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## Skill Shortages and Labour Market Transition Measures in the Canadian Electricity Industry

Executive Summary Report

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## About the Electricity Sector Council

Approximately 100,000 Canadians are involved in the generation, transmission and distribution of one of our country's essential utilities: electricity. Their work powers homes and businesses across the country, fuelling everything from light bulbs, cell phones and refrigerators to water treatment plants and road vehicle assembly lines.

The Electricity Sector Council provides support to this dedicated team by working with industry employers and other stakeholders to research and resolve human resource and workplace development issues.

This report is also available in French and can be obtained electronically at [www.brightfutures.ca](http://www.brightfutures.ca).

## Skill Shortages and Labour Market Transition Measures in the Canadian Electricity Industry

### Executive Summary

To address labour shortages in the electricity industry, recruitment efforts should be aimed at youth and under-represented groups such as women and Aboriginals, but probably not at declining industries. Simply said, the main course of action should be to “Grow the Talent Pool”.

That’s the key recommendation stemming from two research reports commissioned by the Electricity Sector Council in an attempt to shed some light on anticipated shortages of skilled labour (mainly due to massive retirements over the next four to six years) and market transition measures which consist of tapping declining industries for the available workforce. This document summarizes the findings of both reports which led to a series of recommendations listed below under the section “Proposed Next Steps”. These two reports are entitled: “Labour Demand and Market Transition Measures in the Electricity Industry” and “Labour Market Transition Supply from Declining Industries”.

Labour issues were tackled both from a “demand-side” and “supply-side” perspective in these two separate research projects. The “demand-side” analysis looked at current conditions in the electricity sector and surveyed stakeholders from industry, labour, government, and training institutions for insights regarding the current labour “landscape” – i.e., how it is changing and what is being, or could be done to transition workers from other industries. The “supply-side” analysis looked at other industries’ conditions and occupations which overlap with the skills and education requirements of in-demand electricity sector jobs, focusing primarily on potential labour supply from declining industries.

Both research projects set out to answer two basic questions: (1) *Who* might be able to fill the electricity sector’s labour gaps? (2) *How* can they be brought into the sector? These questions seem simple enough until we give it a closer look, especially in the context of constraints such as the aging workforce; the location of work; the level of skills and experience; and the need for security clearances in the energy sector. Examination of all these issues finally led to a set of comprehensive recommendations – i.e., *What* the sector should do to deal with its impending labour shortage?

The outcome is that recruiting mature workers (i.e. those available in greatest number in declining industries) will be challenging for the electricity sector and, ultimately, may not provide full return on re-training investment. In addition to funds required for retraining/skills upgrading, relocation compensation and benefit packages would be needed, and the wait for

security clearances (where applicable) would deter many older workers from choosing electricity careers. Even if they did so, the value of training workers who will provide only five or so years of service is limited. In the final analysis, the focus should be on targeting youth and new labour sources such as women and Aboriginals for employment in the electricity sector, as well as recognizing the value of existing employees and studying recruitment practices of other countries.

### *Labour Perspectives*

Skilled labour shortages are a problem for many economic sectors both in Canada and globally. In the electricity sector in particular, there is an urgent need for the following designated “target occupations”:

- Electrical power line and cable workers
- Power plant operators
- Power system operators and electricians
- Engineers: electrical and electronics, mechanical, civil
- Stationary/ substation engineers and auxiliary equipment operators
- Electrical and electronics engineering technologists and technicians
- Construction millwrights and industrial mechanics
- Utilities managers
- Contractors and supervisors
- Accountants
- Information systems analysts and consultants

### *Demand-Side Analysis: Key findings*

The electricity industry is experiencing a significant loss of older, experienced workers due to retirement. This will have a much bigger impact than any increase in demand arising from growth in the industry or changes in productivity in the next decade.

### *Skills and Knowledge Challenge*

Substantial investment in human capital required by the electricity industry means that workers typically have a life-long career in the electricity industry, and these workers possess a tremendous amount of corporate memory and experience. Workers have, on average, a higher level of education than workers in other industries. Specifically, 76 per cent of electricity workers have a post-secondary degree, diploma, or certificate, compared to 57 per cent for all industries. Processes should be put in place to ensure that this high standard of knowledge and skill is passed onto to the next generation of the electricity workforce.

### *Competition for Graduates*

According to recent studies (the 2004 Canadian Electricity Association *Keeping the Future Bright* report), the projected number of electricity-related program post-secondary education enrollees is well below the industry demand. This problem is further compounded as other resource-based sectors (e.g., mining and petroleum) and telecommunications and technology firms are growing at the same rate as electricity, thus intensifying the quest for domestically-trained engineers. A promising solution is to engage in forward planning in partnership with colleges and universities.

An additional challenge arises from the difficulty to fully utilize Statistics Canada's national educational databases to extract both college (and technical institutes) and university enrolment and graduation data. University data is available but with some limitations, and college enrolment data has not been updated since 1998-1999. The absence of current data for colleges makes it difficult to determine the number of technicians or technologists enrolled or graduating across Canada in any given year. The lack of comparable national data means that data gaps must be plugged locally or through other collaborative efforts.

### *Lateral Entry Challenges*

An alternative approach to fill the gap between industry demand and the supply of labour has been to consider workers from foreign countries or comparable economic sectors. A number of constraints, however, appear to reduce the attractiveness of these options for the electricity sector.

Foreign-trained workers need to face long processes associated with credential recognition, language training and security clearance. Nuclear employees in particular may have to wait as much as one year to receive proper government security clearance. This can represent an insurmountable barrier for foreign-trained workers. Similarly, such delay results in workers from other industries being unable to gain rapid re-employment into the nuclear field.

In addition, factors affecting the re-employment of displaced workers or the transfer of workers from one sector to another are quite diverse, with the transferability of skills playing a relatively small role in the overall mix. Amongst other factors, the age, income level, and how much individuals have vested in an area, community or occupation have consistently come up as important elements in their decision making. Furthermore, replacing mature electricity workers on the verge of retirement with *other* mature workers

who will retire in a few years (and whose entry into the sector will likely be delayed by training requirements and other factors) is at best a stop-gap solution.

### Supply-Side Analysis: Key findings

Several sectors of the Canadian economy were examined for potential pools of labour supply. Three industries were short listed that are both in decline and employ workers whose skills and education overlap considerably with those required for the electricity industry target occupations (listed earlier under “Labour Perspectives”). These three industries are: chemical manufacturing, integrated forestry companies, and transportation equipment manufacturing.

#### *Integrated Forestry Sector*

Of the three, forestry appears to offer the richest opportunity for the electricity sector. It represents an ongoing source of workers whose skill mix and age range is a better match than that of workers in the other two target sectors. Within the forestry sector, the paper and wood product manufacturing sub-sector is the most promising area for transitioning efforts. Firms and unions have been active players in organizing transition programs. Regionally, northwest Ontario, northeast Ontario, and northern Quebec are key areas to target.

#### *The Chemical Manufacturing Sector*

Chemical manufacturing, on the other hand, seems to be a less probable source of new electricity workers. It has the smallest workforce, is likely to shed the fewest workers, has the oldest workers on average, and the least compatible skill mix.

#### *The Transportation Equipment Manufacturing Sector*

The transportation equipment manufacturing sector, unlike forestry and chemical manufacturing, does not offer an ongoing source of potential labour. At best, there is a short “window of opportunity” to transition workers from this sector as the sector employment prospects are expected to rebound after 2008. The attractive skill mix and the large number of workers in the transportation equipment manufacturing sector, however, mean that it is a valuable source of transition opportunities during the current window: southwest Ontario and the Montreal area are likely the key regions to target.

## Transition Measures: Some Conclusions

Having identified where potential new workers can be found, the obvious next question is: *How* to prepare them to work in the electricity sector?

Limited evidence on labour market transition measures in Canada and elsewhere suggests that these are generally costly and/or not very effective. First, these measures are often restricted to mature workers and unemployed workers. Moreover, the existing data does not support the use of wage subsidies, long-term retraining schemes, public work programs, and micro-enterprise training schemes. Some schemes have had positive results however, most notably: job search assistance, short-term training (especially on-the-job training and skills upgrade training), and rapid response worker adjustments. Job search assistance in particular seems to be a very cost effective measure.

An important element in any successful transition policy appears to be timing. In other words, the earlier the intervention, the more effective it is likely to be since the highly skilled, younger and easily re-employable workers are most mobile and have fewest ties. For maximum benefits, the electricity sector should try to be involved in transition efforts *before* workers are laid off.

## PROPOSED NEXT STEPS

### *1. Target Youth*

The electricity industry should be seeking to bring youth on board – i.e., to *sell* them on a career in the sector – before they enter college, university, or any other form of post-secondary training. It is not enough to wait until they graduate from post-secondary institutions, as choices leading to a scientific career are made early (e.g. math courses) and the competition for new graduates with the required skills is fierce.

Youth should be made aware of the diversity of opportunities in the sector, the stability of the industry, and the relatively good salaries and benefits. Developing ties with trainers who provide electricity-related education is an obvious starting point. Other measures to help promote the sector include:

- Increasing access to information about education and certification curricula for key occupations in the electricity industry
- Continuing to foster a culture of learning which provides ongoing training opportunities (because such opportunities are increasingly expected by younger workers)
- Using successful provincial campaigns (e.g., Ontario's TradeUp for Success program) as the basis for national marketing promoting the electricity sector
- Highlighting renewable energy initiatives (renewable energies still represent only a small percentage of the industry's business, but environmental sustainability is a priority issue for the Canadian youth).

The number of post-secondary enrollees in electricity-related programs is well below the projected level of demand. One measure that could be adopted, and which has proven to be effective in other industries, is return-for-service agreements that provide financial incentives, such as covering the cost of tuition, in exchange for a commitment to an employer after graduation. The sector could also pursue capital investment opportunities in renewable energy projects with community colleges and universities, in order to expand training opportunities and raise awareness.

## *2. Outreach Under-represented Groups*

Women and Aboriginal Canadians notably are under-represented in the electricity sector and are a possible source of labour. These groups can be targeted through:

- Mentorship programs for Aboriginal high school students
- Education incentives for Aboriginal youth
- Marketing that highlights career opportunities for women.

## *3. Recognize the Value of Existing Employees*

Older workers possess critical knowledge and expertise and a wealth of practical and industry-specific experience. Recruiting young workers is vital, but it is equally important to retain skilled, mature workers who are already in the industry. This will benefit the sector both in the present (because these workers are able to do a good job) and in the future (because these same workers can pass on their knowledge to younger colleagues, either informally or through structured mentorship programs).

Given the increasing demand for skilled workers in resource-based industries, it is necessary to make these workers feel that continuing their career in the electricity sector is to their advantage, and they should be encouraged to remain in the industry beyond the traditional retirement age. In order for this to occur, increased efforts need to be placed on ensuring that resources are available to retain workers past retirement age within the framework of existing legislation.

## *4. Analyze the Global Situation*

The competition for skilled labour is not limited to within Canada. It has become a global contest. Companies in other jurisdictions are creating new and innovative ways to identify and nurture talent. For example, some U.S. firms are recruiting Canadian linemen and engineers. The electricity sector needs to be aware of these measures, because (a) it could adopt them for its own use, and (b) it needs to develop strategies to prevent potential workers from being “poached” by overseas competition. More research into these practices is necessary.

#### *5. Transition Workers from Declining Industries: Pilot Projects*

One way to test the feasibility of transitioning workers from declining industries in the electricity industry is to create one or two small pilot projects targeting workers in the automotive and aviation industries in the Greater Toronto Area and/or Montreal, or possibly a single project targeting forestry workers in northern Ontario. Suggestions include:

- Establishing connections with local stakeholders and labour unions who can often provide useful data on workers
- Developing a database detailing successful experiences with transition measures in the electricity industry
- Standardizing the recognition of all training credentials as some workers outside the trades have credentials that may not be recognized.



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