



The Powerline Technician Trade in Canada: Emerging Practices and Training Delivery Matrix

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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.



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EXECUTIVE SUMMARY

The recruitment, retention and training of Powerline Technicians present significant challenges to the future of Canada's electricity industry. These challenges differ across provinces and need to be addressed with a cohesive strategy that takes into account each province's unique situation with regard to drivers of human resource performance. The drivers of change in the Powerline Technician trade are complex and highly localized. A concerted effort to address specific situations in each province while working towards a national strategy is likely to address these challenges.

Combined with findings from the Electricity Sector Council's 2008 *Situational Analysis of the Powerline Technician Trade in Canada*, the research document, *The Powerline Technician Trade in Canada: Emerging Practices and Training Delivery Matrix*, has provided the Electricity Sector Council and its industry partners with perceptive highlights of the future of the Powerline trade. With a repository of emerging practices for recruitment, retention and training, the Canadian electricity sector will be able to act upon, and further address specific workforce situations in each province while working towards a national strategy. This common objective of strengthening the ongoing development of the Powerline Technician trade will brighten the future of the Powerline labour force.

Key Findings

Recruitment

- The emerging practices identified for recruitment of candidates in the Powerline Technician trade relate to engagement strategies, employee referral programs, screening processes, recruitment in local communities, strategic alliances, reputation management, and outreach programs. Respondents suggest that a persuasive recruitment tool would be a coaching program to encourage Powerline Technicians to promote the trade in their communities. Respondents also agree that there is significant credibility associated with a first-hand endorsement by an individual already in the trade.
- An emerging practice in some provinces is to recruit candidates from remote communities to fill vacancies in these areas. The programs may include a financial incentive and reimbursement of tuition fees on the condition that the candidate agrees to serve in the remote community for at least five years. Several respondents say that screening candidates from within their organizations has been the most effective recruitment strategy in their organizations. The rationale given is that these candidates are familiar with the organizational culture and processes.
- Use of a screening process based on a points system is a leading practice. Respondents say it ensures the selection process is objective and includes specific criteria that will result in a superior screening process. The screening process has been effective in short-listing candidates with the highest potential and a superior work ethic. The screening criteria are based on several attributes and variables, such as the applicant's high school (or college/university) math grades, reading and mechanical reasoning abilities, relevant work experience, and any post-secondary courses completed in fields related to electricity/electrical engineering.
- A leading practice is to engage a recruitment representative from an Aboriginal community. The representative has an in-depth knowledge of challenges facing these communities and focuses on strengthening relationships with stakeholders in these communities. The strategy includes frequent visits by recruiting staff and investments in local media. Some employers have also engaged diversity experts to meet with visible minority and female candidates, to attend career fairs, and to visit high schools to increase awareness about opportunities in the Powerline Technician trade.



Retention

- Respondents say that the most important influence on retention levels is a positive work environment. The approach undertaken by some employers has been to increase awareness of the benefits offered to Powerline Technicians (in addition to wages). An emerging strategy to retain Powerline Technicians has been to offer a flexible overtime program to increase their earning potential.
- Respondents in some provinces say that most Powerline Technicians prefer geographically stable work that minimizes the need for frequent relocation and travel. This challenge is being addressed by recognizing the need for Powerline Technicians to be adequately compensated, if relocation is required. The approach has helped to stabilize working conditions and has increased retention rates of Powerline Technicians.
- A focus on recruitment from within the province has resulted in higher retention rates of Powerline Technicians. Most of the candidates recruited in the recent past are from within provinces. The retention strategy is especially effective in remote rural areas. The approach of recruiting and deploying Powerline Technicians locally has resulted in dramatically higher retention rates.
- Due to impending retirements of Powerline Technicians, a gap in knowledge within organizations is expected in the near future. Some employers have implemented mentorship programs by pairing Powerline Technicians with others having different levels of experience to upgrade the skills of those with less experience. Other initiatives include coaching and sponsorship programs to accelerate the learning process. Some respondents also say lower retirement rates may strengthen knowledge management strategies because of the benefits experienced Powerline Technicians can offer through mentoring and their positive influence on younger workers.

Training

- A key strategy being adopted by employers is to increase investments in in-house training. These organizations have created new positions (such as “training coordinator”) to coordinate visits to job sites and expose candidates to new equipment and the latest technologies. These training coordinators conduct road shows, liaise with educational institutions and address the needs of students on an ongoing basis.
- Several employers have taken a structured approach to refresher training, using a formal schedule. This approach can have a tangible impact on safety standards and performance of Powerline Technicians. Currently, time allocated to refresher training varies, depending on the employer and the level of experience of the Powerline Technician.
- Respondents across provinces mention that the Powerline Technician trade has inadequate resources dedicated to “train the trainer” programs. Several respondents expressed an interest in comparing training techniques of their employer with benchmarks of industry associations and training networks. While a potential exchange of instructors between employers has been reviewed, respondents say a best-practice model may not exist as yet.
- Some respondents are having difficulty attracting temporary and permanent instructors because the time spent as an instructor results in an effective decrease in pay. While they are working in the classroom, overtime (and overtime pay) is no longer available. These respondents are investigating the possibility of attracting retired Powerline Technicians, or those nearing retirement, to take on the instructor roles.



Training Delivery Matrix

- *Apprentice training based on an updated occupational analysis:* The most significant gaps are in areas related to “soft skills,” such as communication and planning. The gaps are significant for such abilities as “Communicates with customers” and “Communicates with apprentices” “in the work place,” and “Develops and maintains schedule.” Other tasks where most provinces have gaps are trainings related to transmission poles, voltage control equipment, and environmental hazards.
- *Refresher training for journeypersons:* Ongoing refresher training activities are significantly lower, compared to training at the apprentice level. Currently, training activities focus on new equipment, mandatory safety training, and orientation for journeypersons entering the trade from another province or country. Interestingly, ongoing training activity for “soft skills” related to communication and planning is higher for journeypersons, compared to apprentices. Refresher training levels are also higher for environmental hazards, repairs of transmission and distribution systems, and troubleshooting problems with overhead and underground lines.

Recommendations

1) Increase apprentice enrollments in the Powerline Technician trade.

Initiatives:

- 1) Develop a nation-wide course and training schedule for ongoing skills development;
- 2) Strengthen standardized qualifications for instructors;
- 3) Develop a well-defined career path into the trade;
- 4) Create new technical courses;
- 5) Increase enrollment by encouraging people to become Powerline Technicians;
- 6) Start an outreach program to engage women, Aboriginals and new Canadians;
- 7) Determine value of task skills with empirical data;
- 8) Promote Red Seal in the Powerline Apprenticeship Certification process.
- 9) Optimize occupational standards to better reflect the needs of the employers.

2) Recruit additional candidates in the Powerline Technician trade.

Initiatives:

- 1) Invest in a word-of-mouth campaign, such as a coaching program;
- 2) Have experienced managers and Powerline Technicians work at career fairs;
- 3) Organize screening processes and skills assessment camps from within the organization;
- 4) Encourage early introduction to the trades through job sampling;
- 5) Offer financial incentives;
- 6) Invest in outreach programs.

3) Invest in strategies to keep Powerline Technicians in their line of work.

Initiatives:

- 1) Invest in a positive and safe work environment;
- 2) Offer financial incentives;
- 3) Focus on recruitment from within provinces;
- 4) Offer visible career paths;
- 5) Provide continuous feedback with competency-based training and skills assessments;
- 6) Promote industry recognition and awards.



4) Implement the leading practices for training of Powerline Technicians.

Initiatives:

- 1) Provide resources for apprenticeship training;
- 2) Invest in resources for refresher training;
- 3) Explore partnerships between public and private organizations;
- 4) Increase the amount of training for instructors.

Source of Findings

The Electricity Sector Council completed a situation analysis of the Powerline Technician trade in 2008. Its objective was to enable industry partners to provide long-term, pro-active workforce development for the Powerline trade with an assessment of the current workforce, a needs/gap assessment of training and working conditions based on in-depth interviews, and an overview of regional and provincial differences in apprenticeship development.

The objective of this study is to create a repository of emerging practices in the areas of recruitment, retention and training and to identify gaps in the delivery of training for apprentices and experienced Powerline Technicians, based on topics covered in the *National Occupational Analysis* for the Powerline Technician trade. The analysis revealed research gaps which needed to be addressed and the measures necessary to implement future scenarios.

Findings outlined in *The Powerline Technician Trade in Canada: Emerging Practices and Training Delivery Matrix* include a nationally compiled matrix of training standards across all regions and provinces that reflect training requirements, differences and gaps in existing training standards, compared to the National Occupational Analysis. The training matrix approach provides a consistent way to ensure both existing employees and new hires are measured using the same yard stick. Respondents responded to a written survey with a matrix of training standards of the National Occupational Analysis. Respondents were also asked to identify the topics covered in their apprentice training curriculum and those that are currently not part of their programs.

For a full copy of *The Powerline Technician Trade in Canada: Emerging Practices and Training Delivery Matrix* please visit the Electricity Sector Council Web site at www.brightfutures.ca.



SECTION 1: EMERGING PRACTICES

1.1. Introduction

Canada's electricity industry faces significant challenges with regard to training, recruitment and retention. These challenges differ across provinces and need to be addressed with a cohesive strategy that takes into account each province's unique situation with regard to drivers of human resource performance. The drivers of change in the Powerline Technician trade are complex and highly localized. A concerted effort to address specific situations in each province while working towards a national strategy is likely to address these challenges. The following section provides a repository of emerging practices and solutions in the areas of recruitment, retention and training.

1.2. Summary of Insights

1.2.1. Recruitment

The leading practices identified for recruitment of candidates in the Powerline Technician trade relate to engagement strategies, employee referral programs, screening processes, recruitment in local communities, strategic alliances, reputation of employers, and outreach programs.

Engagement strategies

Invest in word-of-mouth campaigns

- *A coaching program for Powerline Technicians:* Respondents suggest a persuasive recruitment tool would be a coaching program to encourage Powerline Technicians to promote the trade in their communities. Respondents also agree that there is significant credibility associated with a first-hand endorsement by an individual already in the trade. For example, respondents in Alberta report that they have had significant successes by recruiting through civil works departments or through family members who are involved in the trade.
- *Invest in "word of mouth" advertising:* Respondents in British Columbia say that employers have found that "word of mouth" advertising has also been an effective marketing tool to generate interest among qualified candidates in the Powerline Technician trade. These candidates often mention their family members or friends as sources of information about opportunities in the trade. Respondents say that traditional print and radio advertising have not generated a superior response from qualified candidates.
- *A positive experience in the workplace:* Candidates who apply at the entry level through these channels have some prior exposure to the trade and are familiar with the challenging working conditions Powerline Technicians face. Respondents say that there is significant potential to increase the applicant pool from these sources. Currently, these applicants learn about the trade and apply to enter the trade on their own initiative (and not because of proactive engagement programs of employers). A key driver of positive word-of-mouth awareness about the trade has been high job satisfaction and a positive experience in the workplace for Powerline Technicians.
- *Use people from within the trade to assess applicants:* Using people from within the trade to assess (interview) individual applicants ensures selected applicants have the "right" aptitude for the trade. The



strong interest in the Powerline Technician apprenticeship at a major employer of Powerline Technicians in Ontario is attributed to the stability, wages, benefits, training, work environment, and recognition that come from being a fully trained tradesperson. These benefits are communicated to potential applicants through the Trade Up for Success program, as well as by word-of-mouth. Respondents in Ontario indicated that the strong interest in the Powerline Technician apprenticeship program of a major employer (4500 applications a year for 48 positions) is supported by the above-mentioned benefits and realistic requirements for apprentices entering the trade. Realistic educational requirements, such as a high school diploma with Grade 12 Math and English, allow interested applicants to apply for a position without other educational barriers.

Career fairs generate mixed results

- *Mixed results:* Career fairs have not met the expectations of some respondents. These fairs have not been a significant source of enrolments and interest in the Powerline Technician trade. Respondents in Manitoba say that a program to measure the impact of these career fairs with Web site traffic to a recruitment site and change in application rates indicates there is not a significant increase in inquiries after career fairs.
- *Powerline Technicians offer access to credible sources of information:* While the impact of career fairs has been mixed across provinces, respondents in British Columbia report that an effective recruitment strategy has been to deploy experienced managers and Powerline Technicians at career trade fairs to promote the trade. The strategy ensures potential candidates have access to credible sources of information in the trade. Representatives who attend these career fairs are often managers who started their careers in the Powerline Technician trade. These managers offer candidates some visibility to a potential career progression in the trade.

Leverage employee referral programs

- *Employee referral programs are effective recruitment tools:* Respondents across provinces say that employee referral programs have been effective recruitment tools. Respondents in British Columbia agree that a cash incentive encourages Powerline Technicians and other employees to proactively recommend potential candidates. A major employer in British Columbia offers a cash incentive of \$2,500 to employees who refer a candidate to the organization. The payment is made if the referred candidate is hired and passes the probation period.
- *International recruitment:* Respondents say that recruitment programs to hire experienced Powerline Technicians have been successful in other countries, such as the United States, Philippines, United Kingdom and Australia. For example, a presence at the Kansas International Rodeo in the United States has generated word-of-mouth awareness and interest in the trade. Candidates who may not have attended these events also hear about employment opportunities from others, who may have attended these events.
- *Screen candidates based on relevant education backgrounds:* Respondents in Quebec say that the minimum entrance qualifications for apprenticeship training have resulted in lower success rates in the areas of theoretical knowledge for students who enter with the minimum mandatory qualifications (Grade 10, with Math). A major employer in the province has set the minimum requirement to a Grade 12 qualification. Respondents say that retaining the current entry requirement into the apprenticeship program may be an effective strategy. Employers have diverse needs, and some, particularly in construction, require



stronger physical/ manual abilities. Respondents say that in these situations, the requirement for technical knowledge is relatively lower, compared to requirements in other areas. Therefore, the current entry requirement provides room for some level of diversification in expertise.

- *Focus on recruitment in local communities:* An emerging practice in some provinces is to recruit candidates from remote communities to fill vacancies in these areas. Employers may include a financial incentive and reimbursement of tuition fees on the condition that the candidate agrees to serve in the remote community for at least five years. Other employers do not offer financial incentives: a major employer of Powerline Technicians and apprentices in Ontario focuses efforts on recruitment from remote communities to fill positions in these communities but does not offer financial incentives.

Make hiring internally and from the general labour pool a priority

- *Screen candidates from within organizations:* Several respondents across provinces say that screening candidates from within their organizations has been one of the most effective recruitment strategies in their organizations. The rationale given is that these candidates are familiar with the organizational culture and processes. They also have the benefit of interacting frequently with Powerline Technicians to address their concerns or questions about the trade. Respondents say that recruiting candidates from within organizations enables them to raise the standard of apprentices, often above the provincial standard.
- *Direct interaction with Powerline Technicians:* Respondents say that candidates who make a career choice after direct interaction with Powerline Technicians or individuals familiar with the trade are most likely to be successful in the trade. It is common for employees within organizations to inquire about the trade while in other positions, such as installers of ductwork for underground systems or padmount transformer bases or on a job site that might employ Powerline Technicians.
- *Retain potential candidates in general labour positions:* Another strategy that has been adopted to manage demand-supply dynamics in the Powerline Technician trade is to retain candidates in general labour positions for a year, if apprenticeship positions are not immediately available. These candidates typically tend to have some labour experience in farming, construction or forestry.
- *Emphasize relevant qualifications and practical experience:* When new apprenticeship positions are available in Saskatchewan, the first round of recruitment is targeted at candidates who are already employees of the organization. These may be workers at other power plants, from other trades, or in the general labour pool. Once the search for internal candidates is complete, then external advertising is initiated. The recruitment stage shortlists preferred candidates, usually those with existing construction or labour experience or those with previous experience working in challenging outdoor conditions, such as those who've been involved in farming or forestry. Applicants are expected to have an education with a minimum of Grade 11 Math and Science, although it has been demonstrated that those without Grade 12 levels have challenges in completing their apprenticeships.

Screening process

Create a comprehensive screening process to measure the most relevant skills

- *Emphasize prior work experience in an outdoor environment:* Respondents in Nova Scotia say the province



has a screening process for apprenticeships that includes criteria such as mechanical aptitude, physical ability, initiative, safety focus, and team spirit. Prior work experience in an outdoor environment such as work in farming, fishing and forestry sectors is considered an asset in the screening process. The only criterion is to recruit from a pool of candidates who have completed a 10-month college program. Some respondents indicate that a screening process called “Skills Expo” has contributed to an improvement in the standard of short-listed candidates. The two-day screening process includes six stations to test job-related skills. Groups of candidates undergo testing for mechanical comprehension, numerical reasoning, verbal comprehension, and technical understanding. The mandatory requirement for the screening process of a major employer in the province is completion of Grade 12.

- *Organize skills assessment camps:* In Saskatchewan, after applicants have been short-listed, appointments are arranged for interviews and testing. This assessment takes place in three parts: an interview, a mechanical aptitude test, and a written test. Candidates who successfully complete the assessment are enrolled in a week-long “skills assessment camp.” This skills assessment program includes a series of physical activities that mimic job conditions and requirements of Powerline Technicians. Candidates find themselves climbing poles and executing construction and maintenance activities. Applicants that complete the week long program are deemed “successful.” A 50 per cent completion rate by the candidates is considered to be satisfactory. Out of those that have successfully completed the camp, the employer selects their new apprentices. Those that complete the camp, but are not chosen, are frequently offered general labour positions and will be eligible to apply again the next year. While the skills assessment camp program is considered to be physically demanding, respondents indicate that it is an invaluable tool, as it serves as an excellent screening process and minimizes dropouts during the actual apprenticeship program.
- *Use a point system for screening:* Respondents in New Brunswick indicate the province has a screening process based on a points system to ensure the selection process is objective and includes specific criteria that will result in a superior screening process. The screening process has been effective in short-listing candidates with the highest potential and a superior work ethic. The screening criteria are based on several attributes and variables, such as the applicant’s high school (or college/university) math grades, reading and mechanical reasoning abilities, relevant work experience, and any post-secondary courses completed in fields related to electricity/electrical engineering. The second area of testing relates to physical fitness. The total intake from the screening program can vary, depending on the employment requirements of the organization, based on a four-year cycle. Respondents say a review of upcoming retirements, existing vacancies, and projected resource requirements influence the final intake of candidates. Another influencer is the analysis of the existing workforce, based on the age and years of service of Powerline Technicians in the trade. The benchmark used in the analysis of upcoming retirements includes such variables as accumulated experience of 25 years or higher, and an age of 60 years or higher.
- *Invest in highly customized practical training:* According to respondents in Alberta, the process of education and development for apprentices begins with practical training. The training is part of a three-year program at NAIT, a trades training institution in Edmonton. The apprenticeship is a four-year program with one year of practical experience. The first three years of the program include seven weeks of training in school. The fourth year primarily consists of practical training. Respondents say that apprentices are only occasionally recruited directly from the second, third or fourth year because of the diverse training standards in each organization. The approach enables these employers to provide highly customized training to the apprentices.



- *A three-part test for screening:* In Quebec, respondents mention that the Powerline Technician trade has an excellent reputation and hence does not have a proactive advertising program to support the application process. The application process is channelled through employers of Powerline Technicians. The process includes a three-part test consisting of mechanical, climbing, and written examinations. Respondents say this is a good screening process which ensures a higher rate of success. The Province of New Brunswick has adopted a similar testing program based on the format being used in Quebec.
- *Prior work experience and in-school training:* Respondents in Ontario say some employers express a preference for apprentices with prior work experience and some in-school training. In response, Cambrian College and industry partners established the “Skills Technology Institute” (SkyTech), which evolved into the Co-op Diploma Apprenticeship program. The program was deployed after some industry partners expressed a need for trades programs that would meet the growing and changing demands of today’s complex industries, such as mining, forestry, manufacturing, and heavy equipment. At the end of the program, those who have successfully completed two 16-weeks, paid co-op placements will have the opportunity to graduate with a college diploma and will have completed all three levels of apprenticeship in-school training, as well as some of the other requirements for apprenticeship training. Respondents say the benefit to employers is that these apprentices do not have to leave for in-school training after they join the employer.

Offer job sampling

- *Encourage firsthand experience with challenging physical aspects of the Powerline trade:* The Registered Apprenticeship Program (RAP) in Alberta offers registered high school students an opportunity to become apprentices, and, at the same time, earn credits toward an apprenticeship program and a high school diploma. Respondents say their success has been limited with the career outreach program because of inadequate information related to the practical aspects of a career in the Powerline trade. According to some respondents, it is important for candidates to experience the challenging physical aspects of the Powerline trade firsthand. The program has been widely advertised by the apprenticeship branch of the Government of Alberta, a promoter of the trades in the school system, and at career fairs, where leading employers are present for specific recruitment drives. Respondents say the program is similar to those in other provinces, except that Alberta does not have a day of outdoor activities, such as climbing poles.
- *Offer a sampling of responsibilities of a Powerline Technician:* Several respondents in British Columbia mentioned that the Trades Trainee program has been effective in engaging potential candidates to consider the Powerline Technician trade. The Trades Trainee program is a temporary entry-level position and lasts two years. It is popular among candidates because it reduces the time required for candidates to acquire high school credits, while at the same time giving them experience working in the field. The program offers candidates the opportunity to perform duties such as helper, driver or a grounds person position, and gain experience working in the field. The candidates are required to attend a four-week course that includes training for grounds person and driving skills. The qualification criteria for these positions have been lowered recently to high school Grade 12 English and Grade 11 Math and Physics, or an equivalent qualification. The Trades Trainee program has been the primary source of candidates for the Powerline Technician program in the province. At present, the Trades Trainee program has 42 new candidates who support Powerline Technician crews in such tasks as driving trucks and groundwork duties. This program has been a very successful training and recruitment initiative in the province.



- *Create a job sampling and recruitment-screening tool:* Respondents in Manitoba report that a skills assessment initiative, referred to as SATO (Skills Assessment Trade Orientation), has been very effective as a job-sampling and recruitment-screening tool. The program includes a two-day sampling of 16 tasks for the Powerline Technician trade. The tasks are based on a DACUM (Developing a Curriculum) analysis of the trade and include such topics as knowledge, skills, attitude and aptitude for success in the trade. The program includes a sampling of physical activities, such as climbing poles and other basic skills, such as driving trucks, mechanical advantage exercises, underground cable preparation, etc. An assessment is conducted at the end of the program to screen candidates who are interested in joining the trade and possess the skills and qualifications to succeed. The program is scheduled twice a year in February/March and August/September. Since 1990, the program has delivered tangible results with an increase in graduation rates from 75 per cent to 95 per cent.
- *Early introduction to the trades:* Respondents in Manitoba mentioned a new program called “Introduction to Trades” that is scheduled to be launched this year. The program has been developed in cooperation with Red River College. It will help candidates to identify gaps in their high school-related qualifications that may be prerequisites to enter the Powerline Technician trade. In addition, a customized program is being developed with specific courses to upgrade the candidate’s skills and expose the candidate to basic safety training and trades skills. The “Introduction to Trades” is to be offered to First Nations communities in the initial stage. A strategy is being developed to target areas where the application rate has been historically low. The approach is expected to increase interest in the trade in these areas and may result in an increase in the number of candidates who may consider a career in the Powerline Technician trade.

In-class training to strengthen academic credentials

- *Theoretical knowledge and skills assessments:* Powerline Technician apprentices in a large Powerline Technician apprenticeship program in Ontario attend in-class training sponsored by the Ontario Ministry of Training, Colleges and Universities. The training course is two weeks of each year of their apprenticeship. At the in-class training, they are taught the theoretical knowledge required for the trade and have their skills assessed to ensure they meet the training standards of the Powerline trade.
- *Emphasize competence in math and physics:* A practice mentioned by respondents from British Columbia is called “Math and Physics for the Line Trade.” The program was developed by the leading employer in the province in cooperation with the Kwantlen Polytechnic University. It focuses on upgrading math and physics competencies of candidates.

Strategic alliances and reputation of employers

- *Recognition as a top employer:* Respondents in Alberta say that recognition of an employer by an external organization has significant credibility with candidates. For example, an employer in Alberta was recently recognized as a top 40 employer in the province. The recognition has increased the profile of the organization and the Powerline Technician program.
- *Encourage geographically stable work:* Respondents say that most Powerline Technicians prefer geographically stable work that minimizes the need for frequent relocation and travel. The challenge is being addressed by recognizing the need for Powerline Technicians to be adequately compensated if relocation is required. Steps are taken to minimize relocations, unless it is imperative and alternative options are not



available. The approach has helped to stabilize working conditions and has also lowered the potential risk of Powerline Technicians seeking alternative employment opportunities with fewer relocations.

Financial incentives

- *Reimburse training costs:* Respondents in Alberta say that reimbursement of training costs by employers is a standard practice in the province. The costs reimbursed often include wages, benefits and tuition. The standard requires employers to approve the time of the apprentice in an “Apprentice Redbook” to confirm that the required number of hours in practical fieldwork is complete before the apprentice is eligible to progress to the next phase of a training program.
- *Address rising costs and funding challenges:* Respondents in Quebec say that a significant incentive is the tuition reimbursement offered to candidates. The estimated cost of tuition is \$17,000 per student. Students pay a nominal fee for courses and are required to purchase their own work clothing. The college provides all other materials and supplies, such as hard hats, work gloves, and necessary safety equipment. The Ministry of Education in Quebec subsidizes the cost of operating the program.

Investments in outreach programs / under-represented groups

International journeypersons

- *Explore the option to hire international journeypersons:* Respondents in British Columbia say that employers have made recruitment of experienced Powerline Technicians from other countries part of their recruitment strategy to fill vacancies. Recent estimates indicate that approximately 50 per cent of applicants for Powerline Technician positions in the province are Canadian, 25 per cent are from the United States, and 25 per cent are from other countries. These applicants are pre-screened to ensure they have the technical skills to work with the company. Respondents say that qualifications and experience of Powerline Technicians may differ across countries. For example, Australian Powerline Technicians may have different skill sets, depending on the location of their training and work experience in Australia. Respondents indicate that a thorough assessment process to identify gaps in capabilities and skill sets is critical to ensure that successful candidates operate at high standards.

Aboriginal communities

- *Engage a recruitment representative from an Aboriginal community:* Respondents in Saskatchewan say a major employer has an extensive program to recruit new apprentices from Aboriginal communities. While Aboriginal communities are a growing demographic within the province, their members are not well represented in the existing Powerline Technician workforce. By implementing a strategy to reach out to these communities through frequent visits by recruiting staff, and through increasing awareness in the local media, enrolments from the Aboriginal communities has grown to constitute 15 to 20 percent of new Powerline Technician recruits. A leading practice, according to a respondent, is to engage a recruitment representative from an Aboriginal community. The representative should have an in-depth knowledge of challenges facing these communities and also needs to continuously strengthen relationships with stakeholders in these communities.



- *Improve academic qualifications:* Respondents in British Columbia say that the Trades Trainee intake program is the primary channel to recruit Aboriginal Peoples, women and other diverse groups into the Powerline Technician trade. A significant barrier to an increase in the intake of candidates from native communities has been lower academic qualifications. Applicants who do not have the minimum requirements for the Powerline Technician apprenticeship can apply to the Trades Trainee program, which requires a lower standard (Math 11, Physics 11 and English 12). They can then have two years to obtain the Math 12 and Physics 12 required to apply for an apprenticeship. Respondents also indicate they are working on other programs to enable young individuals to obtain the academic qualifications, while at the same time gaining some work experience.
- *Understand the unique needs of Aboriginal communities:* In New Brunswick, respondents say a new program to engage Aboriginal candidates was launched earlier this year. The initial class size is expected to include six Aboriginal students. Steps are being taken to understand the unique needs of the Aboriginal community for training and qualifications to enter the trade. Successful candidates may be placed in Aboriginal communities or at other locations where there is a greater need for Powerline Technicians.

Female candidates

- *Create dedicated resources for outreach programs:* Respondents in Saskatchewan say that an employer in the province has also attempted to reach out to visible minority and female candidates, areas that are also under-represented in the existing workforce. Diversity consultants have been engaged to meet with minority groups, to attend career fairs, and to visit high schools to increase awareness about opportunities in the Powerline Technician trade. Building awareness is expected to increase the pool of qualified, diverse candidates applying to the organization. The consultants are also available to assist candidates throughout the application process.
- *Engaging women with work on a training crew:* Respondents in Saskatchewan hope to increase the representation of women in the Powerline Technician trade, but feel that the physical nature of the work may remain a deterrent, despite increased investments in targeted recruiting. Women who apply to the employer are generally seeking positions that are not strenuous (e.g., technology positions). Several women have successfully completed the screening process for the Powerline Technician trade but dropped out prior to completing their apprenticeship. Respondents say employers are willing to support candidates in improving their physical fitness levels, but cannot adjust the physical nature of the work. Additional perceived barriers are that the current workforce is primarily male, which may be off-putting to some female candidates. As well, the nature of the work, as an apprentice or a journeyman, can involve long hours and frequent travel, which may not appeal to a female applicant with children. In British Columbia, women and other applicants who are not selected are offered feedback and advice on what they can do to meet the minimum qualifications for the trade.

Minority groups and remote communities

- *Outreach programs to attract minorities:* Respondents in Quebec say employers have identified the need to create a more diverse workforce in the Powerline Technician trade. Currently, only 7 out of 600 applications are from candidates who are visible minorities. Respondents say the issue is not the lack of capabilities to be trained and employed as a Powerline Technician, but more a lack of awareness of the possibilities in this area. Several outreach programs have been launched in Quebec to address the gap in applications from



minority groups. Respondents say that significant success has been achieved with the Cree nation in Waskaganish in James Bay. Other areas for attention mentioned by respondents are education and physical fitness qualifications of candidates who apply to enter the Powerline Technician trade.

- *Create proactive remote/rural engagement programs:* A strategy to increase retention rates in Nova Scotia encourages the recruitment of candidates who have lived in the communities where positions are available. The approach includes a proactive engagement activity plan with presentations at local volunteer fire halls. The events are advertised in local media, such as community newspapers and radio stations. The training of a candidate designated for a remote community is conducted in a larger urban centre. The impact of this strategy has yet to be determined.

Flexible strategies

- *Offer flexible relocation options:* Respondents in Quebec say a more flexible offering regarding locations of work may make the Powerline Technician trade more attractive in urban areas. Currently, employers may have a challenge in recruiting Powerline Technicians for positions in urban areas, such as Montreal. Powerline Technicians are willing to locate in urban areas for up to two years. Thereafter, they request transfers to other areas. The reasons cited by respondents indicate that challenging working conditions, aggravated by aging and complex systems, including submerged cables, may be motivating Powerline Technicians to seek alternative locations. One of the goals is to train Powerline Technicians from Montreal by opening a branch of the school in Montreal.
- *Create flexible class sizes:* Respondents in British Columbia say that deployment of a flexible approach to class sizes allows employers to respond quickly to changes in supply and demand for Powerline Technicians. For example, an organization that is currently graduating 15 apprentices a year may analyse anticipated workforce shortages in the coming years and adjust enrolments to 37 students to build up a workforce reserve. It may then plan to drop the enrolment rate to 20 to 25 per year thereafter, based on future demand projections. By investing in a flexible capacity strategy to increase or decrease recruitment, employers can maximize their training investments and manage projections of wage costs. Respondents in British Columbia say that the Powerline Technician apprentice program has maintained a retention rate of 98 per cent for the past three graduating classes.
- *Ensure adequate and scalable capacity for training:* Respondents in Quebec indicate that one of the significant challenges in the province is to increase the capacity to train Powerline Technicians and related support resources, such as training locations and qualified instructors. A major employer in the province has a projected requirement of approximately 500 additional Powerline Technicians in the next five years to replace expected retirements. 25 per cent of the Powerline Technicians that work for contractors are more than 55 years of age. In addition, 300 Powerline Technicians will be required to manage top line growth in operational areas.

Conclusions

- *Word-of-mouth campaigns:* One of the most effective engagement strategies in the trade is to invest in word-of-mouth campaigns. Respondents suggest a persuasive recruitment tool would be a coaching program to encourage Powerline Technicians to promote the trade in their communities. For example, respondents in British Columbia have found that “word of mouth” advertising has also been an effective marketing tool to generate



interest among qualified candidates in the Powerline Technician trade. Using people from within the trade to assess (interview) individual applicants ensures selected applicants have the “right” aptitude for the trade. Employee referral programs are also effective recruitment tools. Respondents across provinces say that employee-referral programs have been effective recruitment tools in the province. For example, a major employer in British Columbia offers a cash incentive to encourage referrals.

- *Experienced managers and Powerline Technicians at career fairs:* Career fairs tend to generate mixed results, according to respondents. Respondents report that career fairs have not been a significant source of enrolments and interest in the Powerline Technician trade. However, these fairs may be a more effective recruitment strategy if experienced managers and Powerline Technicians are present at career trade fairs to promote the trade.
- *Internal and general labour pool candidates:* Some of the strategies to hire internally and from the general labour pool include frequent screening of candidates from within organizations. Encouraging candidates to interact directly with Powerline Technicians also facilitates the screening process. Another strategy is to retain potential candidates in general labour positions to manage demand-supply dynamics in the Powerline Technician trade.
- *Screening process:* A comprehensive screening process to measure the most relevant skills may include an emphasis on prior work experience in an outdoor environment, mechanical aptitude, physical ability, initiative, safety focus, and team spirit. Several organizations organize skills assessment camps to test the capabilities of applicants. For example, respondents in New Brunswick indicate the province has a screening process based on a points system to ensure the selection process is objective and includes specific criteria that will result in a superior screening process.
- *Firsthand experience with the trade:* An emerging practice is to encourage firsthand experience with challenging physical aspects of the Powerline trade. Also referred to as an early introduction to the trades, use of a job sampling and recruitment-screening program is seen as an effective way to engage and screen potential candidates.
- *Financial incentives:* The reimbursement of training costs by employers is a standard practice in some provinces. For example, respondents in Alberta say the costs reimbursed often include wages, benefits and tuition.
- *Investments in outreach programs / under-represented groups:* Employers in some provinces have made recruitment of experienced Powerline Technicians from other countries an important part of their recruitment strategy. An emerging practice to engage aboriginal candidates is to engage a recruitment representative from an Aboriginal community. This enables employers to understand the unique needs of Aboriginal communities. Some provinces offer women the opportunity to join a training crew. Another outreach program encourages the recruitment of candidates who have lived in the communities where positions are available.
- *Flexible strategies:* Several respondents indicate that some flexibility in the offering to candidates may relate to relocation options and flexible class sizes. Respondents in Quebec say a more flexible offering regarding locations of work may make the Powerline Technician trade more attractive in urban areas. Respondents in British Columbia say that deployment of a flexible approach to class sizes allows employers to respond quickly to changes in supply and demand for Powerline Technicians.



1.2.2. Retention

The leading practices identified for retention of Powerline Technicians relate to the work environment, delayed retirements, financial Incentives, labour market variances, career planning, skills assessments and corporate initiatives.

Work environment

- *Invest in a positive and safe work environment:* Respondents in Alberta say that the most important influence on retention levels is a positive work environment. The approach undertaken by some employers has been to increase awareness of the benefits offered to Powerline Technicians (in addition to wages). Respondents also mention that most employers have a value-based safety program because safety is a high priority in the workplace. These safety programs often include monthly meetings to review ongoing safety initiatives. Employers are also actively involved in programs such as the Canadian Electrical Association and the Western Energy Institute.
- *Offer flexibility in work locations:* Respondents in Saskatchewan say that the workforce has demonstrated a preference to work in larger centres. Many smaller towns have seen significant population decreases with corresponding declines in available community services (such as health, education and recreation). For this reason, operations are being centralized in larger district offices. While this consolidation of operations has resulted in increased travel time to remote job sites, it has improved employee loyalty and is considered an improvement in their working conditions.
- *Encourage geographically stable work:* Respondents in Nova Scotia say that most Powerline Technicians prefer geographically stable work that minimizes the need for frequent relocation and travel. The challenge is being addressed by recognizing the need for Powerline Technicians to be adequately compensated if relocation is required. Steps are taken to minimize relocations, unless it is imperative, and alternative options are not available. The approach has helped to stabilize working conditions and has also lowered the potential risk of Powerline Technicians seeking alternative employment opportunities that require fewer relocations.
- *Position vacation time as a superior benefit:* Some respondents in Nova Scotia say Powerline Technicians in the trade value paid vacation time. A strategy to position vacation time as a superior benefit has increased retention rates. The average time worked by a Powerline Technician per year is 2080 hours, excluding vacation periods, which is 15 days for 10 years of service (120 hours). The vacation allowance for Powerline Technicians with 10 to 20 years is 160 hours of vacation time a year and 200 hours for more than 20 years of service.

Delayed retirements

- *Offer incentives to encourage delayed retirements:* When asked about labour retention, respondents reported that there have historically been high retention rates, as high as 99 per cent in some years. However, there is some concern about higher retirement rates over the next eight to 10 years, as the workforce ages and approaches retirement eligibility. The current economic situation deters some retirees, and at least one employer is exploring incentives that could be used to encourage delayed retirements.



- In Quebec, a key driver of the slowdown in retirement rates of Powerline Technicians has been a significant reduction in pay after retirement. Powerline Technicians approaching retirement often prefer to continue working in the trade because retirement pensions are based on their base salary and do not include overtime pay. The current financial crisis, which has had an impact on pension/retirement funds, may also contribute to a delay in the retirement of some Powerline Technicians.
- *Offer the option to work past retirement:* Respondents in British Columbia say that retention rates of Powerline Technicians have been higher than expected due to lower retirement rates. While Powerline Technicians in their sixties or seventies can retire, they continue in the trade to enjoy the camaraderie and positive work environment. Their enthusiasm in their workplace and the benefits they can offer through mentoring are of significant value to employers – both in direct work efforts and in their influence on younger workers. This dedication and enjoyment of work demonstrates to newer employees that the organization is the preferred place of employment for a long-term career.

Financial incentives

- *Offer flexible overtime and competitive pay:* An emerging strategy to retain Powerline Technicians in Alberta has been to offer a flexible overtime program to increase their earning potential. On average, Powerline Technicians in one respondent's organization increased their earnings by up to 30 per cent with overtime services. Another component that is emphasized by employers is the offering of benefits that are valued at approximately 25 percent of the base wage earned by Powerline Technicians.
- *Work environment and salary:* Respondents in Quebec say that retention rates are high at this time. Key drivers of these rates are high job satisfaction and alignment of the goals of Powerline Technicians with the working environment. Powerline Technicians are generally pleased with the training and work environment offered by employers. Competitive entrance requirements ensure that those in the trade have a high level of interest in continuing in the Powerline Technician trade.
- *Increase awareness of additional benefits:* Some respondents in British Columbia say that Powerline Technicians tend to assess their remuneration solely on their hourly wage. Employers have addressed this perception gap by increasing awareness of additional benefits such as pensions, health insurance, overtime payments, etc. The strategy has been an effective retention tool.
- *Offer extended tuition reimbursement:* Respondents say that an offer to reimburse tuition costs of candidates over an extended period of time is a significant driver of retention. A part of the course fee is reimbursed on completion of the course after providing six years and 11 years of service to the employer. The extended tuition reimbursement program is also a persuasive recruitment tool because candidates recognize that their tuition cost may be recoverable from the employer. The concept of tuition reimbursement across several years is a polarizing topic, with some respondents supporting the practice of having students pay tuition costs upfront. Other respondents say their employers have invested in providing training services within their organizations and may not be able to estimate the tuition cost of each student accurately.



Labour market variances

- *Offer temporary market adjustments linked to economic conditions:* A respondent in Manitoba says there is a correlation between economic conditions and retention rates of Powerline Technicians. During periods of economic expansion, retention rates may be lower. However, respondents also say that economic conditions in the province tend to be relatively stable; hence, when economic conditions in other provinces deteriorate, the flow of skilled labour into the province increases. An earlier successful strategy, adopted during periods of economic expansion, included a “temporary market adjustment” of \$1 per hour to the wages of Powerline Technicians.
- *Career progression:* Another benefit that has increased retention rates is the opportunity for frequent career advancement within organizations. For example, new employees at one organization attend a six-week “upgrade program” to familiarize themselves with the organization’s operations and culture. The instructors of these programs are often retired managers who started their careers as Powerline Technician apprentices in the trade. Respondents say that the exposure to experienced managers at the crucial initial phase demonstrates to new employees the level of flexibility and opportunities available to them in the organization.
- *Offer a temporary remote market allowance package:* Respondents in British Columbia say that employers with resource requirements in districts in northern and coastal communities of the province have had some difficulty in attracting workers. New programs to make these positions more attractive to Powerline Technicians include reimbursement of travel expenses for leisure or medical purposes.
- *Secure employment offer:* The promise of a secure offer of employment at the end of the apprentice training program is a significant incentive for candidates to complete their training and enter the trade. A respondent in New Brunswick says students selected through a screening process are admitted into the community college program. At the end of the program, successful candidates are offered permanent positions by employers in the province. Respondents indicate that all the candidates have received permanent positions since the program was introduced in 2002.

Recruitment policies and retention rates

- *Focus on recruitment from within provinces:* A respondent in Manitoba says a focus on recruitment from within the province has resulted in higher retention rates of Powerline Technicians. Most of the candidates recruited in the recent past are from the province and have lived or worked in the province. Respondents state that retention rates for Powerline Technicians from outside the province tend to be relatively lower, compared to those recruited from within the province. The retention strategy is especially effective in remote rural areas in the northern region of the province. The approach of recruiting from within these communities and deploying the Powerline Technicians in the same communities has resulted in dramatically higher retention rates.
- *Advertising investments:* Respondents in New Brunswick also indicate that candidates are keen to work in the province to ensure they are close to the communities they live in. While candidates from outside the province are not excluded from the recruitment process, advertising investments are generally made within the province. It is also generally accepted that candidates who apply from within the province are more likely to be retained by employers for a longer period of time.



Increase emphasis on career planning

- *Offer visible career paths:* Respondents in British Columbia indicate the effectiveness of a strategy to increase the visibility of career paths by increasing the interaction between senior managers and staff with quarterly visits to plants and field locations. Some employers also organize social events and business meetings, such as pancake breakfasts and frequent conference calls. Respondents say that access to frequent interactions with management in the field offers a higher level of visibility for career paths in the trade. Some employers also have a “Manager in Training” program, where interested and qualified Powerline Technicians are trained on the job and through courses to become field managers. Other employees who may be interested in additional responsibilities are encouraged to develop their skills to become instructors or take on other functions in the company.
- *Offer experienced Powerline Technicians supervisory or training positions:* Powerline Technicians with more than 15 years work experience are more likely to accept supervisory or training positions. However, respondents in Nova Scotia say that there is a shortage of experienced supervisors. In the past, employers took steps to encourage experienced Powerline Technicians to retire. Today, Powerline Technicians are often encouraged to postpone their retirement.
- *Leverage changing priorities to increase retention:* A respondent in Nova Scotia says there is a strong correlation between interest in returning to rural communities and the age of Powerline Technicians. Older Powerline Technicians are more likely to have family in these rural communities. Strategic placements based on the age of the Powerline Technician and family connections to the area are key drivers of retention.

Competency-based training and skills assessment

- *Arrange for continuous feedback with competency-based training and skills assessments:* Some respondents from a major employer indicate that a competency-based training and skills assessment has been an effective self-directed learning tool to identify gaps in skills and knowledge of Powerline Technicians. The assessment is based on an analysis of tasks in the DACUM chart of skills that are approved for different phases of the Powerline Technician apprenticeship. The approach requires supervisors to identify gaps in the skills and knowledge of Powerline Technicians on their teams. These gaps may relate to such tasks as “installing underground cables,” which may require a Powerline Technician to join an underground crew for exposure to the task. Respondents say Powerline Technicians are also required to complete an annual personal development plan. They have the opportunity to identify learning needs and create a plan for exposure to tasks in the identified areas.
- *Invest in knowledge management:* Respondents in Ontario say an important driver of retention is an effective knowledge management strategy. The challenges of training are significant because the current process of training is time-intensive and does not include a significant on-line learning component and support infrastructure. Due to the impending retirement of Powerline Technicians with more than 20 years of experience, organizations should anticipate experiencing a gap in their knowledge base. Some employers have implemented strategies to address these challenges. For example, a major employer in Ontario has implemented a mentorship program to upgrade skills of Powerline Technicians with fewer years of experience. The program pairs Powerline Technicians with different levels of work experience. Other initiatives include coaching and sponsorship programs to accelerate the learning process.



Corporate initiatives

- *Strategic operational alliances between contractors and utilities:* Respondents in Nova Scotia mention that strategic alliances between utilities and contractors have been effective in filling resource gaps in operations. The approach increases the flexibility in deployment of resources for both organizations in the strategic alliance. It also enables these organizations to deploy resources in areas where the need is greatest. A disadvantage of the approach is the resulting increase in unpredictable and complex work conditions that may require frequent relocation of Powerline Technicians.
- *Enhance corporate profiles:* Respondents in New Brunswick say that industry recognition and awards can potentially increase retention rates. An employer in the province met their key performance indicator of “zero lost time accidents” in 2008. The organization also has a comprehensive Human Resource Strategy with a vision of “People at their Best.” Respondents say the strategy has fostered a positive work environment that has led to recognition twice by *Maclean’s* magazine as a top 100 employer. In addition, the organization received a silver award for a Healthy Workplace at the 2008 Canada Awards for excellence, given by the National Quality Institute.

Conclusions

- *A positive work environment and geographically stable work:* Respondents say that the most important influence on retention levels is a positive work environment. The approach undertaken by some employers has been to increase awareness of the benefits offered to Powerline Technicians (in addition to wages). Another strategy is to encourage geographically stable work. Respondents say that most Powerline Technicians prefer work that minimizes the need for frequent relocation and travel.
- *Financial incentives can increase retention rates:* The current economic situation deters some retirees, and at least one employer is exploring incentives that could be used to encourage delayed retirements. Financial incentives can also increase retention rates. An offer of flexible overtime and competitive pay can be attractive to employees. Respondents also say that increased awareness of additional benefits can be useful because Powerline Technicians tend to assess their remuneration solely on their hourly wage. In some instances, an offer to reimburse tuition costs of candidates over an extended period of time can be a significant incentive for retention.
- *Economic conditions and retention rates:* Respondents in some provinces say there is a correlation between economic conditions and retention rates of Powerline Technicians. An offer of temporary market adjustments linked to economic conditions and a temporary remote market allowance package can increase retention rates. Another benefit that has increased retention rates is the opportunity for frequent career advancement within organizations.
- *Recruitment from within provinces:* Some respondents say a focus on recruitment from within provinces has resulted in higher retention rates of Powerline Technicians. Respondents also say that candidates are keen to work in the province to ensure they are close to the communities in which they live.
- *Visibility of career paths:* A strategic approach to increasing visibility of career paths and training resources can increase retention rates. A strategy to increase the visibility of career paths by increasing the interaction between



senior managers and staff through quarterly visits to plants and field locations has been effective. A strategic approach to training resources can increase retention rates. Some provinces offer experienced Powerline Technicians supervisory or training positions. This is also reinforced by a strong correlation between interest in returning to rural communities and the age of Powerline Technicians.

- *Continuous feedback and a knowledge management strategy:* A process of continuous feedback with competency-based training and skills assessments is an important retention strategy. It is an effective self-directed learning tool to identify gaps in skills and knowledge of Powerline Technicians. Another driver of retention is an effective knowledge management strategy. The challenges of training are significant because the current process of training is time-intensive and does not include a significant on-line learning component and support infrastructure.
- *Strategic alliances and industry recognition:* Corporate initiatives such as operational alliances between contractors and utilities and industry recognition are also mentioned as emerging practices. Strategic alliances between utilities and contractors have been effective in filling resource gaps in operations. Industry recognition and awards can potentially increase employee satisfaction and retention rates.

1.2.3. Training

The leading practices identified for training of Powerline Technicians relate to initiatives to strengthen training of apprentices, investments in in-house resources for training, partnerships with external resources and training infrastructure for instructors.

Initiatives to strengthen apprenticeship training

- *Introduce youth-hire programs during the summer months:* A Youth-Hire initiative in the summer months in British Columbia offers recent high school graduates the opportunity to experience the Powerline Technician trade and other trades for two months. Candidates in the program are placed in “helper” positions to ensure they experience diverse roles and responsibilities in the field. Candidates who express an interest in joining the trade after attending the Youth-Hire program are encouraged to apply for the Trades Trainee program.
- *Offer financial support during apprenticeship training:* Some respondents in Nova Scotia say that employers offer financial support to apprentices during their four-year apprenticeship. For example, apprentices are provided with employment insurance during the block-release training, but their wages are bridged to the regular wage. In addition, expenses are reimbursed when apprentices are transferred to different locations. Some respondents identified a challenge related to the limiting aspect of specialized expertise. For example, contractors that offer transmission services may have a greater challenge to retain their apprentices. These apprentices do not have the knowledge and exposure to all aspects of the trade and are thus unable to take the Red Seal test. By comparison, larger employers offer a diverse range of operations for apprentices and Powerline Technicians. In addition, a respondent says a major employer in the province may relocate Powerline Technicians to address training gaps; when this is done, the employer reimburses expenses incurred by the Powerline Technicians.
- *Offer a standardized curriculum:* According to respondents in New Brunswick and Prince Edward Island, the training program followed in New Brunswick is used as a guide for a standardized format for training in other Atlantic provinces. Representatives from organizations responsible for training in each province meet



regularly at workshops and jointly develop the curriculum outline based on the latest national information and standard.

Investments in in-house resources for training

- *Increase investments in in-house training:* Some respondents in Alberta mention that their organizations have created new positions (such as “training coordinator”) to coordinate visits to job sites and expose candidates to new equipment and the latest technologies. These training coordinators manage the process of apprenticeships and conduct road shows to engage potential candidates. The coordinator also liaises with educational institutions, maintains records of attendance at schools, and addresses the needs of students on an ongoing basis.
- *Structured approach to refresher training:* Respondents indicate that a structured approach to refresher training can have a tangible impact on safety standards and performance of Powerline Technicians. Currently, time allocated to refresher training varies, depending on the employer and the level of experience of the technician. In some cases, it may be only eight to 16 hours a year, according to a respondent. Some smaller employers do not have the infrastructure or capabilities to provide extensive training. Safety issues and provincial law mandates are implemented with thorough training standards. However, more consistency in the level of refresher training would be desirable, according to a respondent.
- *Monitor the schedule and impact of safety standards training:* Some respondents in Ontario say that the target of “zero injuries” is part of the vision of the Powerline Technician trade in the province. The message of “zero injuries” is communicated frequently and consistently to stakeholders in the trade. An example quoted by a respondent is the membership level of the Electrical & Utilities Safety Association, which has doubled from about 23,000 to 50,000 workers since 2000, while reported injuries have declined from 1100 to 380, during the same period. This represents a 10.4 per cent reduction of injuries year-over-year, for the past 10 years; and the rate continues to decline.
- *Create formal refresher training programs:* Respondents in British Columbia say that larger employers have extensive formal training programs for Powerline Technicians with numerous optional courses. Smaller employers may only offer mandatory safety-related courses. The instructors for these courses are often recruited from the trade. For example, an employer in the province has 10 instructors who organize training courses across the province for such topics as grounding, capacitors, switching to underground, overhead, etc. These employers also develop customized courses when new regulations are introduced by the province. An important initiative is the introduction of an annual activity plan for occupational safety and health training. The program is part of a new training catalogue that will list available courses for Powerline Technicians.
- *Create a comprehensive national standard for refresher training:* Respondents in Ontario say ongoing refresher training for Powerline Technicians tends to be limited to safety-related topics and often does not extend to other important topics, such as technology changes or process improvement. Several respondents also express a desire for a comprehensive provincial standard for refresher training. They mention three key areas that are critical for ongoing refresher training: changes in skills, changes in legislation of safety regulations, and changes in equipment. A suggested best practice model would include competency training based on a formal training schedule, such as specific hours linked to tasks that require refresher training over a five-year period.



- *Analyze models and diverse refresher-training needs across provinces:* Some respondents in Ontario say that the recommended range of time for formal refresher training is at least 40 hours of year. This would be in addition to up to three weeks of training each Powerline Technician receives at a utility on safety-related tasks, such as Workplace Hazardous Materials Information System (WHMIS), Work Protection Code, and propane safety. However, respondents acknowledge that there are likely to be challenges associated with the implementation of a standardized refresher-training program due to diverse training needs. These might depend on the size and location of the employer and the complexity of tasks performed. Respondents recommend a standardized model, based on the needs of small, medium and large employers.
- *Monitor frequency of exposure to specific tasks:* Another topic of interest to respondents in several provinces relates to the frequency of exposure to specific tasks and related investments in refresher training. For example, some Powerline Technicians may have completed only underground-related tasks during the past four years and may have had limited exposure to tasks related to overhead operations. Respondents across provinces say strategies deployed by some employers include frequent rotation between tasks to enable Powerline Technicians to receive hands-on experience on a diverse range of tasks. Some respondents in Ontario recommend a six-month rotation cycle between tasks to ensure Powerline Technicians are aware of frequent technology changes that require different materials and setups. Employers in some provinces rotate Powerline Technicians between a “trouble crew” (an emergency response crew), which uses a different set of skills than “overhead” or “underground” Powerline Technician crews.

Partnerships with external resources

- *Leverage cross-training opportunities:* Respondents mention that relevant experience is a critical determinant of the potential of a candidate. Specific sectors, such as construction, are targeted for candidates to enter the Powerline Technician trade. Other opportunities for cross-training are within electrician trades, such as power systems electricians. Other sources of candidates include students in programs, such as electrical technology.
- *Explore partnerships with contractors:* Respondents in Quebec say that partnerships between public and private organizations in the Powerline Technician trade have resulted in an increase in the flexibility of deployment options. These partnerships have also increased and optimized resources available for training of Powerline Technicians and have allowed training facilities to grow quickly and respond to increasing needs. For example, private partners (contractors) support the training program of a major employer at a local college. The contractors supply the local college with equipment and materials, often at no cost to the students.
- *Collaboration with community colleges:* In Nova Scotia, a strategic knowledge transfer and collaboration initiative between employers and community colleges enables these colleges and candidates to benefit from the experience of Powerline Technician instructors.
- *E-Learning/M-Learning programs:* Respondents in New Brunswick say a mobile-learning platform offers an effective format to increase access to content for apprenticeship training and ongoing refresher training for Powerline Technicians. The platform is designed primarily for apprenticeship training. A new e-learning module to train Powerline Technicians is being introduced in the province this year. The module includes computer-based applications for grounding and bonding procedures. The learning modules are accessible in vehicles and enable Powerline Technicians to review procedures remotely at work sites. The modules



simulate work-related situations to strengthen and accelerate comprehension of information. The platform also includes a workforce management system to enable Powerline Technicians to plan and update tasks on-line, instead of using paper-based documentation. A built-in Global Positioning System (GPS) provides Powerline Technicians with navigation support in remote or unfamiliar locations.

Training infrastructure for instructors

- *Review the profiles of instructors:* When asked about instructor profiles, one respondent in Saskatchewan reported that their staff was made up of three permanent and three temporary instructors. The temporary instructors spend four to six months in their training positions and then return to fieldwork. The employer has difficulty in attracting temporary and permanent instructors because the time spent as an instructor results in an effective decrease in pay, as overtime (and overtime pay) is no longer available while they are working in the classroom setting. The respondent indicated that they are investigating the possibility of attracting retired Powerline Technicians, or those nearing retirement, to take on the role of instructors.
- *Create an instructor-training and exchange program:* Respondents across provinces mention that the Powerline Technician trade has inadequate resources dedicated to “train the trainer” programs. These programs will enable Powerline Technicians to enhance their communications and presentation skills. Several respondents expressed an interest in comparing the training techniques of their employer with benchmarks of industry associations and training networks. While some respondents indicated that an exchange of instructors has been reviewed internally, a best practice model may not have been developed yet. Other initiatives reported by respondents include weekly group discussions with Powerline Technicians to share insights on the status of training, identify gaps, and share potential solutions.
- *Increase ongoing investments in training to upgrade the teaching skills of instructors:* Respondents in Quebec mentioned that instructors are generally Powerline Technicians who obtain some formal training in education practices. Today, education institutions that train Powerline Technicians have to compete with the attractive salaries (and overtime) paid to Powerline Technicians. Moreover, respondents say instructors without a university education are offered temporary contracts without benefits. A second opportunity mentioned by respondents is to relax the qualification standards for instructors in Quebec (they must currently hold a university degree) with a corresponding increase in investment in training to upgrade the teaching skills of Powerline Technicians who may be interested in becoming instructors.

Conclusions

- *Resources for apprenticeship training:* Initiatives to strengthen apprenticeship training can result in superior performance of training programs. Youth-hire programs during the summer months are seen as an entry point into Trades Trainee programs. Recent high school graduates are offered the opportunity to experience the Powerline Technician trade and other trades for two months. Some organizations have created new positions (such as “training coordinator”) to coordinate visits to job sites and expose candidates to new equipment and the latest technologies. Some employers also offer financial support to apprentices during their four-year apprenticeship. For example, apprentices are provided with employment insurance during the block-release training, but their wages are bridged to the regular wage. A standardized national curriculum based on emerging practices is likely to be beneficial to apprentice training programs across provinces. For example, respondents in New Brunswick and Prince Edward Island say the training program followed in New Brunswick is used as a guide for a standardized format for training in other Atlantic provinces.



- *Resources for refresher training:* A structured approach to refresher training can also have a tangible impact on safety standards and performance of Powerline Technicians. For example, an employer in British Columbia has extensive formal training programs for Powerline Technicians with numerous optional courses. Another emerging practice is to monitor the schedule and impact of safety standards training. Some respondents also indicated that a comprehensive national standard for refresher training would be beneficial. This will require an analysis of models and diverse refresher-training needs across provinces. Another recommended initiative is to monitor the frequency of exposure to specific tasks and related investments in refresher training.
- *Partnerships with external resources:* A strategic focus on leveraging cross-training opportunities may be a potential area for further research. Respondents mention that relevant experience is a critical determinant of the potential of a candidate. Specific sectors, such as construction may offer insights on potential partnerships for training. Another option is to explore partnerships with contractors. Respondents in Quebec say that partnerships between public and private organizations in the Powerline Technician trade have resulted in an increase in the flexibility of deployment options. Deeper collaboration with community colleges is also mentioned as an emerging practice. In Nova Scotia, a strategic knowledge transfer and collaboration initiative between employers and community colleges enables these colleges and candidates to benefit from the experience of Powerline Technician instructors. Deployment of new technologies may also enhance the performance of training programs. Respondents in New Brunswick say a mobile-learning platform offers an effective format to increase access to content for apprenticeship training and ongoing refresher training for Powerline Technicians.
- *Training infrastructure for instructors:* Engaging Powerline Technicians who are retired or near retirement to take on the role of instructors may address the shortage of instructors in some provinces. Another emerging practice is to create an instructor training and exchange program. Respondents from across the provinces mention that the Powerline Technician trade has inadequate resources dedicated to “train the trainer” programs. An increase in investments in training to upgrade the teaching skills of instructors may also be beneficial.



SECTION 2: TRAINING DELIVERY MATRIX

2.1. Introduction

This section includes a nationally compiled matrix of training standards across all regions and provinces that reflect training requirements, differences and gaps in existing training standards, compared to the National Occupational Analysis. Respondents responded to a written survey with a matrix of training standards of the National Occupational Analysis. Respondents were also asked to identify the topics covered in their apprentice training curriculum and those that are currently not part of their programs.

2.2. Summary of Insights

Apprentice training based on an updated National Occupational Analysis

- An analysis of topics covered in apprentice training programs and those that are currently not part of training programs identified specific areas of the curriculum that potentially need to be addressed in each province. Some of these patterns are consistent across provinces, while others may differ from province to province. The most significant gaps are in areas related to “soft skills,” such as communications and planning. The gaps are significant for abilities such as to communicate “with customers, apprentices and in the work place” and to “develop and maintain schedules.” Other areas where most provinces have gaps is training related to transmission poles, voltage control equipment, and environmental hazards.

Refresher training for journeypersons

- Ongoing refresher training is significantly lower compared to training at the apprentice level. The time allocated to ongoing refresher training for Powerline Technicians declines to less than 40 hours per year in most provinces.
- Currently, the focus of training activities is primarily related to new equipment, mandatory safety training, and orientation for journeypersons entering the trade from another province or country. Interestingly, ongoing training activity for “soft skills” related to communications and planning is higher for journeypersons than for apprentices. The emphasis on refresher training is also higher for environmental hazards and repairs of transmission and distribution systems and troubleshooting problems with overhead and underground lines.

Safety standards

- The occupation places a premium on safety standards and practices. Safe working procedures and conditions, accident prevention, and the preservation of health are of primary importance to employers. Job-planning techniques are becoming more widely used, encompassing risk assessment, risk management, and multiple-barrier principles. To continue to improve safety, the occupation is experiencing a move toward the increased use of fire-retardant clothing, ergonomically designed tools, equi-potential 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.



- 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 regular training to reinforce awareness of workplace hazards and protection processes. Safety education is an integral part of training in all jurisdictions.

2.3. Analysis of Regional Differences in the Matrix

Apprenticeship training

- A survey of respondents on apprentice curricula across provinces indicates that some tasks and sub-tasks under Block A (Occupational Skills) of the Powerline Technician Occupational Analysis are not covered in all provinces. These relate to maintenance of work-related records under the task of “Interprets occupational documentation.” Only four of the 10 provinces surveyed (British Columbia, Manitoba, Ontario and Saskatchewan) cover this task.
- While safety training is a high priority across provinces, respondents in some provinces noted that control of environmental hazards and maintenance of schedules are not included in their apprentice curriculum. Communication in the workplace also seems to be an area where some provinces are lagging in their training standards. Other sub-tasks with gaps identified in this category include “communicates with customers and apprentices.” In addition, electronic communication was also mentioned as a sub-task that is not covered in the apprentice curricula of some provinces.
- Under tasks related to “use and maintenance of tools and equipment,” most provinces follow the 11 sub-tasks identified in this category. However, some provinces do not cover use of electrical measuring and testing equipment, aerial work platforms, and live-line tools.
- Under tasks related to structures (Block B), “selection and setting of poles” was identified as an area with limited training in some provinces. In addition, there are significant gaps in training under tasks related to transmission towers and installation of footings.
- Coverage of the occupational analysis is comprehensive under tasks related to conductor systems (Block C). These include overhead conductors and underground cables. Quebec is the only province with limited coverage of underground cable installations in its apprentice curriculum.
- Auxiliary equipment (Block D) also has some gaps in the areas of lighting systems (street lights). The gaps are more extensive for installation of voltage control equipment, with six out of 10 provinces indicating that capacitor installations are not covered in their apprentice curricula. Several provinces also indicated that installation of voltage regulators and switches are not covered. Installation of protection equipment is covered in all provinces except Quebec, where the installation of re-closers is not covered in their apprentice curriculum.
- There are also several gaps under Block E (Maintenance and Repairs). The sub-tasks with the most gaps include maintenance of poles, towers and system components. In addition, troubleshooting and repairs of overhead and underground lines are not covered in some provinces. Use of bare-hand techniques is not part of the common core in most provinces.



Mandatory refresher training for journeypersons

- Ongoing refresher training activity for tasks in the National Occupational Analysis is significantly lower than levels of training at the apprentice level. As indicated in the leading practices section of this report, the time allocated to training declines to less than a week a year for journeypersons. Training is primarily driven by three factors: introduction of new equipment, safety training mandated by the organization or province, and orientation for journeypersons entering the trade from another province or country.
- An analysis of the coverage of tasks and sub-tasks of the Powerline Technician occupational analysis indicates that there are gaps in training related to work-related records, preparation of work sites, control of environmental hazards, and development and maintenance of schedules.
- Other areas that may not be covered in some provinces include communication with customers, apprentices and co-workers. Training in use and maintenance of tools and equipment, installation of poles and transmission towers is also limited in most provinces.
- Respondents identified some gaps in refresher training for transmission towers, underground cables, and metering equipment. Several provinces have indicated gaps in tasks related to repairs of transmission and distribution systems.

Please refer to the appendix of this report for further details on the Training Delivery Matrix.

2.4. Conclusions

Apprentice training based on an updated National Occupational Analysis: There are significant gaps in topics covered in apprentice training programs across provinces. These gaps need to be evaluated in context of the unique and common needs of the trade in each province. For example, several gaps exist across provinces in areas such as communication and planning. Other areas where most provinces have gaps is training related to transmission poles, voltage control equipment, and environmental hazards. A needs analysis of training requirements for apprenticeships will provide common guidelines for apprentice training.

Refresher training for journeypersons: The topics covered in ongoing refresher training for Powerline Technicians is significantly lower compared to training at the apprentice level. A formal national and provincial schedule could be created to provide a guideline for the frequency of training for topics in the National Occupational Analysis. Currently, the focus of training activities is primarily related to new equipment, mandatory safety training, and orientation for journeypersons entering the trade from another province or country.



SECTION 3: APPENDICES

3.1. Scope of the Project

3.1.1. Emerging practices

To conduct a scoping / probing exercise of key respondent groups to:

1. Identify operational activities relating to the successful recruitment and retention of Powerline workers across all regions in Canada;
2. Identify new innovations in training and recruitment;
3. Produce a regional summary of the activities that are working and can be replicated in other regions.

3.1.2. Delivery matrix

To prepare a nationally compiled matrix of training standards across all regions and provinces that:

1. Compiles all training requirements,
2. Reports on existing differences, and
3. Produces a gap analysis of the existing training standards against the National Occupational Analysis.

3.2. Research Methodology

The report includes recommendations and key findings based on qualitative research. The conclusions reflect the opinions expressed by the respondents in the qualitative interviews. As per MRIA (Market Research and Intelligence Association) guidelines for qualitative research, inferential statistics are used to apply conclusions about one set of observations to reach a broader conclusion. The aim of qualitative analysis is a complete, detailed description.

No attempt is made to assign frequencies to the features that are identified in the data, and rare phenomena receive the same attention as phenomena that are more frequent. Qualitative analysis allows for fine distinctions to be drawn because it is not necessary to constrict the data to a finite number of classifications. Ambiguities, which are inherent in human language, can be recognised in the analysis. For example, the word "red" could be used in a corpus to signify the colour red, or as a political categorisation (e.g., socialism or communism). In a qualitative analysis, both senses of *red* in the phrase "the red flag" could be recognised.

Employer emerging practices

The research plot included in-depth interviews with five respondent groups: Training institutions/provincial and territorial offices of CCDA (Canadian Council of Directors of Apprenticeship); small and large organizations (Human Resource/Training Manager); union/labour; Powerline Technician training supervisors; and representatives from CCDA. Based on the project deliverables, several probe areas were identified for in-depth study in primary qualitative research. The interviews covered the following probe areas.



Probe areas

Survey and/or interview guide designed to probe the following areas:

| Emerging Practices | Delivery Matrix |
|---|---|
| <ul style="list-style-type: none"> • Recruitment and retention • Journeyman upgrading, keeping them engaged • Competency-based evaluation • Outreach programs for under-represented groups • Regionally tailored solutions • Different ways people are reaching out • Tapping into the market of people interested in the trade • Finding journeymen • Managing unplanned attritions • Mentorship – standards, support development • Post-journeyman training • Knowledge-transfer • Demographic differences – reaching out to a new generation of workers • Rural/remote communities | <ul style="list-style-type: none"> • Use of most up-to-date information available on training standards • Industry consultation, as required • Final “gap analysis” report |

3.3. Research Plot and Probe Areas

3.3.1. Survey of stakeholders

The research plot included in-depth interviews with five respondent groups: training institutions/provincial and territorial offices of CCDA; small and large organizations (HR/training manager); union/labour; Powerline Technician training supervisors; and representatives from the Canadian Council of Directors of Apprenticeship (CCDA).

3.3.2. Respondent profiles

Respondents with in-depth knowledge and first-hand experience with training and recruitment in each province were interviewed for feedback on best practices. These respondents were in five groups: training institutions/provincial and territorial offices of CCDA; small and large organizations (HR/training manager); union/labour; Powerline Technician training supervisors; and representatives from the Canadian Council of Directors of Apprenticeship (CCDA) national office.



| Respondent Group | Rationale |
|---|--|
| 1. Training organizations/provincial and territorial offices of CCDA | Senior representatives from training organizations are likely to have a first-hand understanding of content and provincial training practices. |
| 2. Small and large organizations (HR/training manager) | The HR/Training Manager is likely to have direct experience with recruitment, retention, content and training processes. |
| 3. Union/labour | Union/labour respondents can offer a unique perspective on practical experience, on-the-job training, and retention challenges. |
| 4. PLT training supervisors | PLT training supervisors have experience in the trade and first-hand understanding of the evolution of training, content and provincial practices. |
| 5. Canadian Council of Directors of Apprenticeship (CCDA) national office | The CCDA national office has spearheaded the analysis of Red Seal training and apprentice development. The national office can provide a high-level perspective of leading practices across provinces. |

A total of 39 interviews were conducted within the five short-listed respondent groups. The survey included an in-depth interview of 30 to 45 minutes and an email survey on training standards in each province. A total of 39 respondents were interviewed. Respondents represented Alberta (2), British Columbia (3), Saskatchewan (2), Manitoba (3), Ontario (20), Quebec (2), Nova Scotia (3), New Brunswick (3), and Prince Edward Island (1).

| | Count of Respondents in Each Province | | | | | Total |
|----|---------------------------------------|------------|----------|----------|----------|-----------|
| | Employer | Instructor | College | CCDA | Union | |
| AB | 1 | | 1 | | | 2 |
| BC | 1 | 2 | | | | 3 |
| SK | 1 | 1 | | | | 2 |
| MB | 1 | 2 | | | | 3 |
| ON | 8 | 7 | 2 | | 3 | 20 |
| QC | 1 | | 1 | | | 2 |
| NS | 1 | 2 | | | | 3 |
| NB | 1 | 1 | | 1 | | 3 |
| PE | | | | 1 | | 1 |
| NL | | | | | | 0 |
| | 17 | 15 | 4 | 2 | 3 | 39 |

Notes:

1. The interviews with small and large organizations, union/labour, Powerline Technician training supervisors and colleges were conducted in November and December 2008. Interviews with CCDA representatives were conducted in January 2009.
2. The analysis of secondary and primary information (from interviews) was done in December 2008 and January 2009.

The interviews with small and large organizations, union/labour, training supervisors, and colleges were conducted in November and December 2008. The Electricity Sector Council arranged for names of CCDA representatives to be interviewed in January 2009. Responses were received from two CCDA representatives (Prince Edward Island and Newfoundland) in early January. These representatives were interviewed in the second week of January 2009. The analysis of secondary and primary information (from interviews) was completed in December 2008 and January/February 2009.



3.4. Training Delivery Matrix (detailed matrix)

BLOCK A: OCCUPATIONAL SKILLS

Task 1: Interprets occupational documentation.

| BLOCK A: OCCUPATIONAL SKILLS | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|---|----|----|----|----|----|----|----|----|-----|----|
| Task 1: Interprets occupational documentation. | | | | | | | | | | |
| 1.01 Interprets drawings, specifications and standards. | x | x | x | x | x | x | x | x | x | x |
| 1.02 Interprets policies, regulations and procedures. | x | x | x | x | x | x | x | x | x | x |
| 1.03 Interprets material and equipment documentation. | x | x | x | x | x | x | X | x | x | x |
| 1.04 Maintains work-related records. | x | | x | | x | x | | | | |

While the scope of tasks under “Interprets occupational documentation” is followed across provinces, one of the sub-tasks has some gaps in six of the 10 provinces. The sub-task related to “Maintains work-related records,” as per respondent feedback, is not followed in New Brunswick, Nova Scotia, Alberta, Quebec, Prince Edward Island and Newfoundland.

Task 2: Supporting knowledge and abilities.

| BLOCK A: OCCUPATIONAL SKILLS | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--|----|----|----|----|----|----|----|----|-----|----|
| Task 2: Supporting knowledge and abilities. | | | | | | | | | | |
| 2.01 Assesses and prepares work site. | x | x | x | x | x | x | x | x | x | x |
| 2.02 Controls vehicle and pedestrian traffic. | x | x | x | x | x | x | x | x | x | x |
| 2.03 Identifies Powerline hazards. | x | x | x | x | x | x | x | x | x | x |
| 2.04 Controls Powerline hazards. | x | x | x | x | x | x | x | | x | x |
| 2.05 Controls environmental hazards. | x | | x | | x | x | x | | | |
| 2.06 Organizes equipment, tools and personnel. | x | x | x | x | x | x | x | x | x | x |
| 2.07 Organizes materials and supplies. | x | x | x | x | x | x | x | x | x | x |
| 2.08 Develops and maintains schedule. | x | | | | | | | | | |

Sub-tasks related to control of hazards is not part of the curriculum of some provinces. Respondents from New Brunswick, Nova Scotia, Quebec, Prince Edward Island and Newfoundland indicated that “Controls environmental hazards” is not part of their apprentice curriculum. In addition, Quebec does not cover the “Controls Powerline hazards” sub-task. Only British Columbia covers the “Develops and maintains schedule” sub-task in their apprentice curriculum.

Task 3: Communicates in the workplace.

| BLOCK A: OCCUPATIONAL SKILLS | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--|----|----|----|----|----|----|----|----|-----|----|
| Task 3: Communicates in the workplace. | | | | | | | | | | |
| 3.01 Communicates with other disciplines and co-workers. | x | x | x | x | x | x | x | x | x | x |
| 3.02 Communicates with customers. | x | x | x | x | x | | x | | x | x |
| 3.03 Communicates with apprentices. | x | | x | | x | x | x | x | | |
| 3.04 Participates in tailboard meetings. | x | x | x | x | x | x | x | | x | x |
| 3.05 Communicates using hand signals. | x | x | x | x | x | x | x | x | x | x |
| 3.06 Communicates electronically. | x | x | | x | x | x | x | | x | x |



The sub-tasks “Communicates with customers” and “Communicates with apprentices” are not covered in the curriculum of several provinces. In addition, respondents in Manitoba and Quebec indicated that “Communicates electronically” is not part of the apprentice curriculum in their provinces.

Task 4: Uses and maintains tools and equipment.

| BLOCK A: OCCUPATIONAL SKILLS | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|
| Task 4: Uses and maintains tools and equipment. | | | | | | | | | | |
| 4.01 Uses personal protective equipment (PPE). | x | x | x | x | x | x | x | x | x | x |
| 4.02 Uses hand tools. | x | x | x | x | x | x | x | x | x | x |
| 4.03 Uses power tools. | x | x | x | x | x | x | x | x | x | x |
| 4.04 Uses powder-actuated tools. | x | x | x | x | x | x | x | x | x | x |
| 4.05 Uses electrical measuring and testing equipment. | x | x | | x | x | x | x | | x | x |
| 4.06 Uses ladders. | x | x | x | x | x | x | x | x | x | x |
| 4.07 Uses climbing gear. | x | x | x | x | x | x | x | x | x | x |
| 4.08 Uses aerial work platforms. | x | x | x | x | x | | x | x | x | x |
| 4.09 Uses rigging, hoisting and lifting equipment. | x | x | x | x | x | x | x | x | x | x |
| 4.10 Uses live-line tools. | x | x | | x | x | x | x | x | x | x |
| 4.11 Maintains tools and equipment. | x | x | x | x | x | x | x | x | x | x |

Respondents from Manitoba and Quebec indicated that “Uses electrical measuring and testing equipment” and “Uses live-line tools” are not part of their apprentice curriculum. Respondents from Saskatchewan indicated that “Uses aerial work platforms” is not part of their apprentice curriculum, and Manitoba does not include “Uses live-line tools” in their curriculum.

BLOCK B: STRUCTURES

Task 5: Installs poles.

| BLOCK B: STRUCTURES | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|
| Task 5: Installs poles | | | | | | | | | | |
| 5.01 Selects poles. | x | x | | x | x | x | | | x | x |
| 5.02 Frames poles. | x | x | x | x | x | x | x | x | x | x |
| 5.03 Sets poles. | x | x | | x | x | x | x | | x | x |
| 5.04 Installs pole guys and anchors. | x | x | x | x | x | x | x | x | x | x |

Respondents from Manitoba, Quebec and Alberta indicated that the sub-task “Selects poles” is not part of their apprentice curriculum. In addition, respondents from Manitoba and Quebec indicated that “Sets poles” is not part of their curriculum.

Task 6: Installs transmission towers.

| BLOCK B: STRUCTURES | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|
| Task 6: Installs transmission towers. | | | | | | | | | | |
| 6.01 Installs footings. | x | x | | | | | | | x | x |
| 6.02 Assembles transmission towers. | x | x | x | | | | | | x | x |
| 6.03 Erects transmission towers. | x | x | x | | | | | | x | x |
| 6.04 Installs transmission tower guy wires and anchors. | x | x | x | | | | | | x | x |



The curriculum for sub-tasks for the installation of transmission towers under the structures tasks has gaps in several provinces. Respondents from Nova Scotia, Ontario, Saskatchewan, Quebec and Alberta indicated that assembly, erection and installation of transmission towers are not part of their apprentice curriculum. In addition, Manitoba, Nova Scotia, Ontario, Saskatchewan, Quebec and Alberta indicated that “Installs footings” is also not part of their curriculum.

BLOCK C: CONDUCTOR SYSTEMS

Task 7: Installs overhead conductors.

| BLOCK C: CONDUCTOR SYSTEMS | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--|----|----|----|----|----|----|----|----|-----|----|
| Task 7: Installs overhead conductors. | | | | | | | | | | |
| 7.01 Strings overhead conductors. | x | x | x | x | x | x | x | X | x | x |
| 7.02 Sags overhead conductors. | x | x | x | x | x | x | x | X | x | x |
| 7.03 Ties-in overhead conductors. | x | x | x | x | x | x | x | X | x | x |
| 7.04 Splices overhead conductors. | x | x | x | x | x | x | x | X | x | x |

Respondents from surveyed provinces indicated that all the sub tasks under “Installs overhead conductors” are part of their apprentice curriculum.

Task 8: Installs underground cable.

| BLOCK C: CONDUCTOR SYSTEMS | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--|----|----|----|----|----|----|----|----|-----|----|
| Task 8: Installs underground cable. | | | | | | | | | | |
| 8.01 Places underground cable. | x | x | x | x | x | x | x | | x | x |
| 8.02 Splices underground cable. | x | x | x | x | x | x | x | | x | x |
| 8.03 Terminates underground cable. | x | x | x | x | x | x | x | | x | x |

The entire task of installation of underground cables and related sub-tasks are not included in the apprentice curriculum of Quebec.

BLOCK D: AUXILIARY EQUIPMENT

Task 9: Installs lighting systems.

| BLOCK D: AUXILIARY EQUIPMENT | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|---|----|----|----|----|----|----|----|----|-----|----|
| Task 9: Installs lighting systems. | | | | | | | | | | |
| 9.01 Installs street lights. | x | x | x | x | | x | x | | x | x |
| 9.02 Maintains street lights. | x | x | x | x | | x | x | | x | x |

Respondents from Ontario and Quebec indicated that “Installs lighting systems” and related sub-tasks are not part of their apprentice curriculum.



Task 10: Installs voltage control equipment.

| BLOCK D: AUXILIARY EQUIPMENT | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|---|----|----|----|----|----|----|----|----|-----|----|
| Task 10: Installs voltage control equipment. | | | | | | | | | | |
| 10.01 Installs transformers. | x | x | x | x | x | x | x | x | x | x |
| 10.02 Installs capacitors. | x | | x | | x | x | | | | |
| 10.03 Installs voltage regulators. | x | x | x | x | x | x | | | x | x |
| 10.04 Installs switches. | x | x | x | x | x | x | x | | x | x |
| 10.05 Installs reactors. (not common core) | | | | | | x | | | | |

Respondents from several provinces indicated that the installation of capacitors and voltage regulators are not part of their curriculum. All surveyed provinces, except Saskatchewan, indicated that “Installs reactors” is not part of their curriculum.

Task 11: Installs protection equipment.

| BLOCK D: AUXILIARY EQUIPMENT | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|---|----|----|----|----|----|----|----|----|-----|----|
| Task 11: Installs protection equipment | | | | | | | | | | |
| 11.01 Installs reclosers. | x | x | x | x | x | x | x | | x | x |
| 11.02 Installs fuses. | x | x | x | x | x | x | x | X | x | x |
| 11.03 Installs sectionalizers. | x | x | x | x | x | x | x | X | x | x |

Respondents from all surveyed provinces, except Quebec, indicated all the sub-tasks related to the installation of protection equipment are not part of their apprentice curriculum. A sub-task for the installation of reclosers is not included in the curriculum in Quebec.

Task 12: Installs metering equipment.

| BLOCK D: AUXILIARY EQUIPMENT | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--|----|----|----|----|----|----|----|----|-----|----|
| Task 12: Installs metering equipment. | | | | | | | | | | |
| 12.01 Installs primary metering. | x | x | | x | | | | | x | x |
| 12.02 Installs secondary metering. | x | x | x | x | | x | x | | x | x |

Respondents from Manitoba, Alberta, Saskatchewan and Quebec indicated that “Installs primary metering” is not part of their apprentice curriculum. Respondents from Ontario indicated that the installation of primary and secondary metering is not part of their apprentice curriculum and not applicable in the province.

BLOCK E: MAINTENANCE AND REPAIRS

Task 13: Maintains transmission and distribution systems.

| BLOCK E: MAINTENANCE AND REPAIRS | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--|----|----|----|----|----|----|----|----|-----|----|
| Task 13: Maintains transmission and distribution systems. | | | | | | | | | | |
| 13.01 Inspects distribution and transmission systems. | x | x | x | x | x | x | x | | x | x |
| 13.02 Maintains poles. | x | x | x | x | x | | x | | x | x |
| 13.03 Maintains towers. | x | x | | x | x | | | | x | x |
| 13.04 Maintains system components. | x | | | | x | x | x | | | |
| 13.05 Trims trees. | x | x | x | x | x | x | | | x | x |



Task 14: Repairs transmission and distribution systems.

| BLOCK E: MAINTENANCE AND REPAIRS | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--|----|----|----|----|----|----|----|----|-----|----|
| Task 14: Repairs transmission and distribution systems. | | | | | | | | | | |
| 14.01 Troubleshoots overhead lines. | x | | x | | x | x | x | | | |
| 14.02 Troubleshoots underground lines. | x | | x | | x | x | x | | | |
| 14.03 Repairs overhead lines. | x | x | x | x | x | x | x | | x | x |
| 14.04 Repairs underground lines. | x | | x | | x | x | x | | | |

Task 15: Applies live-line methods.

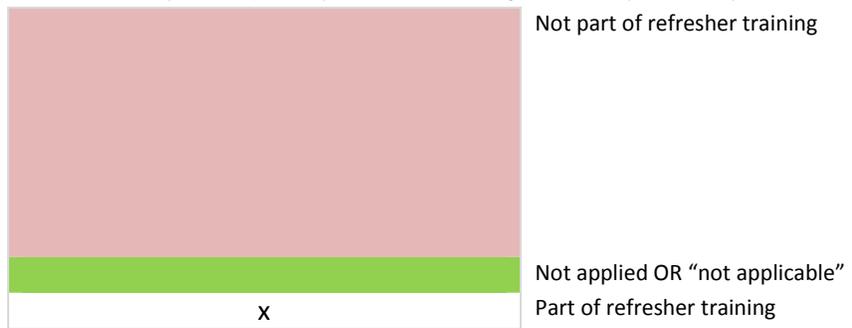
| BLOCK E: MAINTENANCE AND REPAIRS | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--|----|----|----|----|----|----|----|----|-----|----|
| Task 15: Applies live-line methods. | | | | | | | | | | |
| 15.01 Assesses live-line status. | x | x | | x | x | x | x | | x | x |
| 15.02 Uses rubber protective equipment. | x | x | x | x | x | x | x | | x | x |
| 15.03 Uses bare-hand techniques. (Not common core) | x | x | | | | | | | x | x |
| 15.04 Uses rubber glove techniques. | x | x | x | x | | x | x | | x | x |

The maintenance and repairs of transmission and distribution systems and live-line methods seem to be areas with significant differences in apprentice curricula across provinces.

3.5. Mandatory Refresher Training for Journeypersons

Ongoing refresher training activity is significantly lower than levels of training at the apprentice level. The time allocated to training declines to less than a week a year for journeypersons. Training is primarily driven by three factors: introduction of new equipment, safety training mandated by the organization or province and orientation for journeypersons entering the trade from another province or country.

Refresher training for journeypersons.



BLOCK A: OCCUPATIONAL SKILLS

| Task 1: Interprets occupational documentation. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|
| 1.01 Interprets drawings, specifications and standards. | | | | | | | X | | | |
| 1.02 Interprets policies, regulations and procedures. | | | | | | | | | | |
| 1.03 Interprets material and equipment documentation. | | | | | | | | | | |
| 1.04 Maintains work-related records. | | X | | X | | | | | X | X |
| Task 2: Supporting knowledge and abilities. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
| 2.01 Assesses and prepares work site. | | X | | X | | | | | X | X |
| 2.02 Controls vehicle and pedestrian traffic.. | | | | | | | | | | |
| 2.03 Identifies Powerline hazards. | | | | | | | | | | |
| 2.04 Controls Powerline hazards. | | | | | | | | | | |
| 2.05 Controls environmental hazards. | X | X | | X | | | X | | X | X |
| 2.06 Organizes equipment, tools and personnel. | | | | | | | | | | |
| 2.07 Organizes materials and supplies. | | | | | | | | | | |
| 2.08 Develops and maintains schedule. | | X | | X | X | | | | X | X |
| Task 3: Communicates in the workplace. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
| 3.01 Communicates with disciplines and co-workers. | | | | | | X | | | | |
| 3.02 Communicates with customers. | | | | | | X | | | | |
| 3.03 Communicates with apprentices. | | X | | X | | | | | X | X |
| 3.04 Participates in tailboard meetings. | X | | | | | | X | | | |
| 3.05 Communicates using hand signals. | | | | | | | | | | |
| 3.06 Communicates electronically. | X | | | | | X | | | | |
| Task 4: Uses and maintains tools and equipment. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
| 4.01 Uses personal protective equipment (PPE). | X | | | | | X | X | | | |
| 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. | | | | | | X | | | | |
| 4.09 Uses rigging, hoisting and lifting equipment. | | | | | | | | | | |
| 4.10 Uses live-line tools. | | | | | | X | | | | |
| 4.11 Maintains tools and equipment. | | | | | | | | | | |

BLOCK B: STRUCTURES

| Task 5: Installs poles. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|
| 5.01 Selects poles. | | | | | | | | | | |
| 5.02 Frames poles. | | | | | | | | | | |
| 5.03 Sets poles. | | | | | | | | | | |
| 5.04 Installs pole guys and anchors. | | | | | | | | | | |
| Task 6: Installs transmission towers. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
| 6.01 Installs footings. | | | | | | X | | | | |
| 6.02 Assembles transmission towers | | | | | | X | | | | |
| 6.03 Erects transmission towers. | | | | | | X | | | | |
| 6.04 Installs transmission tower guy wires and anchors. | | | | | | X | | | | |



BLOCK C: CONDUCTOR SYSTEMS

| Task 7: Installs overhead conductors. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--|----|----|----|----|----|----|----|----|-----|----|
| 7.01 Strings overhead conductors. | | | | | | | | | | |
| 7.02 Sags overhead conductors. | | | | | | | | | | |
| 7.03 Ties-in overhead conductors. | | | | | | | | | | |
| 7.04 Splices overhead conductors. | | | | | | | | | | |
| Task 8: Installs underground cable. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
| 8.01 Places underground cable. | | | | | | | | | | |
| 8.02 Splices underground cable. | | | | | | X | | | | |
| 8.03 Terminates underground cable. | | | | | | X | | | | |

BLOCK D: AUXILIARY EQUIPMENT

| Task 9: Installs lighting systems. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|---|----|----|----|----|----|----|----|----|-----|----|
| 9.01 Installs street lights. | | | | | | | | | | |
| 9.02 Maintains street lights. | | | | | | | | | | |
| Task 10: Installs voltage control equipment. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
| 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. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
| 11.01 Installs reclosers. | | | | | | | | | | |
| 11.02 Installs fuses. | | | | | | | | | | |
| 11.03 Installs sectionalizers. | | | | | | | | | | |
| Task 12: Installs metering equipment. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
| 12.01 Installs primary metering. | | | | | | X | | | | |
| 12.02 Installs secondary metering. | | | | | | X | | | | |

BLOCK E: MAINTENANCE AND REPAIRS

| Task 13: Maintains transmission and distribution systems. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
|--|----|----|----|----|----|----|----|----|-----|----|
| 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. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
| 14.01 Troubleshoots overhead lines. | | X | | X | | X | | | X | X |
| 14.02 Troubleshoots underground lines. | | X | | X | | X | | | X | X |
| 14.03 Repairs overhead lines. | | | | | | | | | | |
| 14.04 Repairs underground lines. | | X | | X | | | | | X | X |
| Task 15: Applies live-line methods. | BC | NB | MB | NS | ON | SK | AB | QC | PEI | NL |
| 15.01 Assesses live-line status. | | | | | | | | | | |
| 15.02 Uses rubber protective equipment. | | | | | | | | | | |
| 15.03 Uses bare-hand techniques. (Not common core) | | | | | | X | | | | |
| 15.04 Uses rubber glove techniques. | | | | | | | | | | |



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