as a competence assessment tool for internationally qualified Powerline Technicians.
9) Optimize occupational standards to better reflect the needs of employers.

Initiatives:
1. Create a national best practice promotion standard and integrate the standard with local strategies and solutions to promote the trade;
2. Obtain greater employer input into the content of Powerline Apprenticeship Programs to improve the fit between the skills provided to apprentices and skills demanded by employers;
3. Analyse the desired aptitudinal profile of apprentices across provinces based on feedback from instructors, employers and Journeypersons and update the Powerline Technician profile in the Human Resources and Skills Development (HRSDC) Career Handbook;
4. Revisit the lowest rating for “Numerical Ability” in the occupational standard in context of rising expectations of employers for stronger math and physics skills.

Source of Findings

The report includes recommendations and key findings based on qualitative research. Qualitative research seeks to obtain insights and findings through loosely structured methods such as observations and interviews, and focuses on the meanings and interpretations of the participants (i.e., qualitative research analyses the why and how of behaviour, not just what, where and when). The aim of qualitative analysis is a complete, detailed description.

The conclusions in this report reflect the opinions expressed in the 135 qualitative in-depth interviews by 12 respondent groups in six clusters across the country. These clusters represent key influencers of the successful outcome of strategies for the powerline trade:

1) Utilities, managers and others who are familiar with challenges of the powerline trade;
2) Powerline Technicians;
3) Students, engineering, skilled trades, lapsed skilled trade workers, parents, new Canadians;
4) Directors of Apprenticeship, training organization representatives;
5) Committee members;
6) Representatives from organizations responsible for Red Seal.

A more detailed description of the research methodology employed can be found in Section 1 and Appendix A of the final report.
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SECTION 1: RESEARCH PLOT AND PROBE AREAS

Based on the project deliverables, the following topics were identified for in-depth study in the literature review and primary qualitative research.

Survey of Stakeholders

The research plot included in-depth interviews with twelve respondent groups: employers; trainers; Union representatives; committee members; Powerline Technicians (PLTs) with one to five years, six to 15 years, and over 15 years experience; Directors of Apprenticeship; students; new Canadians; engineers; and Red Seal representatives. The interviews covered the following probe areas:

1. Challenges faced by the skilled trades across provinces and steps that can be taken to address these challenges;
2. Challenges faced by the Powerline Technician trade and steps that can be taken to address these challenges;
3. Challenges faced by the Powerline Technician trade in each province and territory;
4. Insights on the following topics in context of the Powerline Technician trade:
   a. Attitudes towards apprenticeships
   b. Access to education, training and certification
   c. Retaining and attracting workers to the Powerline Technician trade
   d. Responding to powerline labour force needs
   e. Awareness of the apprenticeship system
   f. Apprentices’ expected value of training
   g. Cost of apprenticeships to apprentices
   h. Cost of apprenticeships to employers
   i. Regional and provincial differences in apprenticeship development
   j. Age composition of apprentices
   k. Journeyperson working conditions
   l. Role of Red Seal
Respondent Profiles

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<td>Red Seal</td>
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<td>Representatives</td>
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<td>5</td>
<td>15</td>
<td>27</td>
<td>1</td>
<td>135</td>
<td></td>
</tr>
</tbody>
</table>

1. Results indicative of partial completion of interviews due to availability of Directors of Apprenticeship.
2. Commission de la construction du Québec (CCQ).

Research Methodology

The report includes recommendations and key findings based on qualitative research. Qualitative research seeks to obtain insights and findings through loosely structured methods such as observations and interviews, and focuses on the meanings and interpretations of the participants (i.e., qualitative research analyses the why and how of behaviour, not just what, where and when). The aim of qualitative analysis is a complete, detailed description.

The conclusions in this report reflect the opinions expressed in the qualitative in-depth interviews by twelve respondent groups in six clusters. These clusters represent key influencers of the successful outcome of strategies for the powerline trade:

1. **Utilities, managers and others who are familiar with challenges of the powerline trade**
   This respondent group provided an overview of the challenges they are facing with regard to re-training and recruitment of Powerline Technicians. The perspective of employers was critical because it provided comprehensive expectations with regard to Red Seal and training across provinces.

2. **Powerline Technicians**
   This respondent group provided input on how the trade has evolved over the years. Respondents identified key motivations for working in the trade and provided insights on how to attract new potential Powerline Technicians to the trade. They also identified barriers and perceptions that prevent technicians from joining the Powerline Technician trade.
3. Students, engineering, skilled trades, lapsed skilled trade workers, parents, new Canadians
This group provided information on the reasons they considered a skilled trade, the ranking of the Powerline Technician trade in their considered set and reasons why they did or did not select the trade. In addition, engineering students provided insights on reasons students select engineering degrees over skilled trade training. Interviews with parents provided insights into popular misconceptions about skilled trades and reasons they hold negative attitudes to apprenticeship and have a poor image of the trades. The study sought to probe the myth that skilled trades are only for those who are not academically inclined.

4. Directors of Apprenticeship, training organization representatives
This group identified key drivers of interest in the skilled trades from the perspective of Directors of Apprenticeship and training organization representatives. Their insights identified enrolment trends across provinces, reasons for preference of certain skilled trades over others and how the powerline trade ranks in terms of preference for students entering training organizations.

5. Committee members
Committee members provided a high level perspective on challenges facing the electricity industry and how the dynamics of the Powerline Technician trade affects the performance of the industry. Their insights provided a deeper understanding of expectations from this project. They also revealed how best to maximize value by focusing on the most important topics that could have a substantial impact on decisions related to the powerline trade.

6. Representatives from organizations responsible for Red Seal
Interviews with representatives from organizations responsible for Red Seal identified insights related to awareness, understanding and usage of Red Seal; barriers to apprenticeship completions; Red Seal completions within the Powerline Technician trade within the identified organizations and across geographies; and reasons why a majority of Journeypersons do not have or do not pursue Red Seal certification.
SECTION 2: KEY FINDINGS

2.1. Market Trends in the Powerline Technician Trade

2.1.1. Apprenticeship registrations per year
The number of apprentice registrations per year for the Powerline Technician trade has grown from 1,205 in 2001 to 1,790 in 2005 (an increase of 585 apprentices). The number of apprentices entering the trade has been increasing by approximately 12 per cent a year since 2001. However, the growth in apprentices has to be viewed in context of Journeypersons leaving/retiring from the trade.

Figure 2-1
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Registration Status, (number), 2001 to 2005

<table>
<thead>
<tr>
<th>Registrations</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
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<tbody>
<tr>
<td>Grand Total</td>
<td>1,205</td>
<td>1,365</td>
<td>1,490</td>
<td>1,605</td>
<td>1,790</td>
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<tr>
<td>Change (number)</td>
<td>160</td>
<td>125</td>
<td>115</td>
<td>185</td>
<td></td>
</tr>
<tr>
<td>% Change</td>
<td>13.28%</td>
<td>10.37%</td>
<td>9.54%</td>
<td>15.35%</td>
<td></td>
</tr>
</tbody>
</table>

2.1.2. Regional trends in apprenticeship registrations
When analysed by region, there are clear trends in apprenticeship registrations across regions in Canada. Atlantic Canada has seen a dramatic drop of 24 per cent in registrations since 2001. Ontario and Western Canada have witnessed increases in registrations during the same period. These provinces account for 94 per cent of the total increase in registrations from 2001 to 2005.
2.1.3. Size of the Powerline Technician trade
The total number of Journeypersons in the Powerline Technician trade in Canada is estimated at 11,953, according to the National Occupational Classification for Statistics 2006. Ontario and Quebec have over half the Journeypersons (56 per cent) while Atlantic Canada has 10 per cent and Western Canada has 34 per cent of Journeypersons.

2.1.4. Population to Journeyperson ratios
The gender ratio of females to males is very low for the Powerline Technician trade. It is just 3:97 compared to the ratio for all occupations of 48:52. There is currently approximately one female in Powerline Apprentice Programs in each province. On one hand, it is perhaps not surprising that the apprenticeship system is male-dominated, given that trades in general are male dominated as well. However, apprenticeship remains an important point of entry for females into the trades and could thus play a crucial role in decreasing gender inequality. This is particularly important within the broader context of redressing gender wage differentials for women who choose not to pursue a university or college education.
2.1.5. Gender related, Aboriginal and new Canadian enrolments

The gender ratio of female to male apprentice registrations in this trade is 1:179, compared to all occupations of 1:10. The ratio has remained unchanged since 2001. The total registrations per year since 2001 has remained very low (10 registrations). One of the most striking traits of the apprenticeship system in general and the PLT trade in particular is that it is characterized by great under representation of women, particularly relative to other forms of post-secondary education. For instance, in Ontario just one female application was received out of a total of 5,000 applications.

Figure 2-5
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Sex, (number), 2001 to 2005

The powerline apprenticeship trade can address the trend of “education disengagement” in Aboriginal communities. One of the challenges related to education in Aboriginal communities has been termed as ‘fading out’ or ‘becoming disengaged’ from school, which denotes fluid, rather than isolated, developments. It has also been noted that an increasing number of people are moving back and forth between primarily being students and being employed.\(^1\) Results from a recent national ‘Youth in Transition’ survey show that many young Canadians who did not originally finish high school subsequently engage in ‘second chance’ education.\(^2\) This may include on-the-job training opportunities that may earn them high school graduation equivalency. This pattern is particularly evident among Aboriginal populations yet seems to be rarely recognized in the ‘drop-out’ literature.\(^3\)

Employers face recruitment challenges which exist in Aboriginal communities, especially in rural areas. There are particular challenges in implementing recruitment programs in the more rural parts of a province. The infrastructure is not there and few programs exist to prepare Aboriginal people to enter the trade. There is more demand than supply. For example, in Edmonton there are more employers with apprenticeship opportunities than there are Aboriginal people ready to enter the positions. The Alberta Aboriginal Apprenticeship Committee has started to work with the Alberta Workforce Essential Skills Committee to identify appropriate curriculum for Aboriginal people approved to participate in skilled trade initiatives.

Geographic and demographic differences among Aboriginal communities mean recruitment programs are likely to be effective if they are customized to address local needs. One size does not fit all. Aboriginal locations across provinces differ demographically and provide a unique variety of challenges and opportunities. Current initiatives have had to take a flexible approach to adapt and respond to emerging needs, often by bringing new partners to help on developing programs or utilizing existing resources. A common theme across geographies is to promote awareness and understanding to help create an interest in a trade. Initiatives in skilled trades currently work with Aboriginal employment centres and with First Nations and Métis organizations to increase awareness, understanding and interest in apprenticeship programs among young Aboriginals. The guidance and direction of a strong and focused steering committee is a priority to manage the project. The approach has ensured projects remain focused on goals and do not duplicate services offered by other organizations such as employment counseling and life skills training.

A best practice model to engage Aboriginal communities is being implemented in Alberta. The Employment Support Model prepares Aboriginal apprentices for the workplace and supports them through their apprenticeship program. The model recognizes cultural differences and provides support necessary to help candidates understand the skilled trades and complete the required training. The support mechanisms built into the Employment Support Model are key to ensuring the apprentices successfully complete their programs.

The model includes mechanisms to:

- Identify candidates’ essential skill shortages for the trades and direct them to approach resources to acquire the skills;
- Refer Aboriginal apprenticeship candidates to employers for employment opportunities;
- Prepare the workplace for Aboriginal apprentices;
- Provide mentorship and peer support;

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1 Krahn 1996
2 Human Resources and Development Canada
3 National ‘Youth in Transition’ survey
• Resolve potential problems in the workplace;
• Ensure Aboriginal apprentices are prepared for technical training;
• Identify current and future industry employment opportunities.

This best practice model is in place in the five Albertan communities of Calgary, Edmonton, Fort McMurray, High Level and Lethbridge where the program currently operates. The Project Officer promotes the project locally. Project Officers provide information sessions for counselors in Aboriginal employment centres on apprenticeship programs, industry training and the opportunities in different trades.

They also provide Aboriginal awareness training for companies and their employees. There is also a Community Advisory Committee (CAC) whose members are knowledgeable about local Aboriginal issues, the trades and apprenticeships and the workplace. Committee members understand Aboriginal culture and the difficulties Aboriginal apprentices may face in completing an apprentice program. The role of the CAC is to select potential candidates to participate in the project. A CAC member mentors the apprentices through the apprenticeship process. The committee then identifies industry employment opportunities.

With assistance from local employment centres and the Project Officer, the Alberta Aboriginal Apprenticeship Project (AAAP) Community Advisory Committee selects suitable candidates for employer interviews. Only those candidates with all the necessary qualifications to enter an apprenticeship program are referred for interviews. Once an apprentice has been placed in a company, the Project Officers maintain regular contact with the apprentice, providing support to them in a variety of different ways. The Project Officers provide information to both the employer and the apprentices, coaching and trouble-shooting. If problems arise between the apprentice and the employer, the strong relationship the Project Officer has will help to quickly resolve the issue and maintain employer participation in the program.

2.1.6. Income range for Powerline Journeypersons
The total income range for Powerline Journeypersons ranges from $38,055 (in Prince Edward Island) to $71,400 (in Saskatchewan). The average index versus Prince Edward Island is 145 for all provinces. Atlantic provinces index 127 versus Prince Edward Island. Western provinces index 158 and central Canada indexes 146. It is important to note that Manitoba indexes 118 while the three other western provinces index 172. Income gaps are likely to primarily affect younger Journeypersons who are more mobile. Research indicates that Journeypersons
with over 10 years experience have a lower level of interest in moving to another province. Based on in-depth interviews with Powerline Journeypersons, shortages are mentioned as having a significant impact on overtime related income.

Figure 2-7
Power Line Technician Annual Income by Province and Index of Incomes of Journeypersons

2.1.7. Growth in annual registrations by age group
The general trend of Powerline Technician registrations across age groups is upward, primarily driven by growth in Ontario and Alberta. The 20 to 24 and 25 to 29 age groups have the largest number of registrations for Powerline Technicians. Some of the reasons for higher registrations in the younger age group are the following:

- Increase in interest in the skilled trades among younger groups because of the federal government’s television advertisements promoting skilled trades, sponsored locally by Colleges;
- Limited employment opportunities in rural farming and local communities;
- Relatively higher pay and superior benefits compared to other occupations;
- Attractive to those who are aware of and understand the trade, or have a relative/acquaintance in the trade.

Figure 2-8
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Age Group, (number), 2001 to 2005
Absolute growth in annual registrations for Powerline Technicians is highest in the 20 to 24 year age group (235) followed by the 25 to 29 year age group (180). This confirms that there is growing interest in the trade.

Figure 2-9
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Age Group, 2001 to 2005 (% change)

While 56 per cent of the registered apprentices are 20 to 29 years, the over 30 years age segment is a significant group with 700 of the 1,780 registrations in 2005 (44 per cent of total). The growth may be attributed to re-registrations in the trade by experienced Journeypersons. (Note: The data from Statistics Canada includes the total number of people registered for a Powerline Technician apprenticeship in a year. It includes carryovers from previous years, new registrations and those returning to the trade.)

Figure 2-10
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Age Group, 2001 to 2005 (% share)
2.2. Characteristics of Powerline Apprenticeship Programs

2.2.1. Apprentice registrations by length of program
When analysed by three or four year apprenticeships, over 96 per cent of registrations are for four level or four year programs. About one per cent originates in the three years or three level programs. In addition, almost all the growth is in the four years or four levels programs.

Figure 2-11
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Duration, (number), 2001 to 2005

2.2.2. Withdrawal rate of the powerline apprenticeship
The withdrawal rate of the powerline apprenticeship has remained low at about five to nine per cent a year. This can be attributed to the profile of apprentices who enter the apprenticeships. They tend to have a relative or acquaintance in the trade who provides them with a good overview of the challenges apprentices will face in the trade.

Figure 2-12
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Count, (number), 2001 to 2005
2.2.3. Apprenticeship training in the powerline trade

Apprenticeship training in the powerline trade is only full-time block release or some form of other full-time release. It is important to note that a concern expressed is the length of block release training based on experience of Powerline Technicians. Block release is the preferred method of attendance for courses relating to the construction industry. Block release courses require students to attend college on a full-time basis for a series of 'blocks' during an academic session (e.g., four blocks of five weeks); whereas day release may require one day of training a week for a specific number of weeks.

Time allocated to training drops dramatically for more experienced Journeypersons. It drops from two months a year to less than five days a year after five years in the trade.\(^1\) The drop is attributed to high replacement costs, perception of lack of the need for ongoing training because “the trade hasn’t changed.” Other contributors to infrequent and inconsistent training include low investments by employers in ongoing training and shortage of Journeypersons to take on additional roles as instructors.

Figure 2-13
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Training Time, (number), 2001 to 2005

![Graph](image)

2.2.4. Employer sponsorships of Powerline Technician apprenticeships

There has been a substantial increase in employer sponsorships of Powerline Technician apprenticeships, while sponsorship by unions has remained relatively low.\(^2\) Powerline Technician certification is required in some provinces, and is available but voluntary in most other provinces and territories. Even where certification is voluntary, it is still recommended by the provincial government. If a person has over four years of on-the-job experience and some high school, college or industry courses for line workers, he/she may be eligible for line worker certification in some provinces and territories. Certification for Powerline Technicians is compulsory in British Columbia and Prince Edward Island. It is available, but voluntary, in Alberta, New Brunswick, Newfoundland, Northwest Territories, Nova Scotia, Ontario, Saskatchewan and Yukon.\(^3\)

\(^1\) In-depth interviews.
\(^2\) HRSDC Career Handbook.
\(^3\) Ibid
2.3. Regional Differences in Working Conditions

2.3.1. Regional differences in the powerline trade

Common challenges/priorities across regions:
- Lack of visibility of career paths for potential Powerline apprentices;
- Lack of trade education related activity at the high school level;
- Requirement to upgrade the training system and introduce a new process of best practices in training;
- Low awareness and lack of a positive image of the trade especially among students.

- Powerline Technicians from other provinces tend to have shorter career spans in Western Canada;
- Inadequate resources to train as many apprentices as needed to maintain the current ratio of Journeyperson to apprentices;
- Lack of visibility of career paths for potential powerline apprentices;
- Low consistency in incumbent capabilities and low math/physics skills.

- Improve the quality of PLT applicants (stronger knowledge of math and physics);
- Lack of trade education related activity at the high school level;
- Low awareness of the trade and lack of a positive image;
- Resistance to adopt new technologies and to change among PLTs over 45 years of age;
- Low involvement of employers in apprenticeships and promotion of the trade.

- Upgrade the training system and create a new process of best practices around training;
- Inadequate refresher training after apprentices complete their Apprenticeship Program;
- Low awareness of the trade and lack of a positive image.

Sources: In-depth interviews.
Western Canada

Primary concerns

- Short career spans of PLTs from outside western Canada;
- Inadequate resources to train the necessary number of apprentices to maintain the current ratio of Journeyperson to apprentices;
- Lack of visibility of career paths for potential powerline apprentices;
- Low consistency in incumbent capabilities and low math/physics skills;
- Low awareness and lack of a positive image of the trade especially among students.

Growth of the PLT trade has accelerated rapidly in Western Canada. Alberta has seen dramatic growth in enrolments in the PLT trade since 2001. For example, Alberta has had an average of 46 registrations (20 per cent) a year for PLT apprenticeship training since 2001. Saskatchewan and British Columbia have grown at a lesser but still significant rate of about 10 to 15 per cent a year. Statistics Canada data is not available for Manitoba. However, respondents indicate the number of apprentices added has grown from 30 to 48 apprentices a year over the past two years, confirming a high growth rate of over 40 per cent. Alberta has one apprentice for each Journeyperson and two to three Journeypersons per apprentice in British Columbia, Manitoba and Saskatchewan.

Figure 2-16
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Province, (number), 2001 to 2005 (West)

Key findings

1. Experienced Powerline Technicians mention a trend towards university educated professionals in management and supervisory positions related to the Powerline Technician trade. They would like to see more trades-oriented people back into management to stay competitive. This also stems from concern about their career advancement prospects into supervisory and management positions. They feel that supervisory and management positions without skilled trade experience may not adequately recognize the expertise of Powerline Journeypersons.

“Some of the concerns we have is that I guess the corporation is going more towards education than a trades background when they’re going towards supervisors and managers and such. It used to be if you were a 15 or 20 year linesman, you were basically in the running for any manager or supervisor job that came. Now, you have to have certificates in management or a Commerce degree or whatever, before they even consider you.”

Sources: In-depth interviews, Service Canada and Job Futures Canada
2. There has been a significant increase in recruitment of apprentices in the 20 to 24 year age group over the past couple of years. Most respondents say that the current shortage of PLTs is likely to ease in four to five years after the apprentices complete their apprenticeships and transition to becoming Journeypersons.

“We used to hire 12 Line apprentices in the spring and 12 Line apprentices in the fall and then six Cable apprentices. Since we’ve gone to the PLT program, we’re actually hiring 24 apprentices in the spring and 24 apprentices in the fall. We’ve basically added 40 per cent more apprentices to our training program every year. We did it last year and we’re going to do it this and then next year. So, they are addressing it. The problem is, right now. In four years or six years, I think we’re going to be okay. It’s just right now, there’s quite a crunch.”

3. Migration of Powerline Journeypersons to Alberta, British Columbia and Saskatchewan is a serious concern for employers and trainers in Manitoba. On completion of their apprenticeships, Journeypersons explore opportunities in Alberta or British Columbia or even in the United States for offers of $40 or $50 per hour; whereas in Manitoba they are paid $28 per hour. The difference of over 50 per cent has a notable influence on decisions to continue working in Manitoba or move to another province or to the United States. However, most employers agree that hiring from outside the province is not a long term solution. Those from other provinces tend to have shorter tenures of three to five years as PLTs in the province and then prefer to return to their provinces of origin.

“You also find that people who come from eastern Canada versus western Canada they end up trying to get back there in terms of retirement or they’ll stick it out for two or three years and then family issues start to arise in terms of aging parents.”

4. A common comment from respondents across provinces is the need to start early with awareness and education of students in grades nine and onwards. This will ensure they have two to three years to decide on the career of choice. Several respondents felt that guidance counsellors at schools should be a key target group for the sector. They have a significant influence over career choices made by students. And yet most guidance counsellors have a low awareness and understanding of the PLT trade.

“I think they’ve got to get at them in grade nine because by the time one of those fellows gets into grade 12 and he decides he wants to go and take a trade... like, where we are, for example, you have to have physics and math. We see lots of guys who have to go back to get their physics... But I think in grade nine or 10, they have to say, ‘This is what you need for a trade. A trade isn’t a bad thing.’ You know? University isn’t for everybody.”

“One of the biggest challenges is exposure to get into the trade. It’s hard to find any information on the kind of work that we do and some of the training that we do get to get into the trade. For a young person who is trying to look at opportunities to get into this kind of a field, it’s hard for them to find out what we do, other than driving by a street and seeing a bunch of guys working up in the air doing some kind of Powerline work. So, exposure to the trade itself... it’s kind of limited for people” – PLT with one to five years experience, British Columbia

5. Employers estimate the total cost of a four year apprenticeship is $250,000 in Western Canada for a 42 month program and about $150,000 in Atlantic Canada. The risk associated with the investment is a concern for employers as is the long term return on investment for apprenticeship training at the zero to five year mark. Employers need to commit to a long term investment that often falls outside of normal business planning windows. So it becomes a very difficult business case to make. However, they see it as a critical long-term investment to address the shortage of PLTs. In zero to five years, effective training requires substantial resources in terms of the payback employers get on their investment. Essentially, it is a five year investment. The cost of training is partially subsidized by that person’s lower wage as an apprentice; however the return on a long term investment of zero to five years to produce a qualified employee is significant.

Sources: In-depth interviews, Service Canada and Job Futures Canada
6. Short career spans of Journeypersons are a concern for employers. Both employers and Journeypersons agree that the trade is very physically demanding, because of diverse types of stresses that are put on the body. Journeypersons also agree that it takes an average of at least 10 years to train a Journeyperson before they have had adequate exposure to diverse challenges. Careers tend to have shorter life spans in regions with challenging weather conditions, particularly in Manitoba, due to extremes in climate. Most Journeypersons say that the expectation of a high level of performance in the trade for Journeypersons above 50 years of age is unrealistic.

“For example, carpel tunnel syndrome. The vast majority of Powerline Technicians I know with more than 15 years experience suffer from that. Most suffer in silence and most create ways to do their job so that the condition doesn’t get worse. Just the nature of the job, the tight gripping causes that and you will find that most people will tell you that they suffer from that condition. That is the physical manifestation of the trade.” – PLT Instructor

7. Managing consistency in incumbent Journeyperson profiles is a challenge. Both employers and other stakeholders suggest that a closer link between curriculum in secondary school and the expertise needed in the trade is desirable. Practical dimensions of training are critical to strengthen the appreciation and awareness of the trades. Journeypersons move to less challenging tasks after they are promoted to supervisory or higher level positions once they are considered qualified. Journeypersons take on management positions but lack the training to perform these roles effectively.

“In physics when we are talking about DC current, let’s not talk about a six volt battery; let’s talk about high voltage DC and how it behaves. As a learning aide in the curriculum let’s use some trade specific examples; when we are talking about mechanical advantage let’s not talk about a teeter-totter, let’s talk about a set of pulleys and a block lifting a pole or a transformer or a heavy piece of equipment. When we are talking about dynamic loading let’s talk about what that looks like when we shock load a piece of equipment, those sorts of examples, as opposed to when we think about dynamic loading, some of the examples that you see in the physics textbooks are weak. Tie the trades work to higher level high school curricula.”

8. The image of the trade is a concern for all respondents – employers, instructors and Journeypersons. Students either are not aware of the PLT trade or do not have an in-depth knowledge or understudying of the trade. Those who are aware, have negative associations. Often firefighters are used as a parallel for the PLT trade. It is not encouraged in schools or it is seen as a dead end. In other words, students feel they will achieve their trade certificate which would severely limit their options for career progression. In contrast, engineering degrees are highly valued, especially in the utility industry. Employers assume engineers have the leadership skills because of their engineering degree.

“It is often viewed as a bunch of cowboys if you would. Rough and tumble flying by the seat of their pants getting it done any way they can get it done type of people and all the trappings that come along with drinking and rowdy behaviour. If we could transition that sort of mentality more to the, if you think of the image that you have of a jet pilot or a fighter pilot, they have that fly by the seat of the pants mentality or they are trained professionals that do a dangerous job but they do it in a calculating fashion rather than a high fashion.”

“Show real examples. Describe the plumber who owns his own plumbing business now, describe that to apprentices and show him what that looks like. Show what a person who runs a successful plumbing business; show them that is a business leader. Show them this person living in the best neighbourhoods and having a vacation property in Florida and that sort of thing. Demonstrate that for the kids. Show the third year apprentice who has the fancy motorcycle or whatever.”

9. Respondents, especially instructors, would like to see a clear path linking secondary education to the PLT trade to address the recruitment issue and expectations throughout the trade. A clear path would provide students with an understanding of their career progression in the skilled trade. They should be able to envision what it could look like in 10 years from now if it could be linked to higher education; for example, a year

Sources: In-depth interviews, Service Canada and Job Futures Canada
of credit towards their degree or a course by course credit. As these people progress to leadership roles so do the programs need to be modified to put these skills and expectations earlier into the training. So a solution may be a clear path to higher learning that would help the industry out in terms of the whole guidance councillor education system. The approach would change incumbent profiles.

"Will I get a year of credit towards my degree or will I get course by course credit? Is that even an option for me? As these people progress to leadership roles do the programmes need to be modified to put these skills and expectations into the training earlier on?"

10. The line between a “PLT tradesperson” and “technologist” is blurring. A greater focus on math and physics is required in the evolution that is taking place across the trades and the electrical industry. Employers are asking for a higher level math and physics because of increasing sophistication and introduction of new technologies. However, the trend indicates that students who choose trades as a career path are opting out of math and physics. Post secondary education providers are finding that employers are asking for university entrance math and physics for their big three training programs: Power Electricians, Powerline Technicians and Millwrights.

“Let me give you a specific example when we are talking about in physics when we are talking about DC current, let’s not talk about a six volt battery, let’s talk about high voltage DC and how it behaves. As a learning aide in the curriculum let’s use some trade specific examples; when we are talking about mechanical advantage let’s not talk about a teeter-totter, let’s talk about a set of pulleys and a block lifting a pole or a transformer or a heavy piece of equipment.” – PLT, British Columbia

11. According to some respondents, the technical competence of high school graduates is declining because of a (perceived) inadequate emphasis on math and physics. Linkage of higher education to the Powerline Technician trade is a challenge. One of the suggested action points is to increase the emphasis on sciences by changing the curriculum. Community colleges, the providers of technology diplomas, are finding that students entering their program with the prerequisite university entrance math and physics are not having success in the program. They have noticed an evolution over the past 10 years. Some colleges are restructuring their programs. As opposed to a two year technology program, they are now two and a half years, with basic math and physics that students should be receiving in high school incorporated into their curricula to ensure that students are better prepared for trades that require stronger math and physics skills. The University of Manitoba recently adopted the university one curriculum where students entering the applied degree field, Faculty of Education, Faculty of Engineering, have to attend university one before entering their chosen degree programme. University one is a revamp of the higher level skills that students should have received in high school: science, math and English, to strengthen skill sets. Fewer students are taking math and physics because they do not need it to get into university. British Columbia has initiated a pre-training program. They hire people with gaps in math and physics skills and make specific math/physics programs available to them. In British Columbia, BC Hydro has a prerequisite of high school graduation. In discussion with the instructors at the Electrical Industry Training Institute their apprentices do significantly better through the program because of six-month practical training modules.

12. There is confusion in the industry about the merits of training by employers versus colleges. Industry representatives are unsure about who is driving the process of ensuring appropriate entry level skills within the secondary education system. Employers suggest the ideal PLT candidate would be someone who has some post secondary or work experience before they start an apprenticeship.

“As industry, if I look to someone to provide support for apprentices, who manages it? If I am looking for people to come in with the appropriate entry level skills do I go to the secondary education system, do I go to the post-secondary or do I go to an arm of government, the apprenticeship administration to get those answers? In Manitoba that’s confusing. It’s
confusing for employers and it’s confusing for apprentices as well. Who are the decision makers on that? Each one has specific competencies. I am not suggesting do away with or load a lot of power on one or the other; I’m suggesting draw a picture for industry so they know clearly where the roles are and eliminate the overlaps.”

13. Western Canadian provinces are more likely to hire PLTs from other provinces than Central and Atlantic Canada. For example, the trend is for British Columbia and Alberta to hire from Central Canada. Alberta and British Columbia also hire PLTs from Saskatchewan and Manitoba. Higher wages in British Columbia and Alberta make these provinces attractive to PLTs in Central and Atlantic Canada. The PLTs that move tend to have five to 15 years experience because they are less likely to have set roots in their current location compared to PLTs with over 15 years experience. It seems Manitoba and Atlantic Canada are net losers of PLTs while Alberta and British Columbia have gained from migration of PLTs from these provinces.

“Basically, one group hiring away from the other group. So, again, it’s a resource problem. We have the contractors hiring from us and things like that. It’s the ability to compensate. It’s that racketing up thing. Everybody pays a few more dollars and everybody else pays a few more dollars, and then, it just continues to ratchet up.” – PLT, British Columbia

“We have a construction business services group that is the temporary pool within our firm and then we have our contractors and there are not a lot of them so when you go to attract, you are usually attracting from an existing labour pool. It’s not that the labour pool gets bigger and the other issue is that there are usually ratios of apprentices that you can have on at the same time as you have, the most you can have is 25 apprentices depending on safety.” – Employer, Western Canada

14. Unlike in Ontario, one of the biggest challenges in some western provinces, especially British Columbia, is filling vacancies in rural areas. British Columbia, for example, has several full time vacancies in the northern part of the province. Housing and family commitments are the key reasons that experienced PLTs are not keen to relocate to rural areas. Urban settings draw PLTs because the quality of life is more attractive to them and their families.

“We just don’t get the applications here, it’s because B.C.’s economy is doing really well. Mind you, from what I understand we are one of the few that have constant full time vacancies right now; we’ve got about 50 PLT bulletins right now. My issue is that people don’t want to go to northern B.C., 10 of them are up north and the other issue is housing. That would be one thing that I would say is really tough on us. Our housing is 35 per cent higher than Toronto right now. The average selling price of a house on the lower mainland has hit $650,000. That’s the weird part; you would think that people would want to go up north and pay $200,000 for a house, no they want to work on the lower mainland.” – Employer, Western Canada

15. Working conditions for Journeypersons are reported to be good by a majority of PLTs. PLTs and employers report a high level of satisfaction in the trade. The reason for it is relatively higher pay, substantially better work conditions, and equipment and safety practices.

“They do everything out of a bucket. It’s very good work now. They’ve got the best tools and equipment. It’s a great trade. Our guys... they’re very well looked after. It is hard work and it’s very high-risk work... but it’s also very good quality work. Like I said, they’ve got great tools and equipment. They love it... the guys who are doing it... they absolutely love it!” – PLT Manager, British Columbia

16. Several instructors mentioned the lack of adequate training facilities as a barrier to growth of the PLT trade. These organizations are not able to train as many as the industry needs to maintain the current ratio of Journeypersons to apprentices. Currently, in British Columbia apprentices are sent to different locations to get the appropriate training, creating an added burden within the system. Another concern, especially in Alberta, is that inexperienced Journeypersons are taking on the task of training people coming in because the province does not have the manpower to train these people properly.

Sources: In-depth interviews, Service Canada and Job Futures Canada
“Experienced PLTs say ... the level of competency of the people who are there to do the training has declined. The instructors haven’t achieved the level of training that they needed to recognize hazards and avoid them, or put the controls in, to protect themselves. They don’t have the knowledge and experience.” – PLT with over 15 years experience, Alberta

17. An opportunity to grow the PLT trade would be to segment the industry based on skills required for specific tasks within the PLT trade. Unlike other provinces, there is openness to task-skills in Alberta and British Columbia. Other opportunities include engaging more women and people who are less fit; for example, someone with an electrician training qualification (TQ). The barriers mentioned include heavier equipment that is designed specifically for men (strength versus leverage weight). Best practices in other markets would be valuable. For instance the PLT trade is dominated by women in some Asian countries like China. Other examples quoted include below/above ground based skills training.

“I think the systems can be quite different (across provinces). We do a lot of live work, some of them don’t. And even the infrastructure of how it’s set up, there’s a lot of differences; it’s one of those things, you go to university and you spend your first two years doing your general theory. Then you can do your specializations in your last two years. Why can’t the PLT trade be set up that way?” – Employer, Western Canada

18. A strategy being used by some employers to tap into PLAR is a “trade trainee program.” The employers encourage entry level workers such as truck drivers to acquire some work experience before they apply for PLT apprenticeships. The prior work experience provides these employees with a head start.

19. Some employers have suggested that transferable credits between apprenticeships and universities may strengthen the PLT trade. Transferable credits may make the PLT trade more attractive to parents as well as students. The approach would leverage the attraction of a university education and strengthen the image of the skilled trades as being at par with a university education.

20. There may be a gap in expectations and understanding of the work involved in the PLT trade. Several PLTs with one to five years experience mention that the first few years are very challenging as they stretch themselves to go through challenges like working many “long hours” straight after storm damages. They also express concern about the “ever-changing” equipment that they use and the changing standards that they have to follow. The weather is also mentioned often. PLTs work in conditions of up to 20 to 25 degrees below zero depending on the wind. If there is an emergency, they have to go out irrespective of weather conditions. They have to balance working with de-energized circuits and causing outages across larger areas. This is the preferred option and is supported by management because it is the safest option.

“I guess if you’ve never really stretched yourself to the point of going through all of those challenges and working 20 or 30 hours straight on storm damage... you don’t really know if you can do it, until you’re actually in the situation, to see if you can take it. It’s similar to emergency response people and firemen and stuff... you don’t really know if you can go into a burning building and save somebody until you actually go and do it. There is definitely the challenge of that... working at elevated heights up on poles and towers and stuff.” – PLT with one to five years experience, British Columbia

21. In British Columbia, average employment growth is expected for this occupational group. However, as it is a small group, only about 460 openings are projected in the 10 year period between 2001 and 2011. More than half of these openings (61 per cent) will be brought about by growth in the number of new jobs and the rest will be due to retirements. This growth is connected to the utilities and construction industries in which these workers are employed. Both industries expect healthy, average growth over the forecast period. Reductions in this occupation through the 1990s, combined with an aging workforce, have resulted in a shortage of Powerline Technicians.

Sources: In-depth interviews, Service Canada and Job Futures Canada
22. About 2,050 Albertans are employed in the Electrical Powerline and Cable Workers occupational group which is expected to grow 2.6 to 3.6 per cent each year from 2006 to 2011 in Alberta. It is forecasted that 50 to 80 new positions will be created each year in addition to job openings created by employment turnover. Since Powerline Technicians form only a part of the larger occupational group on which this forecast is based, only a portion of the new positions created will be for Powerline Technicians. Employment turnover is expected to increase as members of the baby boom generation retire over the next five to 10 years.

23. In Manitoba, employment prospects for electrical powerline and cable workers in the 2007 to 2011 period are expected to be good. Employment in 2007 is estimated at 585. This is a small occupational group and most job opportunities will arise as current workers retire. Further exploration of the province’s energy resources to meet export, as well as domestic demand will ensure a continued requirement for electrical powerline and cable workers. There is potential for employment on new lines connecting northern dams as well as a hydro grid line to Ontario. The majority of this occupation group work for Manitoba Hydro. Employment opportunities for Power Supply Workers in Manitoba Hydro are expected to continue at the rate of approximately 15 to 20 new hires per year. Experienced Journeypersons may advance to Senior Journeypersons, supervisory or managerial positions. They can also transfer their skills to related occupations such as Engineering Technician, design, safety, and planning. Proportionally more jobs for electrical Powerline and cable workers are to be found in rural Manitoba, but there are opportunities throughout the province. The majority (91 per cent) work in the utilities sector. Manitoba Hydro and its contractors are the chief employers.

24. In Saskatchewan, there are current and expected staffing concerns regarding the inter- and intra-provincial mobility and the aging/retirement of workers. Currently, worker mobility within the province is largely to the major urban centers. There are two major employers: SaskPower, which has a significant share of the workers in this trade, and Centraline in Saskatoon, which is engaged in the construction and installation of powerlines. SaskPower anticipates retirement levels will peak in 2009 and has developed a human resource strategy to respond to that situation.

Central Canada: Ontario

Registrations for Powerline Technicians in Ontario have grown by an average of 18 per cent a year since 2001. The growth is largely driven by HydroOne and local utilities that have coordinated a province-wide training and recruitment initiative. The locations of HydroOne across the province in urban areas and smaller communities has enabled the employer to reach out to potential apprentices in rural areas because of its vast reach across Ontario that includes services to 92 municipalities, 18 remote communities and 1.3 million retail customers (homes, farms, seasonal, small business). Ontario has one apprentice for four Journeypersons.

Figure 2-17
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Province, (number), 2001 to 2005 (Ontario)
Primary concerns
- Improve the quality of PLT applicants (stronger knowledge of math and physics);
- Lack of trade education related activity at the high school level;
- Low awareness of the trade and lack of a positive image;
- Resistance to adopt new technologies and to change among PLTs over 45 years of age.

Key findings
1. The key barrier to attracting people into the skilled trades is the lack of trade education related activity at the high school level. As a result, young people tend to know less about the trades and are inclined to pursue university courses. Students at the high school level, even those that would be attracted to trades have very few options to get into a trade and technical program. Parents also influence the process because they encourage their children to go to university instead of college.

2. Increasing awareness and understanding of the PLT trade is a significant opportunity. People do not recognize that the Powerline trade is related to the electrician trade. When people think of an electrician they think of construction electricians. The trade is associated with a “cabling job.” They do not connect to the fact that those people who work in the powerline trade require a high level of training. Moreover, people who have a limited knowledge of the trade think it is a high-risk trade and unsafe occupation.

3. Limited access to training in local communities may be a barrier to growth of the PLT trade. HydroOne is the primary provider of apprenticeships in Ontario. Access to training is limited in communities where the 86 local utilities are located. As a result, high school students who may be interested in an apprenticeship in the PLT trade may not have access to information or training facilities close to the communities where they live.

“One of the other challenges is not enough opportunities. Right now within the line trade in Ontario, really the only opportunity for an apprenticeship in Ontario is with HydroOne. Few of the 86 other utilities in Ontario are training people.”

4. Task-skills, which is training and certification based on specific tasks and skills rather than on the occupation, is a polarizing topic in Ontario. Most PLTs and union representatives feel it erodes the flexibility of the trade and increases the risk of redundancies. For example, specialization of Linesmen for underground and overhead operations would lead to imbalances in resources if demand increases in one of the areas. The rationale presented is that in a slow economy the cost of retraining could be substantial if there is an increase in task-skilling.

“They are taking this to licensing, which is great if all you need is that skill but it doesn’t help the person doing the work. When that person, in the auto industry you have got that person that’s trained to do that piece of equipment; that plant shuts down unless you’ve got somebody else that has that same piece of robotic equipment; that skill is gone; you have to spend another whatever for retraining. So the guy has to start over again. You can do that if you are 20 to 35 but if you hit 40 you are not going to find somebody who wants to spend the money retraining you.”

5. Over 90 per cent of the 5,000 PLT apprenticeship applications received by HydroOne are from rural Ontario. Most of the applicants have experience in working outdoors, either on a farm or in other trade activities. Most of the applicants have relatives or friends that are already in the Apprenticeship Program or are familiar with the trade. So they are aware that the profession is challenging (difficult working conditions, weather, etc.).

“I would suggest that the fire is a great analogy; the fireman has the same feelings towards their job as what the Lineman has towards their job. You know what, I love the adrenalin, I love the work, I want to be fighting fires or I want to be climbing poles. You know what a fireman hates most, sitting in the firehouse doing nothing. When do they get in the most trouble and bitch and whine? Sitting in the office too much.”

Sources: In-depth interviews, Service Canada and Job Futures Canada
6. There is concern about consistency in Red Seal certified PLT expertise. While the Red Seal is valued in Ontario by employers and PLTs, there is some concern about the consistency of practical experience of Red Seal certified PLTs from different provinces. HydroOne has a two day assessment that includes theoretical and practical training linked to different safety scenarios. It is only after the PLT clears these assessments that he/she accepted.

“There are contractors out there, they hire apprentices to pull cable and all the apprentice does is pull and drop cable. I was in an interview, the kid did nothing for two years except pull cable inside a windmill, yet he was going to have the same Red Seal certification as the guy that had been out sitting on the top of a pole doing a real Lineperson job. So you’ve got a vast difference in what a Red Seal certified Powerline Technician’s experience could be.”

7. Another safety related concern is resistance to change and new technologies among Journeypersons over 45 years of age. The combination of younger apprentices who are interested in doing more and older apprentices who are resistant to change aggravates a high risk situation. Many employers and trainers mention the inverse bell curve when they describe the age of Journeypersons in the trade. The younger (20 to 30 years old, one to five years experience) and older (over 45 years old, over 15 years experience) PLT groups are larger compared to the 30 to 45 year of age group (with six to 15 years experience).

8. Quite often more experienced Journeypersons may take on diverse supervisory roles where they are not doing the hands-on work. They are in first or second Line Supervisor positions or they have moved on. Due to the gap, today Journeypersons with less experience (one to five years) are training new apprentices.

“I’ve heard from people that their preference is that for someone to be training an apprentice they should have 10 to 15 years in because there would be a broad spectrum of situations that they would have been exposed to at that point in their career and they would have a strong sense of all the different variables and be better positioned to hear that with the person they are training.”

9. The possibility of lower employee loyalty as a result of increased employee mobility after a Red Seal certification is a concern for some employers. This is counter-balanced by the merits of Red Seal. It is perceived as a confirmation of expertise by employers and is widely encouraged. However, some comments suggest that the risk of losing a PLT after an investment of over $200,000 in training is a concern for employers. Both employers and instructors have expressed this concern across provinces. A need identified by some employers is for an appreciation of a practical assessment component that in some cases may be too generic for certain types of competencies that individuals need. Red Seal is increasingly used as a strategic competence assessment tool for international qualified PLTs.

“… there isn’t a lot of appetite within most employers because there is a perception that it increases the mobility of a workforce - from their own employer to another employer. The labour organizations are extremely pro and are actively campaigning for this; it was part of the position that IBW took in their negotiations with Manitoba.”

10. Gender equity is mentioned often as a significant challenge. The scope of work is not positioned in a way to be particularly attractive to women. Most of the equipment is considered to be designed for men. Moreover, the limited number of women in the trade is a barrier as well. For example, there is one female apprentice in the Apprentice Program out of 500 registered apprentices in Ontario. Suggestions include initiating a best practice review of the fire service and infantry to find out how the challenges were overcome.

“Because of the tool belt and then the fire safety protection equipment they can be carrying quite a significant physical burden and then they have to hold their arms up high and work for extended periods of time. It is not something that everyone can do physically, male or female.”

Sources: In-depth interviews, Service Canada and Job Futures Canada
Central Canada: Quebec

Primary concerns
- A lack of Journeypersons to replace those retiring from the skilled trade;
- Low involvement of employers in apprenticeships and promotion of the trade;
- Shortage of Journeypersons to support Apprenticeship Programs;
- Inconsistent and infrequent ongoing training of Journeypersons.

Key findings
1. A lack of Journeypersons to replace those retiring from the skilled trade. This trend in Quebec is consistent with the challenge being faced across provinces. The skilled trade in Quebec faces a shortage in the number of Journeypersons required to maintain the current base of practicing Journeypersons. A key driver of the trend in Quebec is the high proportion of Journeypersons with over 15 years experience. Many of these Journeypersons will retire over the next decade. The province has an inadequate supply of Journeypersons to replace those retiring from the skilled trade. The gap is being addressed with higher investments to increase availability of apprenticeship training in schools. The Commission de la construction du Québec (CCQ) is focusing on establishing structured Apprenticeship Programs and financial incentives from employers in the form of tax credits to encourage participation in apprenticeships. Another driver of the focus on increasing supply is the shortage of Journeypersons for apprentice training. Employers tend to resist assigning more Journeypersons for apprentices because of the high replacement cost and lack of availability of replacements.

2. Lack of consistent apprenticeship standards. The Powerline Technician trade is not a designated trade. It is treated as an “occupation” in Quebec. As a result, the province does not have a mandated term for a powerline apprenticeship, nor do apprenticeships include standard log books, simulated hours and standard competencies. Apprentices enter a school program and are registered in the occupation. In some instances the duration of training in school can be as low as 500 hours. In many instances, Journeypersons are assigned to apprentices. However, the process is not as structured as in other provinces such as Ontario. For example, Hydro Quebec hires the most apprentices in Quebec but the program is not four years/8,000 hours.

3. Low involvement of employers in apprenticeships and promotion of the trade. This concern is unique to Quebec. In most other provinces, utilities take a lead in apprenticeship programs and employment of Journeypersons. In general, tax incentives are offered for investments in training. Tax credits are offered by the provincial revenue department in instances where a qualification certificate is not compulsory in a skilled trade. However, the incentive does not apply for Powerline Technicians. A request by the employment department that is responsible for apprenticeship is being reviewed to extend the credit for regulated trades not related to the construction sector.

4. Infrequent and inconsistent ongoing training of Journeypersons. Respondents say that infrequent and inconsistent ongoing training for experienced Journeypersons is a concern. There seems to be a gap in the expectation and commitment of Journeypersons and employers in investing time and resources in training. A lack of resources and high replacement costs are often mentioned as reasons for low levels of ongoing training.

5. Red Seal is associated with higher mobility of Journeypersons. Access to Red Seal certification tends to be provided primarily to Journeypersons who express an interest in working outside the province of Quebec. Some respondents mention that employers are concerned about the risk of increased mobility of Journeypersons after their Red Seal certification. A respondent mentioned that a barrier to Red Seal completions is the quality of the French content of the training materials. According to the respondent, training materials are developed in English.
and then translated into French (i.e., materials are not developed in French). A lower rate of completion of the Red Seal certification in Quebec is attributed to challenges in comprehension of the French content.

6. The count of Journeypersons in the trade is declining in Quebec. The average employment in the Powerline Technician trade is expected to decline by 2.8 per cent during the period 2007 to 2011, according to data from Service Canada (Job Futures Quebec). The annual need for the trade during the period 2007 to 2011 is estimated to be 20.

Atlantic Canada

Primary concerns
- Upgrade the training system and create a new process of best practices around training;
- Inadequate refresher training after apprentices complete their Apprenticeship Program;
- Low awareness of the trade and lack of a positive image.

Key findings:
1. Registrations of apprenticeships in the Powerline Technician trade have declined in all Atlantic Provinces during the period 2003 to 2005. However, employers in New Brunswick and Nova Scotia indicate that the trend has been reversed in these provinces since 2005. A combination of numerous factors has led to the decline during the period 2003 to 2005. Nova Scotia and Newfoundland experienced sharp declines in PLT apprentice registrations in recent years. The decline is substantial in Newfoundland (40 per cent), Nova Scotia (36 per cent) and New Brunswick (20 per cent).

Figure 2-18
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Province, (number), 2001 to 2005 (Atlantic)

2. There is a low awareness and understanding of the Powerline Technician trade. The relatively small share of the Powerline Technician trade compared to other trades has resulted in lower awareness and interest in the trade. Interest in the trade is primarily due to word of mouth through family members who may have some association with the trade.

“If you talked to them about why they went into the Powerline Technician trade, most of them would reply about a parent or a brother or a cousin or an uncle, or the fact that they have a neighbour… so, it doesn’t seem like it’s well known, other than if you have someone close to you.” – Employer

Sources: In-depth interviews, Service Canada and Job Futures Canada
“There’s not much in the paper. It’s kind of a ‘hear’ thing. You’d hear it from somebody that you know that they’re looking for them. I think when you look at our education system, we’ve encourage kids to go the university route. The drive wasn’t there to get people to go towards the trades.” – PLT with over 15 years experience

“I have young people who ask me... they don’t know what a Powerline Technician is. ‘What do you actually do?’ When you tell them and go over the job description with them and when you look at the benefits and the pay scale and the whole Apprenticeship Program, then it becomes pretty appealing to a lot of people.” – PLT with over 15 years experience

“Some people don’t seem to understand the Apprenticeship Program, I guess. They are generally aware. The questions are more around, ‘How long is it? What does it involve?’ and that type of thing. No. I think the awareness level of it is pretty good. I actually just had a son go through the carpenter Apprenticeship Program and just got his ticket here about a year ago. I think the awareness is pretty good. People are looking for more details, I think... the cost and how long and what does it entail and everything.” – PLT Instructor

3. A shrinking pool of experienced Journeypersons to train new Journeypersons is a concern. The gap between the people who are going to be retiring and the new people coming into the trade has also accelerated the decline. As a result of the culture gap, younger people do not get to learn about the trade from people who are closer to their age and hence do not adequately relate to the trade. When they are in the workplace, the integration of different generations is not always easy.

“We have an issue in terms of the huge difference between the people who are going to be retiring and the new people that are coming in... there’s a big gap. You have a 40-year old Linesman and you’ve got a 20-year... there’s no one in the 30 range because we didn’t hire for some years.” – Employer, New Brunswick

“We are at a critical point now that we need new people coming in the pipeline to train them because it’s not a quick turnaround to get somebody who has gone through the Apprenticeship Program and now has the license, plus the experience under their belt, that you can rely on them to operate in trouble situations or on-call situations.” – Operations Supervisor, Nova Scotia

4. The Apprenticeship Program is not on the considered list of professions because it is not promoted within the school system and at career fairs. As a result, younger potential apprentices do not have a good understanding about the path to a Powerline Technician apprenticeship. As one Powerline Technician said, “We are raising our kids to go to university, not necessarily to take a trade.”

“I know that a lot of it has not been followed by new technology in terms of how they’re learning. You know, there’s not a lot of simulation... classrooms are teaching the old fashioned way, of lectures, and then, of course, the on the job training. All of that should be looked at and see how we could be there, maybe parts of it that are duplications or that are not necessary that could shorten the program.” – Trainer, Nova Scotia

5. The learning process lacks adequate simulation and seems to be inconsistent. Both employers and PLTs express concern about the consistency of training. They would like to see a more consistent level of instruction to ensure apprentices have an in-depth understanding of safety and technical information and practices. There has been a substantial increase in new technologies in the PLT trade. These changes are not restricted to tools and equipment for doing hands-on line work, but increasingly relate to mobile workforce units in trucks, like laptops and remote data collection and reporting. These changes require advanced training in computer skills.

“I guess the biggest thing is this training. We figure... usually your slow months are in the winter. I just wish they’d give you some training and send you away on courses and stuff like that. It’s not the same everywhere...you get talking to them in storms... where they’re working... and they say, ‘Do you have this course or that course?’ And you say, ‘No. I didn’t know about it.’ They should really give the training equally to everybody. That doesn’t usually happen. Then you tend to get behind on new equipment because there’s always new stuff coming in every year... technology. You like to stay up on it.” – PLT with over 15 years experience, New Brunswick

Sources: In-depth interviews, Service Canada and Job Futures Canada
6. A shrinking pool of potential apprentices and experienced Journeypersons is making recruitment a challenge. The issue, as phrased by one employer, is that when they have a vacancy or one of their PLTs moves, they cannot hire anyone because there are not enough people looking for work. Contractors are also looking for people in this small pool of available talent. However, it is important to note that retention rates are very high in Atlantic Canada. Employers say it is highly unlikely that a Powerline Technician will leave an employer unless they move to another province.

7. Inadequate ongoing retraining is a concern after apprentices complete their Apprenticeship Program. There is a (perceived) substantial gap in retraining or ongoing investment in coaching. While many employers and trainers endorse refresher courses and upgrades in technology related training, it is not taking place, some employees feel, because of a (perceived) lack of investment in refresher courses. This is seen as a potential problem in the future as the population of newer recruits are more focused on learning. Learning in the past was based on "on the job" training, but today's recruits are more open to ongoing training. Many trainers endorse regular competence tests and Journeyperson evaluation programs. Standardized evaluations do not exist or are not taking place as often as required.

8. The lack of a positive and distinctive image of the Powerline trade is often mentioned as a barrier. This is also attributed to inconsistent terms being used to describe the trade such as Linesman, Powerline Man, Powerline Maintainer, etc. across provinces.

   "...there's not even consistency in the title. A doctor is a doctor is a doctor, whether he's in B.C. or in New Brunswick. I think that's one of the issues as well, that we're not always consistent with what we're calling it." – Employer, New Brunswick

9. While employers recognize the importance of safety and comprehensive training, there is some frustration with the length of the training of 8,000 hours/four years. Even after four years, apprentices in the trade cannot call themselves Powerline Technicians for a year after that. However, employers in Atlantic Canada are committed to comprehensive credentials for the Powerline Technician trade. Task-skilling is not viewed as a potential solution to the length of training for the trade. It is important to note that most employers in Atlantic Canada make attainment of the Red Seal certification a mandatory requirement.

10. Powerline Technicians and employers agree that the trade is demanding and requires a relatively higher level of fitness. This is a big concern for employers in Atlantic Canada as their Technicians age and qualified replacements are increasingly scarce. The demanding work environment is seen as a barrier to broadening the base of new recruits into the trade.

   "It's very difficult for people to be doing it in their 50's or late 60's. There are a lot of health issues associated with that trade when it comes to back and shoulder issues. One of the things I think that they need to consider is from a benefits point of view as well." – PLT, Nova Scotia

11. PLTs with over 15 years of experience are concerned about the lack of junior apprentices and Journeypersons. Most respondents mention that utilities across Canada stopped investing in apprenticeships in the 80s. As a result, the trade has a disproportionate number of people with over 20 years experience and fewer than six or seven years experience. Instructors mention the “demographic time-bomb” that is impacting the trade. They mention impending retirements and loss of knowledge are key concerns.

   "I'm 44 years old now... in Nova Scotia Power up until about a year ago, I was like one of the junior men. I've been here 20 years. Now, I'm one of the old junior guys! There aren't as many of us as there was before. We work more now, than we did before. That's not a bad thing. You just have to judge yourself." – PLT with five to 15 years experience, Nova Scotia

Sources: In-depth interviews, Service Canada and Job Futures Canada
12. PLTs with over 15 years experience tend to have the highest level of satisfaction among PLTs. They often comment that the technology and equipment has improved significantly. These improvements have led to better safety standards. For example, trucks with 55-foot booms are used instead of climbing poles. Use of better equipment has reduced injuries and has made the workplace safer.

“I’m kind of glad to get up everyday and come to work. I’ve got a pretty good job. As far as the gear goes... the tools that I have to work with... when I first started as a Lines-worker, for the first two years of my career, I was on spurs every day and climbing the poles. Now, I climb poles every day right now with the apprentices only because I want to, not because I have to. Our trucks and stuff like that... they’ll reach... we’ve got trucks with 55-foot booms on them and they’re quite plentiful. Do you know what I mean? It makes a big difference as far as the work goes. We’re in fairly good shape that way.” – PLT with over 15 years experience

13. Employers and government in Atlantic Canada have taken tangible steps to adjust wages to reflect the shortage of Powerline Technicians. PLTs earn a premium wage compared to other trades. The trend has helped to stabilize the trade to a certain extent. Premium wages have also increased the inflow of apprentices into the trade.

“Our union here just signed a new five-year agreement. It gave the Powerline Technicians... everybody received a general increase over the next five years. But the Powerline Technicians have come out with another $2.34 on top of those general increases, just to address the market conditions and retention and keeping the people here.” – PLT with over 15 years experience

14. Collaboration with colleges. There is a trend in Atlantic Canada towards collaborating with community colleges for apprentice training. For example, NB Power used to administer their own training program until just three or four years ago. They are now connected through the New Brunswick community college. Up until four years ago, to take the apprenticeship or the Powerline Technician trade, there was no cost to the individual. The trend is towards a mix of tuition paid by apprentices followed by a shorter period of training at a utility.

15. Inadequate training for inexperienced Journeypersons is a concern for trainers. Trainers in Atlantic Canada often mention that PLTs (from Atlantic Canada) with limited experience tend to take on more responsibilities out West than they probably should. Instructors say that the Red Seal is inadequate to address the concern because of its limited scope for on-the-job testing.

“A big concern is safety... getting on with a reputable organization that’s going to show you the right way of doing things. We had some of our younger guys go out West... they were green with us and they made them foremen out West.” – Instructor, New Brunswick

16. The characteristics of PLTs are similar for six to 15 and over 15 years experience. However, the one to five year group has dramatically higher expectations from the trade - especially with regard to career progression. This is viewed with concern by senior PLTs because they feel that safety is compromised with accelerated responsibilities. Experienced PLTs are concerned about the trend in other provinces toward task-skilling. They feel it compromises safety and makes PLTs less adaptable to changing market conditions and on the job requirements.
## Attitudes of Powerline Journeypersons

<table>
<thead>
<tr>
<th>Perspective</th>
<th>1-5 years</th>
<th>6-15 years</th>
<th>15+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PLT</strong></td>
<td>- High expectations from training; - Familiar with computers and technology; - More mobile and likely to move across provinces; - More flexible in terms of working in rural/urban areas; - Prefer specialised training and task-skilling.</td>
<td>- Tendency to be over confident about skills; - Transitioning to family with children; - Less likely to be open to a move if a dual income household; - Monetary benefits become increasingly important; - Work environment influences choices; - Prefer specialised training and task-skilling.</td>
<td>- Not as technology savvy; - Concerned about change in value of the trade (i.e., importance of wages versus team work); - Strong commitment to safety; - Concerned about competency levels of new recruits; - Prefer comprehensive training (not task-skilling); - Advancement is a concern – growing need for certification to transition to supervisory and manager positions.</td>
</tr>
</tbody>
</table>

**Employer**

- Physical fitness is a concern. New recruits are not as physically fit as they were a decade back; - Return on investment becomes a concern, especially from a productivity and competence standpoint; - Need to engage the PLTs to remain loyal for the first 10 years. Thereafter, they are less likely to move as they would have enough roots put down personally to resist a move.
- Retention becomes a key issue. These people have a very mobile skill set. New effective strategies to engage them are required; - Ongoing training is another issue. Creating motivation in the learner to upgrade their skills or continue on with development is a challenge up to the 10 year mark; - Receptiveness of the learner to newer ideas starts to become an issue at the 10 to 15 year mark; - Critical value to the operation - they have the greatest impact on their own safety and the safety of others; - Need for a link between annual performance goals and continuous education achievements. Training drops from eight weeks in one to five years to less than five days a year in five to 15 years.
- Resistance to training and change is a concern; however it levels off after 15 years as they have found their niche; - Relatively lower computer and technology skills is a barrier to skills upgrades; - At 15 year and beyond, physical capacity becomes the issue; - Usually by the time they have 15 year mark in the trade they are a lot less mobile than they used to be; - Replacement cost when training PLTs is a concern.

**Instructor/Trainers**

- Instructors and post Journeypersons have the technical knowledge but lack the training skills and adult instructional techniques to motivate students; - Standardized qualifications are required for instructors to improve their teaching skills. Both Certificate in Adult Education (CAE) and Certificate in Adult and Continuing Education (CACE) need to be accepted as best practices by the industry for utility trainers.
- Better adult instructional techniques are required; - Tend to take on roles as instructors earlier than recommended because of a shortage of more experienced Journeypersons.
- Concern about the right number of apprentices per Journeypersons. It differs across provinces. It is lowest in Western Canada and highest in Ontario.
2.4 Education and Training

2.4.1. Mandatory entry criteria across provinces
Most provinces have mandatory entry criteria of grade 12 or equivalent. Alberta, Saskatchewan and British Columbia have built math and science courses into the standard to address the need for stronger math and physics skills for apprentices entering the powerline trade.

Figure 2-20
Registered Apprenticeship Training, Registrations for “Power Line Technician” by Sex, (number), 2001 to 2005

<table>
<thead>
<tr>
<th>Province</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEWFOUNDLAND AND LABRADOR</td>
<td>Grade 12 or equivalent or entrance assessment.</td>
</tr>
<tr>
<td>NOVA SCOTIA</td>
<td>Grade 12 or equivalent.</td>
</tr>
<tr>
<td>PRINCE EDWARD ISLAND</td>
<td>Grade 12 or equivalent.</td>
</tr>
<tr>
<td>QUEBEC</td>
<td>Grade 12 or equivalent.</td>
</tr>
<tr>
<td>ONTARIO</td>
<td>Grade 10 or equivalent.</td>
</tr>
<tr>
<td>MANITOBA</td>
<td>Grade 10 or equivalent.</td>
</tr>
<tr>
<td>SASKATCHEWAN</td>
<td>Saskatchewan Grade 11 with Grade 11 Math and Science or equivalent as approved by Director. Technology enhanced learning (on-line delivery) before attending technical training.</td>
</tr>
<tr>
<td>ALBERTA</td>
<td>Pass in Alberta Math 20, or Pure Math 20, or Applied Math 20; or equivalent; or pass entrance examination.</td>
</tr>
<tr>
<td>BRITISH COLUMBIA</td>
<td>An entrance assessment process to ensure academic readiness is in place for all trades and occupations. Secondary school students are encouraged to complete Grade 12 with appropriate English, and Applied Mathematics and Science courses.</td>
</tr>
<tr>
<td>NORTHWEST TERRITORIES</td>
<td>Pass entrance examination ‘S’ (equivalent to Grade 12 with Math 30). Technical Training obtained in Alberta.</td>
</tr>
<tr>
<td>YUKON</td>
<td>Grade 10 or equivalent. Technical Training obtained in Alberta.</td>
</tr>
<tr>
<td>NUNAVUT</td>
<td>Source: Red Seal Program</td>
</tr>
</tbody>
</table>

Please note: The information provided for Newfoundland and Labrador, and British Columbia reflects 2001 data. Information for Nunavut is not available at this time. Information presented for every other jurisdiction dates from 2004.

2.4.2. Math and physics competency
Employers identify a gap in the desired level of competency in math and physics of apprentices. Alberta is considered to have the highest standard for entry criteria with regard to competencies in these areas. The requirement specifically requires a pass in Alberta Math 20 or Pure Math 20 or Applied Math 20 or equivalent; or pass an entrance examination.
2.4.3. Apprenticeship terms
The average apprenticeship term in the powerline trade is four years/8,000 hours (2,000 hours per year). Most provinces have a minimum for Journeyperson certification of 1,800 hours based on recognition of experience, education and relevant skills. The apprenticeship term seems to be consistent across provinces.

Figure 2-21
Apprenticeship General Information

<table>
<thead>
<tr>
<th></th>
<th>NL</th>
<th>NS</th>
<th>PE</th>
<th>NB</th>
<th>QC</th>
<th>ON</th>
<th>MB</th>
<th>AB</th>
<th>BC</th>
<th>NT</th>
<th>YT</th>
<th>NU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journeyperson Certification Only (Yes/No)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

2.4.4. Education/entrance requirements
Education and entrance requirements for prior learning assessment and recognition (PLAR) are available in most provinces expect Manitoba and Nunavut. An apprenticeship accreditation process is also available in all provinces except Manitoba. (Status in Quebec not available.)

Figure 2-22
Apprenticeship Education/Entrance Requirements

<table>
<thead>
<tr>
<th></th>
<th>NL</th>
<th>NS</th>
<th>PE</th>
<th>NB</th>
<th>QC</th>
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<th>AB</th>
<th>BC</th>
<th>NT</th>
<th>YT</th>
<th>NU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior Learning Assessment and Recognition (PLAR) Available (Yes/No)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Apprenticeship Accreditation Process Available (Yes/No)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>If Yes, Refer to Page Indicated</td>
<td>76</td>
<td>78</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>84</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Apprenticeship Technical Training Required (Yes/No)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

2.4.5. Prior learning assessment and recognition (PLAR)
Below are the PLAR standards for each province. Please see Appendix B for further details.

Newfoundland and Labrador: The Newfoundland and Labrador Provincial Apprenticeship Board recognizes that learning which some adults acquire from work and life experiences may be equivalent to components of apprenticeship programs offered within the province.

Nova Scotia: Graduates of pre-employment programs approved by the Director of Apprenticeship will be eligible for credit. Practical credit may be awarded to graduates to a maximum of 1,000 hours per academic year of full-time study. For approved programs of 40 weeks duration, credit will normally be 1,000 hours.

Prince Edward Island: Credit may be granted for previous work experience. Credit for pre-apprenticeship (pre-employment) courses is granted on an hour for hour basis. Additional credit may be granted based on the results of a level one examination administered to graduating students. The maximum credit granted is 12 months.

New Brunswick: Apprenticeship credits may be granted under the Apprenticeship and Occupational Certification Act. Credits as the Director determines may be granted to an applicant for a Diploma of Apprenticeship in the following manner: (1) For the successful completion of a course of study or training approved by the Director; (2) For work
performed or experience gained in the trade prior to registering as an apprentice. Credits may be granted at the time of registration and/or prior to completion of apprenticeship.

**Ontario**: In Ontario, program guidelines and trade-specific regulations define individual apprenticeship program requirements. Credits towards completion of a Certificate of Apprenticeship may be granted for both previous technical training and work experience.

**Saskatchewan**: In Saskatchewan, credit in the Apprenticeship Program can be awarded for both previous technical training and work experience. Apprentices from other provinces receive credit on a level for level basis. Work experience is creditable on an hourly basis. Graduates of pre-employment courses from out-of-province may receive time credit equivalent to actual time spent on the course. These individuals are eligible to write placement examinations to establish advanced standing in technical training. An entrance examination can be written where an individual does not meet the educational requirement.

**Alberta**: In Alberta, a PLAR system is in place to confirm the level of skill and knowledge of a person for entry into an apprenticeship program (school transcript or entrance examination); advanced standing in an apprenticeship program based on Provincial Apprenticeship Committee (PAC) accredited training; and advanced standing in an apprenticeship program based on previous work experience in a trade.

**British Columbia**: In British Columbia, the Industry Training and Apprenticeship Commission has established a bylaw that sets out in detail the process for assessing and awarding credit to individuals registering in an industry training or apprenticeship program. Graduates of accredited entry level trades training programs receive credit for first level technical training if they become registered as apprentices within 12 months of graduation. After 12 months, they may be required to pass a placement examination in order to receive credit. In addition, graduates usually receive credit for all time spent within a program to a maximum of six months, subject to approval by their employers. All registered apprentices must normally complete not less than one half the term of their industry training or apprenticeship program in order to be eligible for a completion of industry training or apprenticeship certificate.

**North West Territories**: Credits may be granted under three categories for applicants entering an apprenticeship program. For Technical or Technology Courses an applicant who has completed a two year trade technology program may be granted 3,600 hour time credit and technical training credit for all levels upon passing the appropriate examination(s). An applicant who has completed a one year trade technology program may be granted 1,800 hour time credit and technical training credit for first and second level upon passing the appropriate courses.

**Yukon**: In the Yukon Territory, previous trade(s) training or trade related work experience as credit towards completion of an apprenticeship program is based on the indenturing employer's recommendation. The Department will not give credit beyond the employer's recommendation but may give less.

### 2.4.6. Training delivery methods

The standard training delivery method is block release in most provinces except in Newfoundland where it is based on individualized delivery methods and in Saskatchewan where it is a combination of individualized and block release. Block releases average about 22 weeks in duration. Voluntary pre-employment training is available in Newfoundland, New Brunswick and Alberta.
### 2.4.7. Curriculum resources

The curriculum resources available across provinces are mostly based on the national occupational analysis. However, Ontario follows a mix of national and provincial occupational analysis. There are inconsistencies in practices regarding the skills profile chart, apprentice program outlines, Journeyperson course outline and Modularized Learning Resource Materials. For example, none of the provinces, except Newfoundland has a Journeyperson course outline. Also, none of the provinces, with the exception of Newfoundland and Saskatchewan, has Modularized Learning Resource Materials.

#### Figure 2-24

**Apprenticeship Curriculum Resources**

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#### Figure 2-24

**Apprenticeship Curriculum Resources**

| Source: Red Seal Program |
2.4.8. Assessment/examination resources
While provincial in-school level written examinations are implemented in most provinces (except Ontario, Alberta and British Columbia), most (except Newfoundland) do not have an in-school level practical examination. Moreover, Journeyperson examinations are not available in all provinces except New Brunswick which has a written examination and Saskatchewan which has a practical examination.

Figure 2-25
Apprenticeship Assessment/Examination Resources

<table>
<thead>
<tr>
<th>Province/Territory</th>
<th>In-School Level Practical Examinations (Yes/No)</th>
<th>Level Written Examinations (Yes/No)</th>
<th>Journeyperson Examination(s); Written (W); Practical (P); Both (B); Not Available (NA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NL</td>
<td>Yes</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>NS</td>
<td>No</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>PE</td>
<td>No</td>
<td>No</td>
<td>NA</td>
</tr>
<tr>
<td>NB</td>
<td>No</td>
<td>No</td>
<td>W</td>
</tr>
<tr>
<td>QC</td>
<td>No</td>
<td>Yes</td>
<td>P</td>
</tr>
<tr>
<td>ON</td>
<td>No</td>
<td>No</td>
<td>NA</td>
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<tr>
<td>MB</td>
<td>No</td>
<td>Yes</td>
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<td>NA</td>
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</tbody>
</table>

2.5. Occupational Standards

2.5.1. Trade names for Powerline Technicians
Diverse trade names were found in the provincial/territorial legislation for apprenticeship designated trades. For example, the term “Powerline Technician” is used in just four provinces. While in other provinces terms such as “Lineman,” “Lineperson” and “Lineworker” are used in the provincial/territorial legislation. The French terms used for “Powerline Technician” in Quebec, Ontario and New Brunswick are inconsistent across these provinces.

Figure 2-26
Trade Names for Powerline Technicians by Province

**English Provincial and Territorial Trade Names**

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<tr>
<th>Trade Name</th>
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<tbody>
<tr>
<td>Operating Lineman</td>
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<td>Power Lineman</td>
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<td>Power Lineperson</td>
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<td>Power Lineworker</td>
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<td>Powerline Electrician</td>
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<td>Powerline Technician</td>
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<td>Powerline Technician (Lineman)</td>
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**French Provincial and Territorial Trade Names**

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<tbody>
<tr>
<td>Monteur de lignes sous tension</td>
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<tr>
<td>Technicien(ne) de lignes d'énergie électrique</td>
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Source: Red Seal Program
The Powerline Technician trade is a designated Red Seal trade in all provinces except Manitoba, Quebec and Nunavut. This makes it a challenge to increase consistency in curriculum and assessment/examination resources.

Figure 2-27
Powerline Technician as a Designated Red Seal Trade by Province

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<tbody>
<tr>
<td>Powerline Technician</td>
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</table>

2.5.2. Aptitude of the Powerline Technician classification
The aptitude of the Powerline Technician classification is assigned a “Middle Third of the Working Population” rating for most skills but a higher rating for “Motor Coordination” and lower rating for “Clerical Perception” and “Numerical Ability.” It is important to note that with increased technologies and an emphasis on math and physics, the importance of “Numerical Ability” has grown over the past five years. (Source: HRSDC Career Handbook) The concern in the past has been limited application of math skills. The application of math skills is more frequent today due to changes in technology.

Figure 2-28
Aptitudes Scale

Source: HRSDC Career Handbook

Legend:
1. The highest 10% of the working population
2. Upper third, exclusive of the highest 10%
3. Middle third of the working population
4. Lowest third, exclusive of the lowest 10%
5. Lowest 10% of the working population
Nine aptitude factors are rated according to the above scale to provide the aptitudinal profile needed to perform the work of an occupation. The Aptitudes Scale is based on the General Aptitude Test Battery (GATB).

- **General Learning Ability:** Ability to "catch on" or understand instructions and underlying principles; to reason and make judgments.

- **Verbal Ability:** Ability to understand the meaning of words and the ideas associated with them, and to use them effectively; to comprehend language, to understand relationships between words and to understand the meaning of whole sentences and paragraphs; to present information or ideas clearly.

- **Numerical Ability:** Ability to carry out arithmetical processes quickly and accurately.

- **Spatial Perception:** Ability to think visually about geometric forms and comprehend the two-dimensional representation of three-dimensional objects; to recognize the relationships resulting from the movement of objects in space. May be used in such tasks as blueprint reading and in solving geometry problems. Frequently described as the ability to "visualize" objects of two or three dimensions.

- **Form Perception:** Ability to perceive pertinent detail in objects and in pictorial and graphic material; to make visual comparisons and discriminations and to see slight differences in shapes and shadings of figures and widths and lengths of lines.

- **Clerical Perception:** Ability to perceive pertinent detail in verbal or tabular material; to observe differences in copy, to proofread words and numbers, and to avoid perceptual errors in arithmetical computation.

- **Motor Co-ordination:** Ability to co-ordinate eyes, hands and fingers rapidly and accurately when required to respond with precise movements.

- **Finger Dexterity:** Ability to move the fingers and manipulate small objects with the fingers rapidly and/or accurately.

- **Manual Dexterity:** Ability to move the hands easily and skillfully; to work with the hands in placing and turning motions.

HRSDC assigns the PLT profession L3, H3, H4 and H8 classifications. Below are the descriptions of the classifications. H8 is the highest classification for hazards.

- **L3 Outside:** An outdoor work environment where the worker is exposed to variations in weather conditions and seasonal weather patterns.

- **H3 Equipment, machinery, tools:** Working near or with equipment, instruments, machinery or power/hand tools that may be a potential source of accident or injury.

- **H4 Electricity:** Exposure to electrical circuitry, high tension wires, transformers or other equipment that may be a potential source of electrical shock.

- **H8 Dangerous Locations:** Working in locations that are inherently treacherous and are potential sources of injury. Such work locations include construction sites, underground sites, erected support structures and marine environments.
2.5.3. Scope of the Powerline Technician occupation

At the request of the Canadian Council of Directors of Apprenticeship (CCDA), the Standardization Sub-committee developed a method for validating the Red Seal national occupational analysis. Below is the description of the powerline trade. A draft of the analysis is sent to all provinces/territories for validation. Each jurisdiction rates the sub-tasks and applies percentage ratings to blocks and tasks. This method for the validation of the national occupational analysis identifies common core tasks across Canada for a specific occupation. This feature facilitates the weighting of the Interprovincial Red Seal examinations. The criteria for determining common core depend on the performance of sub-tasks. If 70 per cent of the responding jurisdictions (excluding NVs\(^1\) and NDs\(^2\)) perform a sub-task, it is considered common core. Interprovincial Red Seal examinations are based on the common core identified through this validation process. This process identifies what will be assessed through the interprovincial examination. The occupation description for the trade is as follows:

- **Powerline Technicians** construct, maintain and repair overhead and underground electrical power transmission and distribution systems. In some jurisdictions, Powerline Technicians also construct, maintain and repair communication networks. In larger utilities, Powerline Technicians may also specialize in one of the following areas: transmission lines, overhead and underground distribution, communication networks, and electrical power stations.

- **Powerline Technicians** erect and maintain steel, wood or concrete poles, towers and guy wires. They install, maintain and repair overhead and underground powerlines and cables, and other associated equipment such as insulators, conductors, lightning arrestors, switches, transformers and lighting systems. They splice, solder and terminate conductors and related wiring to connect power distribution and transmission networks. Powerline Technicians may also be called upon to perform stringing operations encompassing electrical/data and telephone systems incorporated into an outdoor transmission distribution system.

- **Powerline Technicians** work outside in all weathers. The work always involves travel to and from the work site, which is often in remote areas necessitating the use of a variety of access equipment such as all-terrain vehicles, helicopters, aircraft, and watercraft. They climb and maintain their balance while working overhead on poles and towers. They also work in confined spaces such as trenches and tunnels. The work often requires considerable standing, bending, crawling, lifting, climbing, pulling, and reaching and may be conducted in cramped, confined spaces or on poles and towers at great heights. Hazards include electric shocks, burns, and falls. Powerline Technicians may work a 40-hour week; however, emergencies may require long hours in inclement weather.

- **Powerline Technicians** are required to have good mechanical aptitude, the ability to lift heavy objects, the ability to work at heights in varying extreme climates, a thorough knowledge of the principles of electricity, power transmission and distribution systems, and communication systems, and familiarity with the materials and techniques of construction. All Powerline Technicians are required to be competent in the use and care of a variety of vehicles and equipment such as articulated bucket trucks, digger derricks, mobile cranes, and trenchers as well as a variety of hand, power, electrical testing, and “hot line” tools and equipment.

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\(^1\) NV: Not Validated by a province/territory.
\(^2\) ND: Not Designated in a province/territory.
All electrical wiring and installations must conform to the Canadian Standard Association (CSA) standards and codes or to the provincial or territorial power supply utility standards. Therefore, Powerline Technicians must be thoroughly familiar with the applicable sections of those documents. For safety, permits and other regulations they follow local electrical, building and safety codes. Powerline Technicians may work alone with minimal supervision and they may supervise others.

2.5.4. Occupational observations
The power generating and distribution industry appears to be in a state of flux. In many areas, there is a trend towards privatization and deregulation of the industry. This has resulted in greater competition among suppliers of power and the contracting-out of some of the traditional Powerline Technician work. There is a greater expectation among consumers to maintain uninterrupted power, which places a greater emphasis on live-line work. There is a greater respect for the environment within the industry that includes the protection of waterways, streams and trees, and a move away from hazardous material such as PCB-filled transformers. In some jurisdictions, the Powerline Technician occupation is suffering from an aging workforce, with many practitioners approaching retirement age, and is attracting fewer new entrants to replace them.

2.5.5. Safety standards
The occupation has always placed a premium upon safety standards and practices. Safe working procedures and conditions, accident prevention, and the preservation of health are of primary importance to employers. To continue to improve safety, the occupation is experiencing a move toward the increased use of fire-retardant clothing, ergonomically designed tools, equipotential grounding and bonding, documented tailboard meetings, and an increase in the use of in-truck computer systems for location and reporting of outages, work orders, etc. Job planning techniques are becoming more widely used, encompassing risk assessment, risk management and multiple-barrier principles.

It is generally recognized that safety-conscious attitudes and work practices contribute to a healthy, safe, and accident-free working environment. Awareness of Powerline Technicians with the Occupational Health and Safety Act and Workplace Hazardous Material Information System (WHMIS) Regulations could be increased. As well, it is essential for continuous reinforcement of workplace hazards and protection processes through regular training. Safety education is an integral part of training in all jurisdictions. The technical safety aspects relating to each task and sub-task are included throughout this analysis.

2.5.6. Occupational standards by province

**BLOCK A: OCCUPATIONAL SKILLS**

**Trends:** The occupation has always placed a premium upon safety standards and practices. To continue to improve safety, the occupation is experiencing a move toward the increased use of fire-retardant clothing, ergonomically designed tools, equipotential grounding and bonding, documented tailboard meetings, and an increase in the use of in-truck computer systems for location and reporting of outages, work orders, etc. Job planning techniques are becoming more widely used, encompassing risk assessment, risk management and multiple-barrier principles.

**Task 1. Interprets Occupational Documentation**

<table>
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<tr>
<th>Task Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.01</td>
<td>Interprets drawings, specifications and standards.</td>
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<td>1.02</td>
<td>Interprets policies, regulations and procedures.</td>
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<tr>
<td>1.03</td>
<td>Interprets material, equipment documentation.</td>
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<tr>
<td>1.04</td>
<td>Maintains work-related records.</td>
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</table>
Task 2. Supporting Knowledge and Abilities

Related Components: Company standards, safety manual, company policies, procedures, and regulations.

Tools and Equipment: Hand tools; personal protective equipment (PPE); safety equipment; live-line tools; electrical measuring equipment; power tools; specialty tools and equipment; powder actuated tools; aerial work platforms; rigging, hoisting and lifting equipment; off-road equipment; and communications equipment.

2.01 Assesses and prepares work site.
2.02 Controls vehicle and pedestrian traffic.
2.03 Identifies Powerline hazards.
2.04 Controls Powerline hazards.
2.05 Controls environmental hazards.
2.06 Organizes equipment, tools and personnel.
2.07 Organizes materials and supplies.
2.08 Develops and maintains schedule.

Task 3. Communicates in the Workforce

Related Components: Company policy, procedures and regulations.

Tools and Equipment: Communication devices (fax, cellular phone, telephone, photocopier, computer, radio, pager).

3.01 Communicates with other disciplines and co-workers.
3.02 Communicates with customers.
3.03 Communicates with apprentices.
3.04 Participates in tailboard meetings.
3.05 Communicates using hand signals.
3.06 Communicates electronically.

Task 4. Uses and Maintains Tools and Equipment

Related Components: Lubricants, operator’s manuals.

Tools and Equipment: See Appendix A.

4.01 Uses personal protective equipment (PPE).
4.02 Uses hand tools.
4.03 Uses power tools.
4.04 Uses powder-actuated tools.
4.05 Uses electrical measuring and testing equipment.
4.06 Uses ladders.
4.07 Uses climbing gear.
4.08 Uses aerial work platforms.
4.09 Uses rigging, hoisting and lifting equipment.
4.10 Uses live-line tools.
4.11 Maintains tools and equipment.
Trends: The occupation is experiencing a move towards a greater sensitivity to environmental protection such as ensuring the protection of streams and trees.

Task 5. Installs Poles

Related Components: Poles (wood, steel, aluminium, fibreglass, concrete), prefabricated bases, cross-arms, insulators, guy wires, anchors, and hardware.

Tools and Equipment: Personal protection equipment (PPE); power tools; hand tools; rigging and hoisting equipment; off-road equipment; live-line tools; safety equipment; back hoe; boom truck; radial boom derrick (RBD); jack hammer; air compressor; specialty tools; and powder actuated tools.

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<td>5.01 Selects poles.</td>
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<td>5.02 Frames poles.</td>
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<td>5.03 Sets poles.</td>
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<td>5.04 Installs pole guys and anchors.</td>
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Task 6. Installs Transmission Towers

Related Components: Prefabricated footings, steel structure components, associated hardware, and insulators.

Tools and Equipment: Hand tools; power tools; rigging, hoisting and lifting equipment; personal protection equipment; off-road equipment; live-line tools; and safety equipment.

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<td>6.01 Installs footings.</td>
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<td>6.02 Assembles transmission towers</td>
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<td>6.03 Erects transmission towers.</td>
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<td>6.04 Installs transmission tower guy wires and anchors. (Not common core.)</td>
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BLOCK C: CONDUCTOR SYSTEMS

Trends: The occupation is experiencing a move toward the installation of data and telephone cable as well as installation of overhead insulated cables.

Task 7. Installs Overhead Conductors

Related Components: Secondary conductors (quadraplex, triplex, duplex, or open wire), insulators, bells, epoxilators, tying-in materials (preformed, tie wire), armour rod, aircraft markers, spacers, dampers, and secondary suspension materials (preforms, wedge grips).

Tools and Equipment: Hand tools, personal protection equipment, safety equipment, live-line tools, power tools, sag boards, running grounds, aerial work platforms, and rigging and hoisting equipment.

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<tr>
<td>7.01 Strings overhead conductors.</td>
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<td>7.02 Sags overhead conductors.</td>
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<td>7.03 Ties-in overhead conductors.</td>
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<td>7.04 Splices overhead conductors.</td>
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Task 8. Installs Underground Cable

**Related Components:** Primary cable (copper or aluminum, concentric neutral, shielded), secondary cable (copper or aluminum, concentric neutral, single conductor), pulling compound, ducting material (PVC or FRE), vaults, terminating material (primary elbows, lugs, stress cones and secondary lugs, pins and spades), marking tape and tags, racking material.

**Tools and Equipment:** Hand tools; personal protection equipment; safety equipment; power tools; aerial work platforms; cable stripper; rigging, hoisting and lifting equipment; backhoe; trencher; and hydro vacuum excavator.

8.01 Places underground cable.
8.02 Splices underground cable.
8.03 Terminates underground cable.

**BLOCK D: AUXILIARY EQUIPMENT**

**Trends:** The occupation is experiencing the increased use of environmentally friendly products such as non-PCB transformer fills, stainless steel transformers, and groundings.

Task 9. Installs Lighting Systems

**Related Components:** Poles (wood, concrete, aluminum, steel); fixtures and lamps; bases; connectors; wire, photo-control sensor; relays; street light arm (elliptical, overbrace); timers; breakaways; plug fuses; and pigtail sockets.

**Tools and Equipment:** Hand tools, PPE, safety equipment, voltmeter, power tools, aerial work platforms, boom truck, and radial boom derrick (RBD).

9.01 Installs street lights.
9.02 Maintains street lights.

Task 10. Installs Voltage Control Equipment

**Related Components:** Transformers, lightning arrestors, fuses (current limiting, nonexpulsion, link fuse), disconnects (load break, cut-out), crossarms, ground connections (ground wire, ground rods, moulding), stirrups, hotline clamps, connectors (ampact, squeeze on, crimped), pad mount transformer base (fibreglass, concrete), poles (wood, steel, aluminum, concrete, etc.), capacitors, oil circuit breakers, supervisory control and data acquisition systems (SCADA), regulators, by-pass switch, platforms, switches (air break, oil, vacuum, gas, sulphur hexafluoride [SF6]), and reactors.

**Tools and Equipment:** Hand tools; personal protection equipment; safety equipment; live-line tools; electrical testing equipment; power tools; aerial work platforms; and rigging, hoisting and lifting equipment.

10.01 Installs transformers.
10.02 Installs capacitors.
10.03 Installs voltage regulators.
10.04 Installs switches.
10.05 Installs reactors. (Not common core.)
Task 11. Installs Protection Equipment

Related Components: Reclosers, poles, by-pass switches, cross arms, lightning arrestors, ground wire, ground rods, mouldings, connectors, fuses (current limiting, enclosed cut-out, open cut-out, plug-type, cartridge, non-expulsion, primary link, power, knife-blades, etc.) fuse charts, and sectionalizer.

Tools and Equipment: Hand tools; personal protection equipment; safety equipment; live-line tools; electrical testing equipment; power tools; aerial work platforms; and rigging, hoisting and lifting equipment.

11.01 Installs reclosers.
11.02 Installs fuses.
11.03 Installs sectionalizers.

Task 12. Installs Metering Equipment

Related Components: Company policy and procedures manual.

Tools and Equipment: Hand tools; personal protection equipment; safety equipment; live-line tools; electrical testing equipment; power tools; aerial work platforms; rigging, hoisting and lifting equipment; and off-road equipment.

12.01 Installs primary metering.
12.02 Installs secondary metering.

BLOCK E: MAINTENANCE AND REPAIR

Trends: The occupation is experiencing a move toward a greater emphasis on live-line maintenance to eliminate outages. In order to facilitate greater quality customer service, the occupation is experiencing the increased use of protective cover-ups and a greater use of inter-jurisdictional assistance to other utilities in emergencies.

Task 13. Maintains Transmission and Distribution Systems

Related Components: Company policy and procedures manual.

Tools and Equipment: Hand tools; personal protection equipment; safety equipment; live-line tools; electrical testing equipment; power tools; aerial work platforms; rigging, hoisting and lifting equipment; and off-road equipment.

13.01 Inspects distribution and transmission systems.
13.02 Maintains poles.
13.03 Maintains towers.
13.04 Maintains system components.
13.05 Trims trees.
Task 14. Repairs Transmission and Distribution Systems

Related Components: Fuses, poles, towers, connectors, conductors, cable, ancillary, equipment, splicers, and sleeves.

Tools and Equipment: Hand tools; personal protection equipment; safety equipment; live-line tools; electrical measuring equipment; power tools and equipment; powder actuated tools; aerial work platforms; rigging and hoisting equipment; and off-road equipment.

14.01 Troubleshoots overhead lines.
14.02 Troubleshoots underground lines.
14.03 Repairs overhead lines.
14.04 Repairs underground lines.

Task 15. Applies Live-line Methods

Related Components: Company policy and procedures manual.

Tools and Equipment: Personal protective equipment; safety equipment; electrical metering equipment; live-line tools; hand tools; specialty tools; aerial work platforms; powder actuated tools; power tools; rigging, hoisting and lifting equipment; and off-road equipment.

15.01 Assesses live-line status.
15.02 Uses rubber protective equipment.
15.03 Uses bare-hand techniques. (Not common core.)
15.04 Uses rubber glove techniques.
15.05 Uses stick techniques.

2.6 Red Seal Program

2.6.1. Competence Assessment
There is some concern being expressed about the practical training related competence assessment of the Red Seal certification. Specific comments relate to Alberta and the process of task-skills and its related impact on comprehensive PLT training and skills. British Columbia and Ontario tend to have their own competence tests even if a Journeyperson has a Red Seal qualification. This is often the case for both above and underground practical experience.

2.6.2. Qualification of international Journeypersons
Red Seal is being used by utilities to qualify international PLTs. For example, in British Columbia, Red Seal has worked closely with international recruits to take them through the certification process. A barrier to Red Seal certifications is concern among employers about the possibility of losing Journeypersons with Red Seal certification to employers in other provinces. Employers, while appreciating the presence of a national certification body, tend to be sceptical about the tangible impact of Red Seal on their employment practices.

“Red Seal has worked really closely with us on our international recruits. They have done a fabulous job; we have six or eight international recruits this year and they really take care of the recruits throughout the process; they are cost effective. That portion of their services I can speak quite highly of. The Red Seal piece isn’t consistent across Canada. It seems to be
kind of serfdom from province to province; as much as we say we want consistency in one designation and all these things we all push back at the end of the day and say we are all different. There is a lot of talk about doing things.” – Employer, Western Canada

2.6.3. Attitudes to Red Seal
Younger PLTs consider the Red Seal to be a “generic test” that does not reflect the specific needs in each province. There is a perceived gap in the relevance of the Red Seal in practical application and competence enhancement on the job.

“In general, I thought the whole test was… you write a test that goes right across the board in Canada itself. Some of the stuff doesn’t pertain to... what you do in British Columbia, isn’t exactly what you’d do in Ontario and Manitoba. It was a very broad test, I guess. And yet you might not have the exact experiences. But it seems it’s like that with every trade. You had to prepare for stuff that you really wouldn’t actually do in your area.” – PLT with one to five years experience, British Columbia

2.6.4. Red Seal certifications
Red Seal certifications granted as a share of apprenticeship registrations has grown from 4 per cent in 2001 to 8 per cent in 2005. The number of Red Seal certifications has tripled during the same period. Numerous barriers still remain:

- Concern among employers that Red Seal designations may increase the probability that PLTs may move from one employer to another.
- PLTs with over 10 years experience are less likely to take the Red Seal examination because they tend to be less mobile due to family and other related commitments.

Figure 2-29
Change in Percentage of Red Seals Granted 2001-2005

![Graph showing change in percentage of Red Seals Granted from 2001 to 2005.]

2.6.5. Red Seal completion rates
Red Seal certifications in the powerline trade have grown at about five times the rate of powerline apprenticeship registrations in Canada during 2001 to 2005. The growth is driven by heightened interest in mobility among younger Journeypersons, mandatory Red Seal certifications as part of apprenticeships and active promotion of the Red Seal program.

Source: In-depth interviews
Red Seal certification is more likely among younger Journeypersons. Journeypersons with over 10 years experience are less motivated to consider the Red Seal certification because they are less likely to move if they are dual income households. Their spouses would have to relocate too. This leads to questions of availability of employment for spouses in the new location. Key drivers of interest in Red Seal are flexible options for employment, employer mandates for certification and family related motivations.

Red Seal completion rates have increased by 22 per cent since 2003. The trend of the pass ratio has been upward with 74 per cent of those who wrote the Red Seal exam having received their certification. The average number who wrote the exam was 193 during the period 2003 to 2006.

The total number of Red Seals issued for all occupations has grown by an average of nine per cent a year during the period 2003 to 2006, compared to 15 per cent for the Powerline Technician trade during the same period. The growth rates are inconsistent across years. This could be attributed to inadequate promotion and low awareness and understanding of the Red Seal certification. It could also be driven by economic conditions and shifts in demand for Red Seal certification in some provinces. The growth of Red Seals issued to Powerline apprentices is on a comparitively small base of 74 compared to 20,386 Red Seals issued to all occupations.
Figure 2-32
Growth in Red Seals Issued (by percentage), and Red Seals Issued to Powerline Apprenticeships (percentage change)

Figure 2-33
Number of Red Seals Issued to Completing Apprentices and Trade Qualifiers, from 1997 to 2006

<table>
<thead>
<tr>
<th>Year</th>
<th>Red Seals Issued to Completing Apprentices</th>
<th>Red Seals Issued to Trade Qualifiers</th>
<th>Total Number of Red Seals Issued</th>
<th>Total Number of Powerline Technicians Who Wrote the Exam</th>
<th>Total Red Seals Issued to Powerline Technicians</th>
<th>Pass Ratio %</th>
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<tr>
<td>1997</td>
<td>8,460</td>
<td>3,759</td>
<td>12,219</td>
<td>159</td>
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<td>1999</td>
<td>9,803</td>
<td>3,065</td>
<td>12,868</td>
<td>248</td>
<td>153</td>
<td>62</td>
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<td>9,994</td>
<td>3,265</td>
<td>13,259</td>
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<td>2001</td>
<td>10,476</td>
<td>4,029</td>
<td>14,505</td>
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<td>2002</td>
<td>10,789</td>
<td>4,144</td>
<td>14,933</td>
<td></td>
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<tr>
<td>2003</td>
<td>11,318</td>
<td>4,521</td>
<td>15,839</td>
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<td>2004</td>
<td>11,972</td>
<td>5,921</td>
<td>17,893</td>
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<tr>
<td>2005</td>
<td>12,450</td>
<td>5,251</td>
<td>17,701</td>
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<td>2006</td>
<td>13,306</td>
<td>7,080</td>
<td>20,386</td>
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</table>

Total 10 year total: 152,011
SECTION 3: RECOMMENDATIONS

The drivers of change in the Powerline Technician trade are complex and highly localized. In many areas, there is a trend towards privatization and deregulation of the industry. This has resulted in greater competition among suppliers of power and outside contracting of some of the traditional Powerline Technician work and training. There is a greater expectation among consumers to maintain uninterrupted power, which places a greater emphasis on live-line work. In some jurisdictions, the Powerline Technician occupation is suffering from an aging workforce, with many practitioners approaching retirement age, and is attracting fewer new entrants to replace future retirees.

Economic conditions, investment in infrastructure, and provincial skilled trade policies over the past three decades have had a significant impact on the current dynamics of supply and demand of Powerline Technicians in each province. A concerted effort to address specific situations in each province while working towards a national strategy will address the challenges in the powerline trade.

A critical step to address these challenges will be to increase enrolments of apprentices in the Powerline Technician trade. To achieve the objective of higher enrolments, several strategies would need to be explored. Some of the possible solutions to the challenges are:

1. Develop a national best practice course and training schedule model for ongoing skills development;
2. Strengthen standardized qualifications for instructors; identify challenges related to delivery and management of high quality training in each province;
3. Develop a well-defined pathway into the trade: trades discovery, job shadowing, Prior Learning Assessment and Recognition (PLAR) processes;
4. Create pilots of a new technical curriculum: increase student exposure to different post-secondary opportunities;
5. Increase engagement: help young people make informed decisions with first-hand exposure to the trade (e.g., Powerline Youth Apprenticeship promotion); provide a clear pathway;
6. Initiate outreach program to engage women and new Canadians; implement best practice review of the fire service and infantry on overcoming similar challenges;
7. Determine value of task-skills with empirical data (task-skills are a polarizing topic across provinces);
8. Ensure deeper integration of Red Seal in the Powerline Apprenticeship Certification process;
9. Optimize occupational standards to better reflect the needs of employers.

Situational Analysis of the Powerline Trade in Canada

Recommendations

1. Develop a national best practice course and training schedule model for ongoing skills development.

Initiatives:

1. Lower the training period in the powerline trade from two months a year to less than five days a year after five years in the trade;
2. Enhance access to, and participation in, the ongoing training programs of Journeypersons, especially safety process compliance; replacement costs of extended training are a barrier to consistency in training;
3. Develop an engagement strategy to strengthen loyalty and interest in continuing in the trade to offset transitioning to management positions;
4. Minimize the culture gap: younger people currently do not learn about the trade from people who are closer to their age and hence do not adequately relate to the trade.
2. Strengthen standardized qualifications for instructors.

Initiatives:
1. Identify challenges related to delivery and management of high quality training in each province;
2. Explore relevance of Certificate in Adult Education (CAE) and Certificate in Adult and Continuing Education (CACE) in each province;
3. Strengthen training skills of instructors to motivate and excite apprentices and younger Journeypersons;
4. Limit the number of experienced Journeypersons taking on diverse supervisory roles without hands-on work, which leads to Journeypersons with less experience (one to five years) training new apprentices;
5. Ensure instructors have both the technical knowledge and the training skills to motivate and engage apprentices/students;
6. Ensure standardized qualifications are required for instructors. The Canadian Electrical Association is working towards creating a standard in adult education with the CAE and CACE programs that are offered at community colleges;
7. Promote the CAE, which is a 33 credit hour program consisting of 10 courses, plus practicum. It is designed to develop skills in teaching adults in a community college or vocational-technical college setting;
8. Mandate that instructors at the Manitoba Community Colleges (Red River College, Assiniboine Community College and University College of the North) be required to complete a minimum of one course a year towards the CAE as a condition of employment.

3. Develop a well-defined pathway into the trade.

Initiatives:
1. Improve the availability and accessibility of education, training, upgrading and recognition of prior learning through solutions such as trades discovery, job shadowing and PLAR processes;
2. Provide young people with a clear pathway from the application process to enrolment and onward to completion;
3. Provide access to ‘turn key’ solutions - step by step from a decision to applying, pre-apprenticeship training and employment;
4. Streamline the credit transfer process;
5. Streamline quality and consistency of academic programs across provinces - assessment process, PLAR, training delivery methods;
6. Increase awareness of the importance of more diverse post-secondary options;
7. Increase information and career counselling support;
8. Attract a broader pool of talent with stronger math and physics skills and higher motivation;
9. Continue to facilitate a national dialogue on program content and best-practice standards.


Initiatives:
1. Implement a “laddered,” or integrated PLT apprenticeship system into the post-secondary system to improve the potential advancement of apprentices and the flexibility of their credentials;
2. Draw higher quality apprentices and encourage employer investment through a laddered PLT apprenticeship system; it would also affirm the value of apprenticeship training relative to other post-secondary education and reduce the negative image of the trades;
3. Integrate skilled trade content into the post secondary system to give students a better appreciation of the trade and possibly broaden the pool of applicants interested in the trade by increasing student exposure to different post-secondary opportunities.
5. Increase enrollment with higher engagement.

Initiatives:
1. Help young people make informed decisions with first-hand exposure to the trade (Powerline Youth Apprenticeship promotion); provide a clear pathway;
2. Facilitate access to information, especially within the high school system (grade nine onwards) with information and guidance at the right time and place;
3. Attract a more talented pool of applicants with strong math and physics competencies;
4. Create a clearer career pathway for potential apprentices to manage long term career expectations;
5. Target core groups such as those considering a career in engineering or other technical university educations;
6. Provide more labour market information about expected earnings and employment opportunities;
7. Provide clearer institutional signals to potential apprentices about the level of skills required to prepare them for the trade.

6. Implement an outreach program to engage women, Aboriginals and new Canadians.

Initiatives:
1. Develop specific strategies based on best practices in other occupations;
2. Make the trade relevant and talk to their needs and concerns. Look at best practices within the trades of other industries. Review best practices of the fire service and infantry on overcoming similar challenges;
3. Create an Employment Support Model (see page 8) for the powerline trade that would prepare Aboriginal apprentices for the workplace and continue to support them throughout their Apprenticeship Program;
4. Ensure the apprentices successfully complete their programs by utilizing the support mechanisms built into the Employment Support Model. The model recognizes cultural differences and provides support necessary to help candidates understand the powerline trade and complete the required training.

7. Determine value of task-skills with empirical data.

Initiatives:
1. Analyse rationale for opposition (task-skills is a polarizing topic across provinces) and support for task-skilling;
2. Analyse the pros and cons of the approach;
3. Identify in-market evidence of concerns related to erosion of skills.


Initiatives:
1. Provide a seamless certification process following the completion of a powerline apprenticeship;
2. Target new skilled trade professionals who may consider getting a Red Seal certification after graduation. According to the Red Seal Program, currently just eight per cent of Powerline apprentices attain the Red Seal certification;
3. Assess local barriers in each province. Interest in Red Seal certification grows significantly with higher awareness and understanding of the benefits of the program;
4. Address perception of “lower employee loyalty” as a result of Red Seal certification;
5. Address perception that the Red Seal certification lacks certain types of practical competency assessments;
6. Promote Red Seal certification as a competence assessment tool for internationally qualified PLTs.
9. Optimize occupational standards to better reflect the needs of employers

Initiatives:
1. Create a national best practice promotion standard based on the most effective practices in each province.
2. Integrate the standard with local strategies and solutions to promote the trade;
3. Obtain greater employer input into the content of Powerline Apprenticeship Programs to improve the fit between the skills provided to apprentices and skills demanded by employers;
4. Promote excellent examples of successful apprenticeships, such as the Construction Owners Association of Alberta’s policy of awarding points on contract tenders for the number of apprentices that are engaged on a project;
5. Analyse the desired aptitudinal profile of apprentices across provinces based on feedback from instructors, employers and Journeypersons and update the Powerline Technician profile in the Human Resources and Skills Development (HRSDC) Career Handbook. Currently, the aptitude of the Powerline Technician classification is assigned a “Middle Third of the Working Population” rating for most skills but a higher rating for “Motor Coordination” and a lower rating for “Clerical Perception” and “Numerical Ability.” Nine aptitude factors are rated according to the aforementioned scale to provide the aptitudinal profile needed to perform the work of an occupation. The Aptitudes Scale is based on the General Aptitude Test Battery (GATB);
6. Note the importance that as a result of an increased emphasis on math and physics skills by employers, the importance of “Numerical Ability” has grown over the past five years;
7. Revisit the lowest rating for “Numerical Ability” in the occupational standard in context of rising expectations of employers for stronger math and physics skills. Increased technology use and an emphasis on analytical skills for remote data collection and entry into mobile devices have resulted in a higher emphasis on “Numerical Ability” over the past five years.
SECTION 4: APPENDICES
Appendix A

Survey Questions

1. What are the top five challenges faced by the skilled trades across provinces?

2. What steps can be taken to address these challenges?

3. Please describe the top five challenges faced by the Powerline Technician trade.

4. What steps can be taken to address these challenges?

5. Are some provinces facing unique challenges with the Powerline Technician trade?

6. Please comment on the following topics in context of the Powerline Technician trade:
   a. Attitudes towards Apprenticeships:
   b. Access to Education, Training and Certification
   c. Retaining and Attracting Workers to the Powerline Technician Trade
   d. Responding to Powerline Labour Force Needs
   e. Awareness of the Apprenticeship System
   f. Apprentices’ Expected Value of Training
   g. Costs of Apprenticeships to Apprentices
   h. Costs of Apprenticeship to Employers
   i. Regional and Provincial Differences in Apprenticeship Development
   j. Age Composition of Apprentices
   k. Journeyperson Working Conditions
   l. Role of Red Seal
Appendix B

Provincial Policies on Prior Learning Assessment and Recognition (PLAR)

Newfoundland and Labrador

**Purpose and Scope:** The Newfoundland and Labrador Provincial Apprenticeship Board recognizes that learning, which some adults acquire from work and life experiences may be equivalent to components of apprenticeship programs offered within the province.

**Policy Statement:** All individuals seeking certification in the designated occupations in Newfoundland and Labrador will have the opportunity to have their prior learning assessed. Prior Learning Assessment (PLA) is a process whereby previous learning is recognized and is credited. Recognizing prior learning may shorten the time required to complete an apprenticeship program.

**Definitions:** Prior Learning: learning acquired through previous experiences. Sources of learning include any learning experience not associated with institutional study or courses taken at an institution that are not recognized through a credit transfer arrangement/agreement.

**Limitations of the Policy:** No person will be given credit for Journeyperson certification without writing the Provincial/Interprovincial examination. Policy authorized September 18, 1997.

Nova Scotia

Graduates of pre-employment programs approved by the Director of Apprenticeship will be eligible for credit. Practical credit may be awarded to graduates to a maximum of 1,000 hours per academic year of full-time study. For approved programs of 40 weeks duration, credit will normally be 1,000 hours.

Graduates of approved pre-employment programs in apprenticeable trades will receive credit for apprenticeship courses where outcomes have been covered by the pre-employment program. Credit will be recognized for a period of two years, or up to five years where the applicant has been in relevant employment during the intervening period.

Assessment and recognition of prior learning will be extended to practitioners who can show evidence of completion of apprenticeship course outcomes or attainment of competencies contained in the appropriate Record of Occupational Progress. Credit is negotiated between the Industrial Training and Certification Officer and the employer and may require the applicant to challenge some course ending examinations. The Director may approve credit to an apprentice from another jurisdiction in Canada provided that jurisdiction has equivalent standards.

Prince Edward Island

Credit may be granted for previous work experience. Credit for pre-apprenticeship (pre-employment) courses is granted on an hour for hour basis. Additional credit may be granted based on the results of a level one examination administered to graduating students. The maximum credit granted is 12 months.
New Brunswick
Apprenticeship credits may be granted under the Apprenticeship and Occupational Certification Act. Credits as the Director determines may be granted to an applicant for a Diploma of Apprenticeship in the following manner:

1. For the successful completion of a course of study or training approved by the Director;
2. For work performed or experience gained in the trade prior to registering as an apprentice. Credits may be granted at the time of registration and/or prior to completion of apprenticeship.

Ontario
In Ontario, program guidelines and trade-specific regulations define individual Apprenticeship Program requirements. Credits towards completion of a Certificate of Apprenticeship may be granted for both previous technical training and work experience.

The formal instruction (technical training) component of an apprenticeship is defined in the curriculum standard for the particular trade. Exemption from some or all of the technical training may be granted by successfully completing ministry-approved exemption tests. Where exemption tests are not in place, exemption may be granted on proof of prior learning and supporting documentation.

Saskatchewan
In Saskatchewan, credit in the Apprenticeship Program can be awarded for both previous technical training and work experience. Apprentices from other provinces receive credit on a level for level basis. Work experience is creditable on an hourly basis. Graduates of pre-employment courses from out-of-province may receive time credit equivalent to actual time spent on the course. These individuals are eligible to write placement examinations to establish advanced standing in technical training. An entrance examination can be written where an individual does not meet the educational requirement.

Alberta
In Alberta, a PLAR system is in place to confirm the level of skill and knowledge of a person for:

- entry into an apprenticeship program (school transcript or entrance examination);
- advanced standing in an apprenticeship program based on Provincial Apprenticeship Committee (PAC) accredited training;
- advanced standing in an apprenticeship program based on previous work experience in a trade.

This prior learning assessment will take the form of:

- a review of original transcripts, diplomas and certificates; or
- verification of original or certified true copies of letters of work experience from previous employers; or
- a request from a current employer that is recognizing previous work experience of an apprentice; and
- an industry examination to confirm the level of skill and knowledge of the applicant.

PAC Accredited Programs
Individuals who are registered in an accredited pre-employment program must have the required educational requirements and successfully complete the program before they are eligible to attempt the prior learning assessment examination for the first period of apprenticeship.

Students who have the trade entrance requirements and have successfully completed the required courses in a Vocational Graduate/Undergraduate or Career and Technology Studies (CTS) Program can attempt prior learning assessment examinations for advanced standing in an apprenticeship program in accordance with the accreditation outlined by the PAC for the trade. Students who have successfully completed the required courses in an
accredited technician or technology program can attempt prior learning assessment examinations for advanced standing in accordance with the accreditation outlined by the PAC for the trade.

There are a number of other PAC accredited programs that would allow an individual who has made application for apprenticeship or is a registered apprentice to attempt prior learning assessment examinations for advanced standing in an apprenticeship program in accordance with the accreditation outlined by the PAC for the trade.

**Previous Work Experience**

An individual may qualify for prior learning assessment examination(s) to determine credit toward an apprenticeship program if he/she has:

- the entrance requirements for the apprenticeship program in the trade;
- a minimum of one year documented work experience in the trade; or
- if a registered apprentice, a request from the current employer who is a party to the contract of apprenticeship and is recognizing previous work experience of one year or more and wishes the apprentice to attempt an examination rather than attend formal instruction.

In granting credit, the following standards shall apply:

- The credit granted for formal instruction shall not exceed the content in the formal instruction of the recognized training;
- The credit granted for on the job training shall not exceed the actual amount of time spent in the on the job training component of recognized training;
- The number of hours of on the job training outlined in the applicable trade regulations cannot be reduced;
- While a PAC may recognize, in whole or in part, a training program, course of training or program of study as equivalent to the on the job training provided in an apprenticeship program, credit for on the job training can be granted only when an employer recommends or approves credit.

Regardless of how much credit a person receives, a person must spend a minimum of 12 months in an Alberta apprenticeship program in order to receive an Alberta Journeyman Certificate.

**British Columbia**

In British Columbia, the Industry Training and Apprenticeship Commission has established a bylaw that sets out in detail the process for assessing and awarding credit to individuals registering in an industry training or apprenticeship program. A brief overview follows:

1. Graduates of accredited entry level trades training programs receive credit for first level technical training if they become registered as apprentices within 12 months of graduation. After 12 months, they may be required to pass a placement examination in order to receive credit. In addition, graduates usually receive credit for all time spent within a program to a maximum of six months subject to approval by their employers.
2. Graduates of approved co-operative education programs receive credit for all levels of technical training and, at the discretion of their employers are granted credit for all time spent within the program to a maximum of one half the length of the industry training or apprenticeship program.
3. At the discretion of their employers, applicants with no previous formal training may be granted time credit equivalent to two-thirds of their previous practical work experience to a maximum of one half the term of their industry training or apprenticeship program.
4. Applicants with not less than 18 months work experience in the trade in which they are registered as apprentices are subject to the concurrence of their employer, eligible to challenge the first level placement examination. Those with not less than three years work experience and who have passed the level one examination can, with the concurrence of their employers challenge the level two placement examination.
All registered apprentices must normally complete not less than one half the term of their industry training or apprenticeship program in order to be eligible for a completion of industry training or apprenticeship certificate. Exceptions to this policy can be made, usually to accommodate out-of-province apprentices or individuals who have served an apprenticeship in a related trade or occupation.

**North West Territories**

Credits may be granted under three categories for applicants entering an apprenticeship program.

1. Technical or Technology Courses:
   - An applicant who has completed a two year trade technology program may be granted 3,600 hour time credit and technical training credit for all levels upon passing the appropriate examination(s).
   - An applicant who has completed a one year trade technology program may be granted 1,800 hour time credit and technical training credit for first and second level upon passing the appropriate examination(s).

2. Approved Related Trade Courses:
   - Graduates from approved pre-employment, pre-apprenticeship and vocational high school courses may be granted hour-for-hour time credit to a maximum of 1,800 hours and are allowed to write first level examinations or first level progressive examination prior to entering into apprenticeship contracts.

3. Work Experience:
   - Time credit for previous work experience may be granted. This is done upon the recommendation of Apprenticeship Training Officers with prior approval of the employer.

**Yukon**

- In the Yukon Territory, previous trade(s) training or trade related work experience as credit towards completion of an apprenticeship program is based on the indenturing employer's recommendation. The Department will not give credit beyond the employer's recommendation but may give less.
- The Department will only give an applicant half time credit for acceptable verified work experience gained when not on a registered apprenticeship.
- To date, credit has not been given for high school programs other than the Yukon Secondary School Apprenticeship Program. Students enrolled in this program receive both high school and apprenticeship work experience credit.
- Applicants must provide verification of previous work experience through letters (on company letterhead) from previous employers or on trade verification forms signed by previous employers. Only half time credit will be given by the Department.
- Applicants who have completed trade courses such as pre-employment and technology programs must submit course completion certificates and transcripts. The course content is assessed to determine eligibility to write apprenticeship level examination(s). Applicants from acceptable programs who successfully pass the prescribed apprenticeship level examination(s) are given hour for hour time credit towards their apprenticeship program. This credit is spread over the terms (four year program – eight terms) of the apprenticeship.
- In the Yukon, the maximum credit that can be granted towards completion of any apprenticeship program is one half the term of apprenticeship. This maximum credit would only be given after successful completion of the specified level examination(s) or in-school examination(s).
- To date, apprenticeship credit has not been given to applicants who have completed trade related correspondence course(s).
Appendix C

Apprenticeship Accreditation Process

Newfoundland and Labrador

Purpose and Scope
The Provincial Apprenticeship Board is responsible for the accreditation of all the provincial apprenticeship training programs offered by private and public training institutions. Accredited apprenticeship programs ensure the learner, industry, employers and the public that the program meets or exceeds educational and industry standards as identified in the National Occupational analysis and reflected in the Plans of Training. The purpose of this policy is to ensure that those who have the desire and attributes to become qualified trades persons reach their goals by participating in quality training programs. The accreditation policy provides an auditing mechanism for provincial apprenticeship training programs independent of the education system. It also meets the challenges of technological changes by simulating ongoing curriculum improvement through the process of continuous review.

Policy Statement
Any training institution wishing to offer apprenticeship training in Newfoundland and Labrador has the opportunity to have their apprenticeship programs accredited by the Provincial Apprenticeship Board. Apprentices who exit from accredited programs will get the full recognition and automatic credit transfer toward their apprenticeship program by the Provincial Apprenticeship Board. Apprentices who exit from non-accredited programs will be evaluated on an individual basis.

Definition
Apprenticeship Program Accreditation is a recognition by the Provincial apprenticeship board that the program conforms to the national standards established for that occupation and that graduates with the requisite experiential hours qualify to write the certification examination.

Limitations of the Policy
The programs considered eligible for accreditation by the Provincial Apprenticeship Board are limited to those apprenticeship programs that lead to Red Seal Certification and any other programs that come under the direction of the Board. The Provincial Apprenticeship Board accredits programs for three to five years. It also maintains a provincial registry of accredited programs on an annual basis. The Provincial Apprenticeship Board does not accredit institutions, agencies, departments or faculties.

Program Accreditation Procedures
1. The Provincial Apprenticeship Board initiates the accreditation process by advising training institutions offering apprenticeship programs of the requirements of accreditation for these programs. They also advise the institutions of a tentative schedule for the accreditation.
2. The evaluation of an apprenticeship program is based on qualitative and quantitative analysis of data provided by the training institution. The accreditation team references the data to National Occupational Standards for Red Seal programs and Provincial Standards for apprenticeship programs that are not Red Seal designated through the Provincial Plans of Training.
3. Before awarding accreditation, a team will conduct an accreditation visit to the training institution.
4. Before the submission of a final report to the Provincial Apprenticeship Board, the Team Leader will send a draft accreditation report to the training institution for comment on information included in the report.
5. A final written report will be submitted to the training institution outlining accreditation status, any areas
needing remediation and the time frame in which it is to occur.

6. Accreditation designation stays in effect for three to five years. During that time, the training institution must report any change in an accredited program to the Provincial Apprenticeship Board through the appropriate authorities. Any change that alters the conditions under which accreditation was awarded may require a reassessment.

Program Accreditation Process
The Apprenticeship Program accreditation process addresses the following in ensuring that the instructor, the facilities and the curriculum are of the highest quality and meet standards established and approved by the Provincial Apprenticeship Board.

- Admission and Retention Policies and Standards
- Policy on Admission with Advanced Standing, Credit Transfer and Prior Learning
- Requirements for Graduation
- Instructional Staff
- Technical Currency
- Educational Facilities
- Course Portfolios
- Quality of Student Work
- Student Success and Satisfaction
- Satisfactory Employment

Appeals Procedure
If the Provincial Apprenticeship Board does not accredit an apprenticeship program, the training institution may appeal to the Chair of the Board within 30 days of the notification. Upon written notification of appeal, the Board Chair will appoint a Special Appeals committee of the Board to review the case. As a part of the review, the committee will meet with all parties. Following the review, the committee can reject the appeal, order an immediate revisit to the institution, at the institution's expense, or appoint an independent arbitrator to investigate and report to the Provincial Apprenticeship Board. The decision of the Board will be final.

Prince Edward Island, New Brunswick, Saskatchewan, British Columbia, Yukon and the North West Territories
Apprenticeship accreditation is a process by which those responsible for apprenticeship in a province or territory evaluates and recognizes training programs as being equivalent to the formal instruction and/or on-the-job training components of an apprenticeship program.

Two main purposes of apprenticeship accreditation are to assure students, employers and the public that training programs meet or exceed established standards and to facilitate the granting of credit to prospective apprentices who have successfully completed accredited training programs. Accreditation also provides an auditing mechanism independent of the training system, and provides guidelines for the improvement of training and the development of future programs to meet the needs of industry.

To be accredited, a training program should meet the following general criteria:

1. The training curriculum should be equivalent to the apprenticeship training curriculum for one or more level of technical training.
2. The instructors who deliver the training should be qualified/certified and competent in the latest technology and trends in industry.
3. The facilities and equipment used to deliver the training should be appropriate to fully deliver the trade
related curriculum.
4. The training program should be subject to review on a regular basis.

Usually it is the members of provincial/territorial industry Trade Advisory Committees and representatives of the apprenticeship agency who are responsible for evaluating and determining if a training is eligible for accreditation.

**Alberta**

In Alberta, a formal Apprenticeship and Industry Training Board Apprenticeship Accreditation Policy has been in place since October 1, 1996. A Provincial Apprenticeship Committee (PAC) is authorized to recognize, within the policy guidelines prescribed in this policy document, a training program, course of training or program of study as equivalent to the formal instruction or on the job training of an apprenticeship program in its trade.

The purpose of recognizing training is to facilitate the granting of credit to a prospective apprentice for having successfully completed that training. This credit is used by staff of Alberta Advanced Education and Career Development to determine the level at which the prospective apprentice enters an apprenticeship program. Where credit is granted, credit is used to do any one or more of the following:

- reduce the number of periods of apprenticeship to be served by the prospective apprentice;
- reduce the length of a period of apprenticeship to be served by the prospective apprentice;
- reduce the amount of on the job training that must be completed by the prospective apprentice;
- reduce the amount of formal instruction that must be completed by the prospective apprentice.

Regardless of how much credit a person receives, a person must spend a minimum of 12 months in an Alberta apprenticeship program in order to receive an Alberta Journeyman Certificate. It is the policy of the Apprenticeship and Industry Training Board to encourage PAC’s to recognize training programs, courses of training or programs of study as equivalent to apprenticeship training where:

- the training content is equivalent to the training content of an apprenticeship program provided under the Act; and
- the training program, course of training, or course of study:
  - provides a person with an opportunity to explore trades training as a career option;
  - provides a person with developmental opportunities in technical and non-technical competency areas of a trade;
  - prepares a person for employment in a trade, to the advantage of both the person and the employer.

It is the policy of the Board that a PAC:

- advise the Board of any courses or programs of training that it recognizes as equivalent to training provided in the apprenticeship program for its trade;
- in determining if a training course or program is to be recognized, ensure that Alberta’s standards in the trade are not compromised while at the same time avoiding undue protectionism by ensuring that artificial barriers to the mobility of workers or the portability of their skills are not created;
- in determining if a training course or program is to be recognized, consider the practices in other provincial/territorial jurisdictions relative to that program;
- without compromising Alberta’s standards in the trade, develop accreditation arrangements that encourage greater mobility for apprentices and Journeypersons.
General Standards
A PAC may recognize training provided anywhere in the world as being equivalent to training in the apprenticeship program in its trade. In recognizing training, the PAC must, to the extent practicable, adhere to the following standards:

1. The instructors who deliver the training in a recognized program should, in the opinion of the PAC be competent and qualified trades persons.
2. The facilities and equipment used to deliver the training in a recognized program should, in the opinion of the PAC be appropriate to fully deliver the trade-related curriculum.
3. Recognized training should be reviewed a minimum of every three years, or more often if recommended by the industry to ensure that it continues to remain current with the curriculum in the Apprenticeship Program.
4. Only formal instruction should be recognized as equivalent to the formal instruction component of an Apprenticeship Program.
5. Only on the job training should be recognized as equivalent to the on the job training component of an Apprenticeship Program.
6. Notwithstanding paragraphs 4 and 5, laboratory work or any form of simulated on the job training that is an integral part of a training program may be recognized as equivalent to the on the job training component of an Apprenticeship Program where a PAC feels it is appropriate.
7. Formal instruction which is equivalent to any part of the formal instruction of an apprenticeship program may be recognized. (This would enable the Executive Director to require an apprentice to complete a recognized course in an area where the person has a deficiency without requiring that person to attend the full formal instruction component of their apprenticeship.)
8. When a course or program of training is determined by a PAC to be equivalent to apprenticeship training, the PAC must decide whether a person who successfully completes the recognized training will be required to complete any further examinations before credit is granted (e.g., period exam).

Program Specific Standards
In addition to the general standards outlined above, a PAC should adhere to the following program specific standards when determining if training in these programs should be recognized:

1. Trade related pre-employment programs should contain curriculum that is equivalent to the training content of at least the first period formal instruction component of the apprenticeship program in the applicable trade.
2. Technology, technician or other related programs should contain curriculum that is equivalent to the training content of one or more periods of formal instruction in the apprenticeship program in the applicable trade.
3. Career and Technology Studies and other trade related high school program modules selected for accreditation should contain curriculum that is equivalent to the training content of one or more periods of formal instruction in the apprenticeship program in the applicable trade.
4. Policy should be in place for the recognition of training which is common to two or more trades.

It is the policy of the Board that:
- the formal instruction provided in one designated trade may be recognized as equivalent to a portion of the formal instruction in the apprenticeship program of another designated trade;
- the on the job training provided in one designated trade may be recognized as equivalent to a portion of the on the job training provided in the apprenticeship program of another designated trade.
Standards

Where the formal instruction or on the job training, or both, provided in an apprenticeship program in one trade is recognized as equivalent to the training provided in another trade, credit is to be granted only to a prospective apprentice:

- who holds a recognized trade certificate in the trade in which the formal instruction or on the job training occurred;
- who has successfully completed the period examinations requested by the applicable PAC, and whose employer is willing to approve credit for the recognized on the job training.
## Appendix D

### Glossary/Definition of Terms

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<tr>
<th>Term</th>
<th>Abbreviation</th>
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<tr>
<td>Apprenticeship and Industry Training Board</td>
<td>AITB</td>
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<td>Canadian Council of Directors of Apprenticeship</td>
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<td>Canadian Standard Association</td>
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<td>Career and Technology Studies Program</td>
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<td>Certificate in Adult and Continuing Education</td>
<td>CACE</td>
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<td>Certificate in Adult Education</td>
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<td>General Aptitude Test Battery</td>
<td>GATB</td>
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<td>Human Resources and Skills Development Canada</td>
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<td>National Occupational Classification</td>
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<td>Occupational Health and Safety Act</td>
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<td>Powerline Technician</td>
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<td>Prior Learning Assessment &amp; Recognition</td>
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<td>Provincial Apprenticeship Committee</td>
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<td>Radial boom derrick</td>
<td>RBD</td>
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<td>StatsCan</td>
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<td>Supervisory control and data acquisition systems</td>
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<td>Trade Advisory Committees</td>
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<td>Workplace Hazardous Material Information System</td>
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