

ADDRESSING THE HUMAN RESOURCE CHALLENGE IN THE ELECTRICITY INDUSTRY

Brief prepared by the Human Resource Committee
of the Canadian Electricity Association

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Canadian Electricity Association *canadienne de l'électricité*



The voice of Canadian Electricity. *La voix de l'électricité canadienne.*



Canadian Electricity Association
Association canadienne de l'électricité

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Executive Summary

A safe, secure, reliable, sustainable and competitively priced supply of electricity is essential to Canada's prosperity. As the critical enabler of the economy and an enhanced quality of life, a strong electricity industry is fundamental to realizing our potential as individuals, as communities and as a nation. Investing in our electricity supply is tantamount to investing in Canada's present and future success.

While the electricity industry consists of a vast infrastructure representing generation, transmission and distribution, at the root of this complex and expansive system is a labour force that is facing significant challenges in the years ahead. An aging workforce and pending retirements in the short and mid-term could have devastating impacts on an industry already challenged by increasing demand, technological change and regulatory instability.

According to the Canadian Electricity Human Resource Sector Study commissioned by the Canadian Electricity Association (CEA) in 2004, almost 40 percent of the electricity sector's non-support staff will be eligible to retire by 2014. A shortage of skilled labour could compromise the electricity sector in a number of ways including reduced reliability, increased cost of production, infrastructure projects delays, and decreased safety and productivity due to less experienced employees and worker shortages.

In this brief, CEA has developed a series of recommendations that provide concrete solutions to addressing the electricity industry's workforce challenges. The Association strongly believes a collaborative effort between the industry and the federal government in three focus areas will secure a strong future for the electricity workforce:

1. We must build our Canadian skills base by investing in education, skills training and apprenticeships, particularly in underrepresented communities.
2. We must ensure trained, skilled workers are able to work and flourish in their area of expertise by streamlining certification and credential recognition, and facilitating workforce mobility.
3. We must attract and retain skilled foreign workers by ensuring successful community and workplace integration.

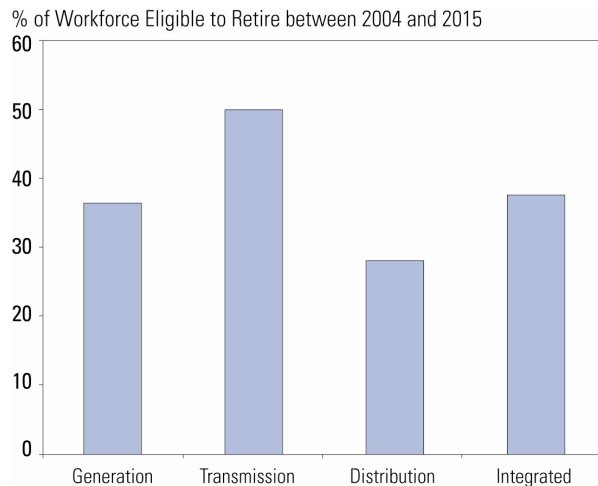
In its economic plan entitled *Advantage Canada*, the federal government acknowledges that people are "the most critical contributor to the national economy over the long term" and recognizes its role in helping individuals and industries reach their full potential (p. 13). The electricity industry is encouraged by the government's intention of investing in Canada's talent pool. It is therefore CEA's intention to assist the government in this effort through the recommendations in this brief.

I Introduction

For over 125 years, the electricity industry has powered Canada's economy and way of life, and has provided the foundation for our country's growth and prosperity. Ensuring an adequate, skilled and internationally-competitive workforce for the electricity industry is critical to our economic prosperity and quality of life.

The electricity industry currently employs 98,000 people. According to the *Canadian Electricity Human Resource Sector Study* commissioned by the Canadian Electricity Association (CEA) in 2004, almost 40 percent of the electricity sector's non-support staff will be eligible to retire by 2014 (figure 1). Retirements estimates show that the sector will need more than 17,000 people in technical positions in the next 8 years (Figure 1).

Figure 1: A Human Resource Challenge: Eligibility to Retire between 2004 and 2015



Source: 2004 Canadian Electricity Human Resources Sector Study

Training requirements are also posing a new set of challenges to the industry. The evolution of technologies in the electricity sector is constant with developments such as increased distributed generation, and the introduction of

SCADA systems and "green" technologies. These new technologies have created the need for new training and skills development, and "re-skilling" of the existing and future labour force.

In this brief, the CEA has set out to inform the federal government on how the current crisis facing the electricity industry is of critical importance to all Canadians. More importantly, CEA has provided recommendations on how industry and government can work together to ensure a strong electricity future for Canada.

II Canada's Electricity Industry

Built with vision, innovation and intent, Canada's electricity system distinguishes itself on an international scale. Ranked fifth globally in total electricity generating capacity and production, Canada also has one of the cleanest electricity generation portfolios in the world. Canada is also recognized for its technological innovations in long-distance electric power transmission, in particular in High Voltage Direct Current (HVDC) transmission systems. It is also a world leader in the deployment of advanced distribution technologies. For example Ontario utilities will install 4.5 million smart meters by 2010.

Canada's electricity industry provides an essential service with far-reaching and immediate impact. It underpins and enables growth in other sectors of the economy and contributes significantly to Canada's export revenues. Twenty-four hours a day, 365 days of the year, Canadian utilities must match production from generating plants with customer demand at competitive prices, while maintaining system reliability, meeting environmental objectives, and fulfilling safety and human resource needs. The result is a highly developed system that optimizes generation, transmission and distribution technologies.

i) Diversified Generation

Canada possesses a diverse generation portfolio, covering a range of mature and

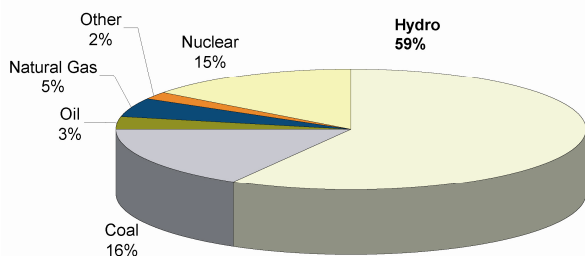
emerging electricity-producing technologies (Figure 2). Hydro power – of which Canada is the global leader – produces the largest share at close to 60% of electrical production, followed by fossil fuels (coal, natural gas and oil) at 28% and nuclear at 12%. Wind, bioenergy and other sources are now being considered as contributors to the overall generation mix, although when combined, represent only 2% of Canadian electricity production.

As jurisdictions look to reducing greenhouse gas and other air emissions, there exists significant potential for Canada to increase the use of hydro, nuclear and emerging renewable sources of power, while also being on the global cutting edge of innovations relating to thermal generation, such as clean coal technologies.

ii) Rising Demand

In addition to being a world leader in electricity production, Canada is also one of its top consumers. In 2003, Canada used about 3.6% of total world consumption and about 12% of total North American consumption.

**Figure 1: Net Electricity Generation, 2004
Total = 577 TWh**

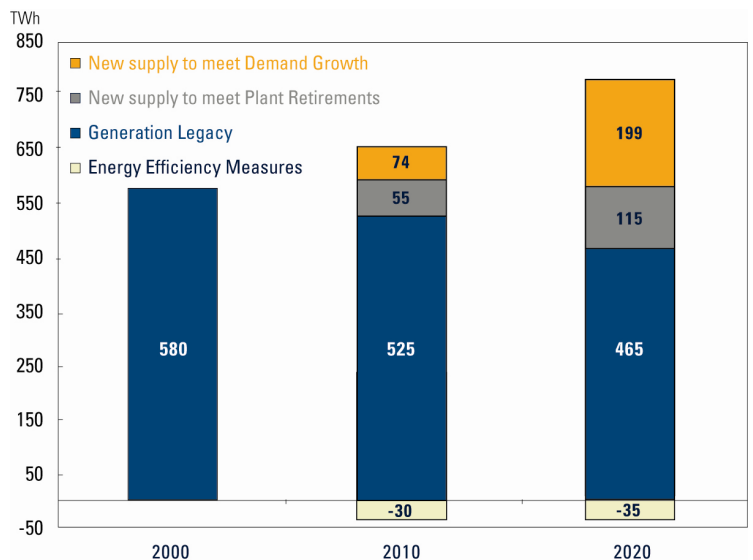


Source: Statistics Canada, Electric Power Generation, Transmission and Distribution, 2004 and Report on Energy Supply & Demand in Canada, 2004

The combination of increasing population, economic growth and greater use of electrical equipment means that electricity demand will continue to grow at an annual average rate of

1.5 to 2 percent. According to an average of two National Energy Board (NEB) scenarios produced in 2003, Canada's electricity supply will need to reach 814 TWh in 2020 from its current level of 594 TWh to meet requirements. CEA estimates that energy efficiency efforts could reduce future needed supply to 779 TWh. The increase in supply must also compensate for the anticipated retirement by 2020 of approximately 20 percent of facilities operating in 2000. Thus, an additional 314 TWh must be generated by 2020 to meet both system demand growth and plant replacement needs (Figure 2).

Figure 2: CEA Generation Projection to 2020



Source: CEA
Energy Efficiency Measures and New Supply to meet Plant Retirements calculated from average or MARKAL 2001, NRCAN 1999, and NEB 1999 models and New Supply to meet Demand Growth calculated from NEB 2003 Scenarios

A growing economy, rising population and the subsequent rise in electricity demand are creating a need to expand both traditional and new emerging technologies to meet rising demand.

iii) Human Resource Implications

The impact of impending retirements, rising demand, the need to build new infrastructure and the introduction of new technologies are not without significant consequence to the Canadian electricity workforce. The strain posed by these factors on individual utilities and on the electricity system as a whole could diminish the industry's ability to deliver reliable, safe, sustainable and competitively priced electricity.

A shortage of properly trained and skilled labour could have serious repercussions for the electricity sector in a number of ways including:

- Reduced reliability;
- Increased cost of production;
- Infrastructure project delays;
- Decreased safety and productivity due to less experienced employees and worker shortages.

III Addressing the Electricity Industry's Human Resource Challenge

CEA welcomes the government's commitment in *Advantage Canada* to support Canada's emergence as an energy superpower in part by making the needed investments in knowledge and people. Canada's energy sector is as much a knowledge industry as is the high tech sector. Trained and experienced workers are essential to ensure the long-term stability of Canada's electricity supply. Recognizing the significant human resource challenges facing the electricity sector, governments and industry must increase their efforts to build our Canadian skills base, ensure trained, skilled workers are able to work and flourish in their area of expertise, and attract and retain skilled foreign workers.

i) Building a Canadian Skills Base

Growing Canada's domestic labour pool and tapping into our potential as a nation is an

important element in addressing the electricity industry's workforce challenges. Increasing participation of under-represented groups, expanding and improving skills training and apprenticeship funding, and raising awareness on electricity-related career choices are critical factors in developing a skilled, educated and adaptable workforce.

Engaging Non-Traditional Communities

Increasing the engagement of the non-traditional workforce is an important step in building a dynamic and sustainable Canadian skills base. CEA is encouraged by the federal government's commitment to take action in this area by "eliminating barriers to labour force participation for under-represented groups" (*Advantage Canada, p.50*)

According to the *2004 Canadian Electricity Human Resource Sector Study*, women, visible minorities and Aboriginal workers are currently underrepresented in the electricity sector. Women account for only 25.4% of all electricity employees and 6.1% of trade staff, engineers and managers/supervisors, which is well below the national average where 46.9% of the total workforce is female.

Visible minorities also fare poorly representing only 7% of total electricity sector workers as compared to 12.6% nationally. This labour group is growing at a rapid pace and based on Conference Board of Canada estimates, could reach 18.4% of the labour force by 2016.

While the electricity industry can provide significant employment opportunities for Aboriginal workers in certain jurisdictions, this labour group represents only 2.2% of electricity industry workers, a slightly lower figure than the national average of 2.6% (*Statistics Canada Census*).

Aboriginal Engagement

As the development of electricity resources increases in areas with growing Aboriginal populations, there exists the potential for increased electricity sector and government collaboration to further engage Aboriginal communities. Utilities have already benefited



from Aboriginal partnerships established through the course of project development.

For example, the Hydro Northern Training and Employment Initiative was launched as a result of two proposed Manitoba Hydro hydroelectric projects in Northern Manitoba representing \$4.0B in construction costs, 2,000 jobs, and is expected to contribute \$2.0B to the national Gross Domestic Product. This Initiative is the first large-scale Aboriginal human resource strategy in northern Manitoba to be planned, designed and implemented by northern Aboriginal Partners. A \$60.3M multi-year program receiving \$22.0M from the federal government through the Aboriginal Skills and Employment Partnership, the Initiative is training and preparing over 1,000 Aboriginal residents for 800 Manitoba Hydro construction and related employment opportunities.

Another example of a pro-active industry-Aboriginal partnership is BC Hydro's Aboriginal Employment and Education Strategy, established as a long term approach to building internal awareness and conducting recruitment outreach with Aboriginal communities in British Columbia. The utility recently created the "trades trainee" role that now provides BC Hydro with an opportunity to work directly with Aboriginal and other youth who are who are inspired to compete in the next recruitment cycle. BC Hydro is also meeting with Aboriginal educational and employment groups across B.C. to develop partnerships to support students and develop regional training programs. Last summer First Nations students were hired as Youth Trades workers and received a half day of high school tutoring and then gained a half day work experience at a generation station. This initiative was widely supported by the school principal and the community.

The Hydro Northern Training and Employment Initiative and BC Hydro's Aboriginal Employment and Education Strategy clearly demonstrate the value for Aboriginal communities and for the electricity industry, of

supporting comprehensive and consistent approaches to Aboriginal engagement and partnerships throughout the country. The federal government's role as a facilitator in fostering new partnerships between Aboriginal communities and the electricity sector is a significant contributor to success.

Recommendation: CEA encourages the federal government to support the creation of a national strategy to engage, support and train Aboriginal peoples in the electricity sector.

Enhancing Apprenticeships and Skills Training

By enhancing the quality, efficiency and availability of apprenticeships, skills training programs, student aid and scholarships, the federal government can assist in increasing the participation of all Canadians in the electricity workforce and meeting labour needs.

CEA welcomes the federal government's Apprenticeship Incentive Program announced in the 2006 Federal Budget which includes a tax credit for employers hiring an apprentice and the Apprenticeship Tax Grant. While these developments are steps in the right direction, they only apply to "Red Seal" trades, thus limiting their applicability in the electricity sector.

Recommendation: CEA calls on the federal government to expand the application of the tax credit for employers hiring an apprentice and the Apprenticeship Tax Grant included in the 2006 Federal Budget to reach a broader range of trades.

Apprentices are required to invest a significant amount of unpaid time and experience work interruptions during the term of their apprenticeship, which can last up to 5 years to complete. The concerns raised by the lost income can be a disincentive to potential apprentices, particularly for northern and Aboriginal students, and students from disadvantaged communities seeking pre-apprenticeship upgrading in order to qualify to apply for an apprenticeship. Depending on the type of apprenticeship and the jurisdiction in



which they live, some students may have to fund their own schooling and lose their qualification for Employment Insurance due to the timing or structuring of work placement hours. Such lost income can lead to lower participation and higher attrition rates. To ensure the successful completion of apprenticeship programs in order to develop a highly skilled Canadian workforce, the federal government must look at options to help defer the financial hardships faced by apprentices through changes to provisions in the Employment Insurance Act.

Recommendation: CEA encourages the federal government to modify provisions in the Employment Insurance Act that act as barriers to apprentices to earn income during the duration of the apprenticeship program.

ii) Enabling Opportunity and Success

CEA shares the government of Canada's vision identified in *Advantage Canada* of creating opportunity and incentives for Canadians to succeed, excel and contribute to a strong and growing national economy. With the development of a new wave of infrastructure projects and the introduction of new technologies, the electricity industry is a significant contributor to Canada's "Knowledge" and "Infrastructure" Advantage.

However, the electricity sector's ability to meet the supply and demand challenge, build new infrastructure and integrate new technologies is dependant upon an adequate and skilled workforce. Trained and experienced workers are essential to ensure the long-term stability of Canada's electricity supply. Recognizing the significant human resource challenges facing the electricity sector, governments and industry must increase their efforts to address issues such as recruiting and retaining workers, facilitating school-to-work transitions and developing sector and career awareness strategies.

Raising Career Awareness



Increasing awareness of the career choices and opportunities available in the electricity sector is a critical factor in the industry's ability to attract Canadians in all communities and all jurisdictions. The federal government has an important role to play in improving labour market programming to help Canadians develop the skills they need and employers want.

Through its participation in the Electricity Sector Council, CEA is actively involved in efforts to increase career awareness in underrepresented communities as well as in the population at large. One such effort is the work currently underway to expand the reach of the successful "Trade Up" program developed jointly by Hydro One, Ontario Power Generation, Bruce Power and the Power Workers Union. Comprised of a comprehensive kit including a student guide, lesson plans, information on trades and hands-on learning activities, the "Trade Up" campaign promotes skilled trade careers in the electricity sector and encourages teachers, counselors, parents and students to consider apprenticeships as an option.

While the "Trade Up" program is a good example of a collaboration between industry and labour to raise career awareness in Ontario, campaigns such as this must be developed on a national scale and tailored to the needs and values of targeted communities.

Recommendation: In recognition of the critical role electricity plays in the economy and daily lives of Canadians, CEA calls on the federal government to provide financial support of Electricity Sector Council Program initiatives aimed at increasing career awareness in the electricity sector.

Occupational Standards and Certification Recognition

Currently, the standards defining trades and occupations within the electricity industry are not evenly recognized throughout the country. Differences regarding certification and the recognition of various positions in the sector, as well as non uniform trade names and job

descriptions act as barriers to workforce mobility within Canada and impede effective comparative work to support best practices in human resources management.

In *Advantage Canada*, the government of Canada has identified “facilitating workforce mobility” (p. 48) as a priority. CEA believes support of national occupational standards for the electricity sector is an important step in removing mobility barriers and improving opportunities.

CEA is encouraged by the federal government’s support of the Electricity Sector Council’s occupational standard project and encourages the government to continue its support in this area.

Recommendation: CEA calls on the federal government to maintain support to the Electricity Sector Council for the establishment of national occupational standards for the electricity industry.

Ensuring a Workforce Aligned with the Needs of the Economy

The capacity to accurately forecast labour market demand and workforce supply is a critical factor in the ability of all industries to respond to the needs of Canada’s economy. Labour market information is particularly germane to the electricity sector which faces a host of adjustments in the coming years including pending retirements, rising demand, increased energy conservation, the introduction of new technologies and increased environmental regulation.

In this changing market environment, there is clearly a need for the government of Canada to work with the provinces, territories and the private sector to ensure training and skills development in the electricity sector are aligned with the needs of the economy. This will require governments to enhance labour market information available to Canadians.

As a first step, we commend the federal government’s support of the Electricity Sector Council’s *Electricity Industry Labour Market Information System* (LMIS) project. Through a three-year phased approach, this multi-layered project will conduct an industry level labour market assessment with sufficient specificity to measure and forecast current and future need for diverse groups and key occupations.

Through the continued support of initiatives such as the Electricity Sector Council’s LMIS project, the federal government can help the electricity industry plan its workforce, analyze its needs, identify training requirements and mitigate business risk related to human capital management. The resulting operational system will better equip the electricity industry to adjust and align its labour practices to support a thriving Canadian economy.

Recommendation: CEA encourages the federal government to continue to support initiatives to assist the electricity industry analyze and plan its workforce, identify training requirements, and mitigate business risk related to human capital management.

iii) Attracting and Retaining Foreign Workers

In *Advantage Canada*, the federal government recognizes that slowing labour force growth and emerging skills shortage have created the need to introduce more workers into the labour force (p. 49). Canadian utilities are increasingly turning to internationally trained workers to broaden their candidate pool and are developing programs to ensure their successful integration. For instance, BC Hydro actively recruits internationally trained professionals (ITP) in B.C. and supports these new hires in a number of ways including: creating intermediate opportunities that help ITPs gain Canadian experience; encouraging structured development plans (i.e. with formal mentoring); and linking ITPs with an internal support group

and other resources such as HR providers and the Hydro Employee Multicultural Society.

Attracting skilled workers to Canada is critical in addressing the electricity sector's human resource needs. Moreover, the federal government must examine ways to make it easier for foreign students and temporary workers to stay in Canada. Current barriers impeding foreign-trained workers from entering the workforce include inhibitive security clearances and visa restrictions, particularly in the areas of transmission and generation, and foreign credential recognition. Other obstacles include: poor advanced preparation prior to immigration; requirements for Canadian work experience; lack of recognition of prior work experience and qualifications, and lack of relevant language skills.

Support for Qualification Programs

Recognizing the contribution of foreign-trained workers to filling the labour gap in the electricity industry, Manitoba Hydro has been actively involved with the Internationally-Educated Engineers Qualification (IEEQ) Program at the University of Manitoba. This innovative program provides immigrants with engineering credentials obtained outside of Canada to meet part of the licensing requirements for professional engineering practice in Manitoba. This year, the IEEQ Team at Manitoba Hydro developed formal employment systems including bursary supports (two \$1500 bursaries), up to six co-op opportunities and a career development program that supports one full-time opportunity per year. The team also actively promotes IEEQ graduates to line management for consideration for current complement vacancies.

The IEEQ model shows tremendous potential for assisting foreign-trained engineers and other workers on a national scale. By broadening the educational scope and expanding models such as IEEQ nationwide, the successful integration of immigrants in the electricity sector labour force would be significantly improved and employer needs would be better met.

Recommendation: CEA encourages the federal government to support the establishment of internationally-educated qualification programs in educational institutions throughout the country.

Foreign Credential Recognition

HRSDC's Foreign Credential Recognition program is an important component of the Internationally Trained Worker Initiative and should be enhanced to ensure processes are fair, appropriate and consistent. Of particular interest to the electricity industry is the continued support of programs such as the Canadian Council of Professional Engineers's initiative to develop and implement an action plan to more quickly and efficiently integrate international engineering graduates into the Canadian labour market.

Greater funding in the field of immigrant labour market integration is also needed to accelerate and improve foreign credentials evaluation in the country of origin, and improve linkages between stakeholders and jurisdictions.

Recommendation: CEA calls on the federal government to support the establishment of a comprehensive pre-qualification process for foreign-trained workers in their country of origin. This could be achieved through the development of a process based on the existing accreditation infrastructure developed by various unions in the electricity industry.

Recommendation: CEA calls on the federal government to examine ways to make it easier for foreign students and temporary workers to stay in Canada.

Easing Visa Restrictions

CEA believes that Citizenship and Immigration Canada should increase efforts to attract skilled workers to Canada through focused initiatives such as easing visa restrictions for low risk applicants who have a strong interest in work opportunities in Canadian trades.



Recommendation:

CEA encourages the federal government to increase efforts to attract skilled workers through easing visa restrictions for low risk applicants where there is a strong interest in work opportunities in Canadian trades.

The Immigration Point System

The Immigration Point System should also be better aligned with Canadian labour market information and should be amended to recognize the value of trade workers. The need for, and value of skilled trades people must be reflected in Canada's immigration system.

Recommendation: CEA calls on the federal government to better align the Immigration Point System with Canadian labour market information, and to recognize the value of trade workers within the Point System.

Bridge to Work

Enhanced funding is required for a national Bridge to Work program that can provide consistent, Canada-wide support to foreign trained workers, from pre-employment to successful workplace integration. Initiatives providing comprehensive career information aimed at foreign trained workers need to be encouraged and supported so that such workers understand the processes involved in order to successfully work in Canada in their field of choice.

Recommendation: CEA encourages the federal government to establish a comprehensive national Bridge to Work program to support foreign trained workers, from pre-employment to successful workplace integration.

IV Conclusion

The electricity industry could face serious workforce challenges in the coming years and now is the time for industry and government to find solutions. CEA strongly believes the federal government has a leadership role in ensuring our electricity supply is in the hands of a skilled, adequate and internationally-competitive workforce.

In this brief CEA has explored various avenues where the electricity industry and the federal government, along with stakeholders and communities, can change the course of a potential labour shortage. Through its recommendations, the Association proposes a list of policy initiatives that will ensure the Canadian electricity industry can maintain and enhance its human and electricity potential.

CEA is prepared to develop detailed implementation plans and programs to operationalise any and all of the recommendations which HRSDC deems to be worth pursuing.

Summary of Recommendations

1. Building a Canadian Skills Base

Aboriginal Engagement

- CEA encourages the federal government to support the creation of a comprehensive national strategy to engage, support and train Aboriginal peoples in the electricity sector.

Enhancing Apprenticeships and Skills Training

- CEA calls on the federal government to expand the application of the tax credit for employers hiring an apprentice and the Apprenticeship Tax Grant included in the 2006 Federal Budget to reach a broader range of trades.
- CEA encourages the federal government to modify provisions in the Employment Insurance Act that act as barriers to apprentices to earn income during the duration of the apprenticeship program.

2. Enabling Opportunity and Success

Raising Career Awareness

- In recognition of the critical role electricity plays in the economy and daily lives of Canadians, CEA calls on the federal government to provide financial support of Electricity Sector Council Program initiatives aimed at increasing career awareness in the electricity sector.

Occupational Standards and Certification Recognition

- CEA calls on the federal government to maintain support to the Electricity Sector Council for the establishment of national occupational standards for the electricity industry.

Ensuring a Workforce Aligned with the Needs of the Economy

- CEA encourages the federal government to continue to support initiatives to assist the

electricity industry analyze and plan its workforce, identify training requirements, and mitigate business risk related to human capital management.

3. Attracting and Retaining Foreign Workers

Support for Qualification Programs

- CEA encourages the federal government to support the establishment of internationally-educated qualification programs in educational institutions throughout the country.

Foreign Credential Recognition

- CEA calls on the federal government to support the establishment of a comprehensive pre-qualification process for foreign-trained workers in their country of origin. This could be achieved through the development of a process based on the existing accreditation infrastructure developed by various unions in the electricity industry.
- CEA calls on the federal government to examine ways to make it easier for foreign students and temporary workers to stay in Canada.

Easing Visa Restrictions

- CEA encourages the federal government to increase efforts to attract skilled workers through easing visa restrictions for low-risk applicants where there is a strong interest in work opportunities in Canadian trades.

The Immigration Point System

- CEA calls on the federal government to better align the Immigration Point System with Canadian labour market information, and to recognize the value of trade workers within the Point System.

Bridge to Work

- CEA encourages the federal government to establish a comprehensive national Bridge to Work program to support foreign trained workers, from pre-employment to successful workplace integration.