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THE ONTARIO-QUEBEC CONTINENTAL GATEWAY: A SITUATIONAL ANALYSIS OF HUMAN RESOURCES NEEDS

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The Ontario-Quebec Continental Gateway: A Situational Analysis of Human Resources Needs

Abstract

This report examines human resource and skills issues pertaining to the Ontario-Quebec Continental Gateway and Trade Corridor over the short- to medium-term (within the next five years). Based on information gathered through interviews with industry representatives and labour market data analysis, the report identifies common and inter-related challenges across the Gateway sectors (construction, air, marine, road and rail transportation, supply chain and multimodal transportation, and border security). Despite the economic downturn, there may be shortages of skilled labour in certain occupations. The report presents strategies being implemented by companies and industry associations to address human resource and skills challenges, and identifies existing gaps.

Résumé

Ce rapport de recherche examine les enjeux reliés aux ressources humaines et aux compétences pour le projet de la Porte continentale et du corridor de commerce Ontario-Quebec à court et à moyen terme (au cours des cinq prochaines années). En se basant sur les renseignements recueillis par le biais de consultations auprès des intervenants principaux et par une analyse quantitative de données sur les marchés du travail, cette étude identifie les défis communs et inter-reliés auxquels font face les secteurs de la Porte continentale (construction, transport aérien, transport maritime, transport routier, transport ferroviaire, transport multimodal et chaîne logistique, et sécurité frontalière). Malgré le repli économique, des pénuries potentielles de main d'œuvre existent pour certaines professions. Ce rapport présente les stratégies mises en œuvre par les compagnies et les associations des industries pour confronter les défis associés aux ressources humaines et aux compétences, et identifie les éléments manquants.

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Executive Summary

On July 30, 2007, Ontario, Quebec and the federal government signed a Memorandum of Understanding for the development of the Ontario-Quebec Continental Gateway and Trade Corridor. The objective of the Continental Gateway is to improve Canada's integration in global supply chains through an efficient multi-modal transportation system. To aid in the development of a comprehensive strategy for the Continental Gateway, a number of working groups comprised of representatives from the Ontario, Quebec and federal governments have been formed under a Public Sector Advisory Committee. One of these groups is the Skills Development Working Group (SDWG), responsible for labour market and skills issues pertaining to Gateway sector occupations.

On behalf of the SDWG, Human Resources and Skills Development Canada (HRSDC) has commissioned the Centre for the Study of Living Standards (CSLS) to analyse the current labour market situation for Gateway sector occupations and identify potential skills shortages and human resource challenges for these occupations over the short- to medium-term (within the next five years). The findings of the CSLS study are presented in this report.

For the purpose of the report, a clear definition of the Ontario-Quebec Continental Gateway and Trade Corridor sectors and occupations was required. This report defines the seven Gateway sectors as:

- the construction sector,
- one sector for each of the four transportation modes (air, marine, road and rail),
- the multi-modal transportation/supply chain sector, which accounts for industries and occupations spanning several transportation modes, and
- the border security sector.

This project included three components. First, a review of the existing literature on human resource and skills issues pertaining to the Gateway sectors was undertaken. The literature reviewed consisted mainly of industry and government publications. The second component was an analysis of quantitative data from various sources, including Statistics Canada, and labour market forecasts from the Construction Sector Council (CSC) for Ontario and Quebec. Labour market projections were available for Quebec (from both Service Canada Quebec Region and Emploi Quebec) but not for Ontario. Although employment prospect indicators for 190 occupations were being compiled by the Ontario Ministry of Training, Colleges and Universities and Service Canada Ontario

Region, many Gateway occupations were not covered. As a result, employment prospects data for Ontario were not available for inclusion in the report. The third component involved interviews with various key stakeholders, to gather qualitative information on the human resource situation and challenges in the Gateway sectors.

This report summarizes the findings from the literature review, data analysis and stakeholder interviews. The report is organized into four parts. The first part is an introduction. The second part provides an overview of the sectors that are directly affected by the Continental Gateway project. The third part describes the major occupations in each of the Gateway sectors, provides an overview of the current human resource situation for these occupations and an outlook for the next five years, and discusses human resource strategies used by companies and at the industry and sector level to address human resource challenges. The final part is a conclusion.

The forecasts used in this study were prepared before the onset of the current economic downturn in Canada. Since then, the global financial crisis and the ensuing recession in the United States and in other parts of the world have had a significant negative impact on the Canadian economy. Economic growth forecasts have been revised downward for the next few years, and previously anticipated increases in trade flows between Canada and the United States, and between Canada and its other trading partners, are no longer expected in the short to medium term.

The report's key findings for each of the Gateway sectors are presented below. Key human resource and skills issues and challenges are presented in Summary Table 1, found at the conclusion of the Executive Summary.

Construction

Prior to the economic downturn, the Ontario and Quebec construction sectors were experiencing labour shortages at the senior and project management levels and in technical occupations such as construction estimators and civil engineers. Shortages in these occupations may persist in the short term, largely driven by labour demand for infrastructure projects. Recruitment and retention challenges in the sector were linked to a negative perception of the construction industry among youth (who are directed to pursue higher education and aim for 'office jobs') and barriers to entry for women, largely attributable to difficult work conditions, and a male-dominated environment and culture. Obstacles for immigrants to enter the construction workforce include: language barriers; difficulties obtaining credential recognition for foreign qualifications; and limited skills upgrading and training in Canadian techniques.

An aging workforce and a high level of retirements in the coming years, particularly at the managerial and supervisory levels pose a challenge to the construction sector. Relatively low labour standards in non-compulsory certification trades and in non-unionized trades pose an additional human resource challenge for Ontario. Unlike Quebec, where all construction trades covered by the Commission de la Construction du Québec (CCQ) are unionized and have compulsory certification, in Ontario, some

construction trades do not have compulsory certification and/or are not unionized. A language barrier and more stringent labour standards in some trades in Quebec are an implicit obstacle to labour movement from Ontario to Quebec, despite regulation facilitating inter-provincial labour movement.

The Construction Sector Council (CSC) and the CCQ are working to address the various human resource challenges affecting the construction sector, through initiatives aimed at standards and skills development, career promotion, and the development of labour market information products, among others. The CCQ has recently reformed the apprenticeship system in Quebec, to better reflect the human resource needs of all construction trades. In Ontario, the establishment of the Ontario College of Trades in the spring of 2009 is expected to provide a channel for addressing the human resource and skills needs of the different trades.

Air Transportation

The large numbers of retirements that had been predicted in the air transportation sector over the past few years appear not to have taken place. Changes in lifestyle preferences and financial considerations have led pilots and aircraft maintenance workers eligible to retire to remain in the labour force for a longer time period. As a result, few labour shortages existed in the air transportation sector prior to the economic downturn. Nevertheless, the sector may face future labour shortages in occupations requiring a high level of technical qualifications including pilots, aircraft inspectors, aviation mechanics and maintenance workers, due to the high level of pending retirements. Uncertainty with respect to the timing of these departures complicates human resource planning.

Training costs for pilots and maintenance workers are significant, and often borne up-front by the individual. The high training costs, coupled with low entry-level salaries, have been identified as a barrier to entry into these occupations.

The Canadian Aviation Maintenance Council (CAMC), which has expanded the scope of its work to cover the pilots occupation, is developing a number of programs and initiatives to address human resource issues in the air transportation sector, including an internet-based labour market information system; the review and update of labour standards; a systematic approach to evaluate candidates (including candidates with foreign credentials) for specific occupations; and career promotion tools and initiatives to attract youth to the aviation sector. CAMC, in partnership with the Canadian Auto Workers (CAW) is experimenting with projects to ‘re-skill’ unemployed workers from other sectors to work in air transportation.

Marine transportation

In the marine transportation sector, few labour shortages were identified in the major occupations (*e.g.* engineers and deck officers) in Quebec and Ontario. Employers in the two provinces have not reported difficulties in recruiting deck crew and engineer crew, despite an increasing demand for these occupations at the national level. Marine

occupations for which Quebec and Ontario employers reported difficulties recruiting included marine crane operators, marine electrical/electronics technicians, instrumentation technicians, marine superintendents/operations managers, and safety managers.

Retention and recruitment challenges for the sector, including difficulties in attracting youth, are generally attributable to the (actual and perceived) difficult working conditions and lifestyles of marine workers. High training costs are a challenge for the marine transportation sector. The sector is also facing a high level of retirements in the coming years.

To address the challenge posed by an aging workforce, the industry, in partnership with training institutes, has developed and implemented a number of career promotion tools and strategies to attract youth to marine occupations and training programs. Best practices for recruitment and retention strategies in the industry have included the design of attractive leave systems.

The industry has been working with the government and training centres to develop high quality training programs, such as the programs offered at the Institut Maritime de Rimouski in Quebec, and at the recently inaugurated Great Lakes International Marine Simulation and Research Centre of the Georgian College, in Ontario. Port authorities have also invested in new technologies and training equipment.

Rail Transportation

No labour shortages were identified in the rail transportation sector occupations in Ontario and Quebec, with the possible exception of locomotive engineers. Railway and locomotive engineer occupations involve long and irregular work hours; incentives are needed to attract new workers to these occupations.

Although the rail sector workforce is aging, labour shortages are not expected to arise due to slow growth in demand, and the targeted recruitment and training of young workers. Employment in rail transportation in Quebec, and of railway track maintenance workers and railway transport labourers in particular, is expected to fall.

Short line railways have less financial resources than Class I railways, and therefore face more challenges in recruiting and training their workforce. In addition, these railways generally serve remote areas where the availability of qualified labour is limited. Short line railways often use specialised firms to develop their training programs, and are interested in exploring alternative, less costly training models.

In addition to career promotion tools and programs and the targeted recruitment of young workers, human resource strategies in the rail transportation sector include pre-employment training programs for railway conductors, developed by the Railway Association of Canada (RAC), and training courses offered by CSMO-Rail.

Road Transportation

Before the economic downturn, a widespread shortage of truck drivers, particularly of long-distance drivers, was the major human resource challenge for the road transportation sector; followed by difficulties recruiting truck mechanics and dispatchers. Since then, the deteriorating economic situation resulted in an excess supply of drivers. Industry representatives are concerned that the impact of the economic slowdown on the trucking industry labour market may be permanent and severe, as drivers who exit the industry labour force to find employment in other sectors were unlikely to return to trucking (where wages are relatively lower and working conditions more difficult) when the level of economic activity picks up.

The driver shortage has been attributed to a number of factors including: recruitment and retention problems linked to low wages (due to cost pressures in a highly competitive industry); difficult work conditions; changing lifestyle preferences; competition with other sectors for workers; unrealistic expectations of new entrants; and informal recruitment processes that are inconsistent with increasing skill requirements for the truck driver occupation. Several industry representatives from Ontario and Quebec explained that the driver shortage was a shortage of skills (qualified drivers) rather than persons (drivers), largely attributable to inadequate training programs and a lack of consistent standards for certification. The situation appears to be worse in Ontario than in Quebec. Truck driver shortages are exacerbated by an aging workforce and a limited number of youth entering the industry, which is a result of both difficulties attracting youth and entry barriers for youth (including driving experience requirements, and difficulty in meeting insurance criteria).

Language barriers and foreign credentials recognition difficulties often constitute entry barriers for foreign workers and immigrants. The number of foreign truck drivers entering Canada through programs such as the Temporary Foreign Worker Program and the Provincial Nominee Program has increased in recent years, but remains small, and the number of companies taking advantage of these programs remains limited. This report identified several limitations to existing programs, which discourage employers and potential drivers from participating in the programs. Women and aboriginal people are also underrepresented in the sector.

In road passenger transportation, the aging workforce and the small proportion of youth in the sector are a cause for concern. In Quebec, the study identifies in the short term potential labour shortages of supervisors for motor transportation and ground and transit operators, bus drivers, subway and other transit operators, taxi and limousine drivers and chauffeurs, largely attributable to a high level of attrition due to retirements. The number of women employed in road transportation varies across sub-sectors, but remains much lower than the all-occupations average. Landed immigrants are also underrepresented in road passenger transportation occupations, with the notable exception of taxi and limousine drivers and chauffeurs.

A number of human resource strategies have been used by trucking companies to address recruitment and retention challenges. Strategies have included providing more stable schedules, responding to driver requests for increased or decreased work hours, increasing salaries, and offering performance bonuses. These strategies have tended to be responsive to driver expectations and demands, rather than being anticipatory. Driver school accreditation is perceived as an important means of raising occupational standards for truck drivers. It would also improve the profile of the occupation and facilitate recruitment. At the industry level, Camo-route and the Canadian Trucking Human Resource Council (CTHRC) are implementing professional driver certification programs. There is a need for reducing costs associated with high quality driver training programs, which include 'Earning you Wheels,' a program developed by the CTHRC through HRSDC funding.

Supply Chain/ Multimodal Transportation

In addition to the mode-specific Gateway transportation sectors, an important emerging sector in recent years is the supply chain sector. This sector comprises various industries along the logistics chain, from manufacturing to transportation using several modes, and warehousing. For the purpose of this report, however, the supply chain sector also comprises industries and occupations which cannot be classified under a single mode of transportation, such as freight transportation arrangement, support activities for transportation not included in other modes, and warehousing and storage.

There is little awareness among the general public in Canada about work opportunities in the emerging supply chain sector. In fact, a large part of the sector's workers enter the sector by default. This lack of awareness of the sector restricts the pool of potential workers.

Few labour shortages have been reported in the supply chain sector (in occupations not covered under specific transportation modes). However, employers have had difficulty finding workers with a strong academic background and a relevant area of specialization.

The Supply Chain Sector Council has been raising awareness of supply chain occupations, and working with academic institutions to develop programs and curricula that reflect the sector's needs. For instance, specialized training in logistics is a major asset for employment in the sector. Although transportation managers from other sectors can generally work in the supply chain sector, employers are often seeking managers with high educational attainment (Master's degrees in relevant specializations).

Border Security

Transport Canada has had difficulty recruiting specialized analysts with knowledge of transportation, and safety and security inspectors, due to the lack of experienced and qualified applicants. The Canada Border Services Agency (CBSA) has identified recruitment needs for information management specialists and policy analysts.

The large number of inspectors expected to retire in the coming years represents a challenge for the border security sector. The CBSA has identified the need to train the 'mid-career' workforce to ensure that the expected senior level vacancies can be filled, and has also highlighted the importance of retaining workers with transferable skills such as communications and information technology workers, in the face of competition from other sectors. Educational requirements for the Border Service Officers (BSO) position have increased in response to the increased demand for knowledge workers.

The CBSA has recruited a large number of young workers to the ranks of BSO since 2006. The high level of recruitment is expected to continue in the near future. In 2007, the federal government announced an investment of $50 million over three years to expand and renovate the CBSA Learning Centre in Rigaud, Quebec. The training provided at the Learning Centre has been modified to reflect additional skill requirements for border security workers.

Conclusion

The severe downturn in the Canadian economy that started in the last quarter of 2008 and is expected to continue throughout 2009 has affected each of the Continental Gateway sectors, resulting in a decline in labour demand and employment. As a result, many existing labour shortages have subsided and unemployment levels have risen. The downturn is further reducing the risk of labour shortages in the short term, due to its impact on retirement decisions of workers, as people who lost a significant part of their savings (due to declines in housing prices and to stock markets losses) decide to remain in the labour force. Nevertheless, there may be *skills* shortages (a shortage of *qualified* workers as opposed to a shortage of persons) in certain occupations. Moreover, representatives of the Gateway sectors expressed the need for action to ensure that the labour and skills shortages that existed prior to the onset of the crisis are addressed, in order to avoid significant bottlenecks during the recovery and subsequent expansion.

A number of common human resource and skills issues are identified across Gateway sectors in Ontario and Quebec:

- Potential labour shortages of qualified workers with specialized skills
- Uncertainty, incentives, and human resource planning
- An aging workforce
- Entry barriers to young workers
- Difficulties in attracting youth
- General recruitment problems
- Retention problems
- Lack of adequate training and standards
- Limited labour force participation of women, First Nations peoples and immigrants

Numerous strategies are being developed and implemented by companies and industry associations in each of the Gateway sectors to address these human resources and skills challenges. At the company level, these include the following:

- The targeted recruitment of youth;
- The provision of pre-employment and on-the-job training;
- Increased flexibility of work schedules;
- Attractive leave systems; and
- Performance bonuses and other financial incentives.

At the industry and sector levels, strategies include the:

- Collection and dissemination of labour market information (LMI);
- Coordination with academic institutions to develop training programs that reflect industry and sector's needs (*e.g*. training for locomotive conductors, academic programs in logistics);
- Development of career promotion tools to inform the public about opportunities
- Attraction of youth;
- Addressing the negative perception issues; and,
- Promotion of training school accreditation (*e.g*. truck driving) as an important means of raising occupational standards.

The report also identifies human resource and skills gaps and issues that could be addressed through coordination between Gateway industries and governments. These include:

- Developing, gathering, and disseminating labour market information (LMI)
- Increasing training capacity;
- Expanding and improving apprenticeship programs for specific occupations;
- Requiring compulsory certification for more construction trades in Ontario;
- Promoting driver school accreditation;
- Lowering the costs of enrolment in high quality programs; and,
- Increasing the labour force participation of women, First Nations peoples, and immigrants (*e.g.* facilitating foreign credential recognition).

In conclusion, the common challenges faced by Gateway sectors provide significant grounds for the sharing of best practices.

Summary Table 1: Human Resource and Skills Issues and Challenges*

	Labour Shortages	Recruitment/ Retention	Aging workforce	Training/ Skills/ Standards	Regulation/ Other
Construction	Less acute in short run, possible exceptions of managerial, supervisory, and technical positions (e.g. civil engineers)	Youth: negative perception of the industry (youth are directed to pursue higher education and aim for 'office jobs') Women: barriers to entry largely attributable to difficult work conditions, and male-dominated environment and culture Immigrants: language barrier, skills recognition issues.	High level of retirements in coming years, particularly at managerial and supervisory levels.	Relatively low standards in non-compulsory certification and non-unionized trades in Ontario. High costs may limit access to some apprenticeships (*e.g.* equipment operators)	Different labour standards and a language barrier have constituted implicit obstacles to labour mobility from Ontario to Quebec
Air Transportation	Few labour shortages reported. Sector may face future labour shortages in occupations requiring high level of technical qualifications (*e.g.* pilots, aircraft inspectors, aviation mechanics and maintenance workers) due to high level of pending retirements.	Low entry-level wages for pilots (combined with high training costs) discourage labour market entry	High retirement rate could result in shortages of pilots and other high skilled occupations (mechanics maintenance workers) Uncertainty about timing of departures complicates human resource planning.	High training costs have constituted labour market entry barriers to pilots and maintenance workers (particularly in light of low entry-level wages).	
Marine Transportation	No shortages in major marine occupations in Ontario and Quebec. However, potential shortages in occupations requiring specialized skills.	Difficulties recruiting crane operators, electrical/ electronics technicians, instrumentation technicians, superintendents/ operations and safety managers. Difficulties attracting youth. Retention is an issue due to difficult working conditions.	High level of retirements in coming years.	Growing training needs, and high training costs.	Labour Code governing Port operations perceived as not reflecting industry needs. Language requirements pose a challenge for recruitment of immigrants.
Rail Transportation	Few shortages, with possible exception of locomotive engineers	Recruitment difficulties for some short line railways due to limited financial resources and geographical location (remote areas where qualified labour is sometimes scarce)	Despite aging workforce, few shortages anticipated due to slow growth in demand and targeted recruitment and training of youth	Training costly for short line railway companies, as they often resort to external firms to develop their training programs	

	Labour Shortages	Recruitment/ Retention	Aging workforce	Training/ Skills/ Standards	Regulation/ Other
Road Transportation	Widespread truck driver shortages have subsided due to the current economic conditions. In the medium- to long- term, shortage of truck drivers could reappear and be exacerbated by drivers having dropped out of the labour force during the slowdown. Shortages of mechanics were also identified prior to downturn. Some shortages in bus drivers and other transit operators identified in the short-run due to high levels of attrition.	Truck driver recruitment difficult due to low wages, difficult work conditions (particularly for long distance drivers), social factors and lifestyle preferences. Retention is difficult as new entrants have unrealistic expectations.	High levels of attrition due to retirements in the coming years for workers in freight and passenger road transportation Difficulty to attract youth, combined with entry-level requirements, result in low proportion of youth in the sector's workforce.	Inadequate training, not reflecting industry realities and increasing skill requirements Skill requirements are increasing. Lack of consistent standards for certification and driver school accreditation.	Limitations to existing programs for foreign workers discourage employers and potential drivers from participating in the programs.
Multimodal Transportation/ Supply Chain	Few reported shortages.	Difficulties finding qualified managers with a strong academic background and relevant specialization. Lack of awareness of supply chain occupations.		Emerging field, training programs not well known	
Border Security		Transport Canada has difficulty recruiting analysts with transportation knowledge, safety and security inspectors. The CBSA has reported difficulties retaining workers with transferable skills such as IT workers, due to competition with other sectors.	A large number of inspectors are expected to retire in coming years.		

*An inventory of existing strategies to address the skills and human resource issues summarized in this table are listed in Appendix 6 of the report. These strategies have been developed and implemented by companies and industry associations. Some of these strategies are supported by federal and provincial governments, including through the Sector Council Program.

The Ontario-Quebec Continental Gateway: A Situational Analysis of Human Resources Needs[1]

I. Introduction

A. Background: The Ontario-Quebec Continental Gateway and Trade Corridor

Increasing global market integration, a rapidly changing global economy characterised by the expansion of trade, the emergence of new economic powers and large trading blocks, represent important growth opportunities for Canada. The federal government's gateway and trade corridor strategy, outlined in the *National Policy Framework for Strategic Gateways and Trade Corridors*, aims to improve Canada's integration in global supply chains through an efficient multi-modal transportation system. Pursuant to this strategy, after launching the Asia Pacific and Gateway Initiative in 2006, the federal government announced its intention to support corridor initiatives in other Canadian regions (Transport Canada, 2008a). In 2006, the provinces of Quebec and Ontario signed a Cooperation Protocol to promote the development of a trade corridor, and improve the efficiency of all modes of transportation (Government of Canada, 2008). On July 30, 2007, the two provinces signed a Memorandum of Understanding (MOU) with the federal government for the development of the Ontario-Quebec Continental Gateway and Trade Corridor (hereafter referred to as Continental Gateway). Several infrastructure projects planned or underway in the two provinces have been included under the umbrella of the Continental Gateway.

In November 2007, the Government of Canada launched a major infrastructure plan called *Building Canada*, which provides $33 billion in funding from 2007 to 2014. Many project areas listed in *Building Canada* involve transportation infrastructure for all modes, including the national highway system (road), short line railways (rail), short-sea-shipping (marine), regional and local airports (air). Under *Building Canada*, infrastructure framework agreements were signed between Canada and the provinces. A $6.2 billion agreement was signed between Canada and Ontario on July 24, 2008 and a

[1] This report was written by Souleima El Achkar, economist at the Centre for the Study of Living Standards (CSLS), under the supervision of Andrew Sharpe, CSLS Executive Director. For their assistance in obtaining access to labour market data, and in reaching out to the stakeholders interviewed, the CSLS would like to thank: Peter Larose, Kathleen Walford, Christine Dalton and François Lamontagne of Human Resources and Skills Development Canada (HRSDC); Yves Larocque of Emploi-Québec; Evelyn Mueller and Ray Gormley of the Ontario Ministry of Training, Colleges and Universities; and Mario Jodoin of Service Canada, Quebec Region. The CSLS would also like to thank members of the LMI Working Group for their feedback on an earlier version of this report. The author would like to thank Fraser Cowan, for his contribution to the report; and Peter Harrison, Sylvia Boss and Jean-François Arsenault for their feedback and comments.

$4 billion agreement was signed between Canada and Quebec on September 3, 2008. *Building Canada* also included $2.1 billion for the Gateways and Border Crossings Fund to support infrastructure investment at key locations such as the Windsor-Detroit border crossing, and other investments that have been included under the Continental Gateway framework.

At the time of the writing of this report, no official list of specific Gateway investment projects is available. Nevertheless, the scale of planned investment can be inferred from government budgets, from *Building Canada* and from the provincial infrastructure plans: *ReNew Ontario*, a five-year $30 billion plan to be completed by 2010, and the five-year $30 billion *Quebec Infrastructure Plan*, announced in 2007.

Following the signing of the MOU for the Continental Gateway in 2007, and since September 2008 in particular, the global economy has been through significant turmoil. A global financial crisis and slowdown in economic activity, tightening credit markets, a recession in the United States and in Canada have significant implications for the Continental Gateway. The projected growth in trade flows between Canada and the United States, and between Canada and its other trading partners, that would require additional capacity, may not materialise in the short run. However, investing in Gateway infrastructure is likely to remain a government priority. In response to the economic slowdown, measures announced by the federal government in the 2009 budget include streamlining project approval processes for construction projects under the *Building Canada* plan, and allocating $12 billion in new funding over the next two years to accelerate and expand investment in infrastructure. Specific initiatives include the establishment of an Infrastructure Stimulus Fund, additional funding for the Green Infrastructure Fund, and new funding to expedite "ready-to-go" projects, including First Nations infrastructure projects.

Nevertheless, a large number of workers will lose their positions during the economic downturn, and some may need to expand or acquire a new skill set in order to find employment in other sectors. To assist them, the federal government increased funding for skills development and training. In particular, the budget features additional funding for training delivered through the Employment Insurance (EI) program and the Strategic Training and Transition Fund, funding to launch the Apprenticeship Completion Grant program, and for training programs targeting youth, older workers, and Aboriginals. Federal funding is also allocated to a national foreign credential recognition framework in partnership with the provinces and territories. These programs represent significant opportunities to address the potential shortages of skilled labour identified in this report.

B. Purpose of the Study

The governments of Canada, Ontario and Québec are undertaking consultations with various public and private sector stakeholders to develop a comprehensive strategy for the Ontario-Québec Continental Gateway and Trade Corridor. To aid in the development of a comprehensive strategy for the Continental Gateway, a number of

working groups comprised of representatives from the Ontario, Quebec and federal governments have been formed under a Public Sector Advisory Committee, to examine various aspects of the Continental Gateway project. One of these groups is the Skills Development Working Group (SDWG), responsible for labour market and skills issues pertaining to Gateway sector occupations.[2] On behalf of the SDWG, Human Resources and Skills Development Canada (HRSDC) has commissioned the Centre for the Study of Living Standards (CSLS) to analyse the current labour market situation for Gateway sector occupations and identify potential skills shortages and human resource challenges for these occupations over the short- to medium- term (within the next five years). The study is overseen by the Labour Market Information (LMI) working group, a sub-group of the SDWG comprised of representatives from the Ontario, Quebec and federal administrations. The findings of the CSLS study are presented in this report.

C. Methodology and Approach

For the purpose of the report, a clear definition of the Ontario-Québec Continental Gateway and Trade Corridor sectors and occupations was required. This report defines the seven Gateway sectors as

- the construction sector,
- one sector for each of the four transportation modes (air, marine, road and rail),
- the multimodal transportation/supply chain sector, which accounts for industries and occupations spanning several transportation modes, and
- the border security sector.

A list of corresponding industry sectors and their descriptions based on the 2007 North American Industry Classification System (NAICS) are provided in Appendix 1. Similarly, a list of Gateway sector occupations and their descriptions based on the National Occupational Classification for Statistics (NOC-S) are provided in Appendix 2.

This situational analysis of the Continental Gateway occupations includes three components. The first is a review of existing literature on human resource and skills issues for the identified Gateway sectors most of which consists of industry and government publications. The second component is an analysis of quantitative data from various sources, including Statistics Canada, and labour market forecasts from the Construction Sector Council (CSC) for Ontario and Quebec. Labour market projections were available for Quebec (from Service Canada Quebec Region and from Emploi Quebec) but not for Ontario. Although employment prospect indicators for 190 occupations were being compiled by the Ontario Ministry of Training, Colleges and Universities and Service Canada Ontario Region, many Gateway occupations were not covered. As a result, employment prospects data for Ontario were not available for inclusion in the report. The third component involves consultations with various key

[2] The other seven working groups on non-infrastructure issues pertaining to the Continental Gateway are: Improving Operations; Regulatory Issues; Labour Relations; Trade Facilitation and Opportunities in a Global Environment; Outreach to the United States; Border-related Services; and Long-Term Sustainability.

stakeholders to gather qualitative information on the human resource situation and challenges in each sector.

D. Structure of Report

The first part of the report is an introduction. Part II provides an overview of the sectors that are directly affected by the Continental Gateway. It describes the industries included in each Gateway sector, and the contribution of these industries to the provincial economy, in terms of output and employment. It examines the recent economic performance of these industries, and discusses the factors that may impact this performance in the short and medium term and therefore affect labour demand. It also examines trends such as regulatory or technological changes that may have significant implications for human resource management and planning, by affecting both the level of labour demand and supply, and the skills required.

Part III describes the most important occupations in each of the Gateway sectors and provides an overview of the current human resource situation for these occupations, and an outlook for the next five years, based on current shortages and projected needs. Data are used to examine employment trends and draw a profile of the Gateway workforce, including employment distribution across industries, age structure, educational attainment, and workforce composition. Workforce composition refers to the proportion of landed immigrants or people who have been landed immigrants in the past, First Nations peoples and women in the Continental Gateway occupations. Qualitative data from the literature review and from stakeholder interviews are also presented to describe the human resource challenges facing these occupations, including skills and certification-related issues, recruitment and retention, labour relations, and regulatory obstacles to certification or to labour mobility. The final part of the report concludes by summarizing the human resource challenges facing the Continental Gateway to inform future policy development.

II. Description of Gateway Sectors

The sectors directly affected by the Ontario-Quebec Continental Gateway and Trade Corridor investments and activities are: construction; transportation of goods; passenger transportation; and border security. Transportation of passengers and goods covers all four modes (air, road, rail and marine). This section provides an overview of the performance of these sectors and highlights factors affecting growth and labour markets.

A. Construction

This section describes the industries included in the Gateway construction sector, the share of these industries in provincial employment, and the evolution of employment in these industries. It describes some of the large infrastructure projects underway in Ontario and in Quebec that are driving labour demand in the sector and having significant implications for human resource management and planning.

The Gateway construction sector includes establishments[3] involved in the building or maintenance of infrastructure which facilitates trade including the construction and maintenance of highways, railways, airports, seaports and distribution centres. It comprises the heavy and civil engineering construction (NAICS 237), including utility system construction (NAICS 2371), land subdivision (NAICS 2372), highway, street and bridge construction (NAICS 2373), and other heavy and civil engineering (NAICS 2379). The Gateway construction sector also includes non-residential building construction (NAICS 2362), which includes industrial building and structure construction and commercial and institutional building construction. Specialty trades contractors (NAICS 238) are also included.

The Gateway construction sector is a major employer in both Quebec and Ontario. According to Statistics Canada data, in 2006, approximately 152,530 workers were employed in the Gateway construction sector in Quebec and 269,815 in Ontario (Table 1.1). These workers represented approximately 74 per cent of the construction sector workers in Quebec, and 70 per cent of the sector's workers in Ontario. The heavy and civil engineering construction sector employed 17,275 in Quebec and 32,035 in Ontario. The highway, street and bridge construction subsector employed 9,205 people in Quebec and 16,970 in Ontario. The non-residential building construction subsector employed approximately 17,595 workers in Quebec, and 22,525 workers in Ontario. However, the largest numbers of construction workers were employed by specialty trades contractors (117,660 workers in Quebec and 215,555 workers in Ontario) in 2006.

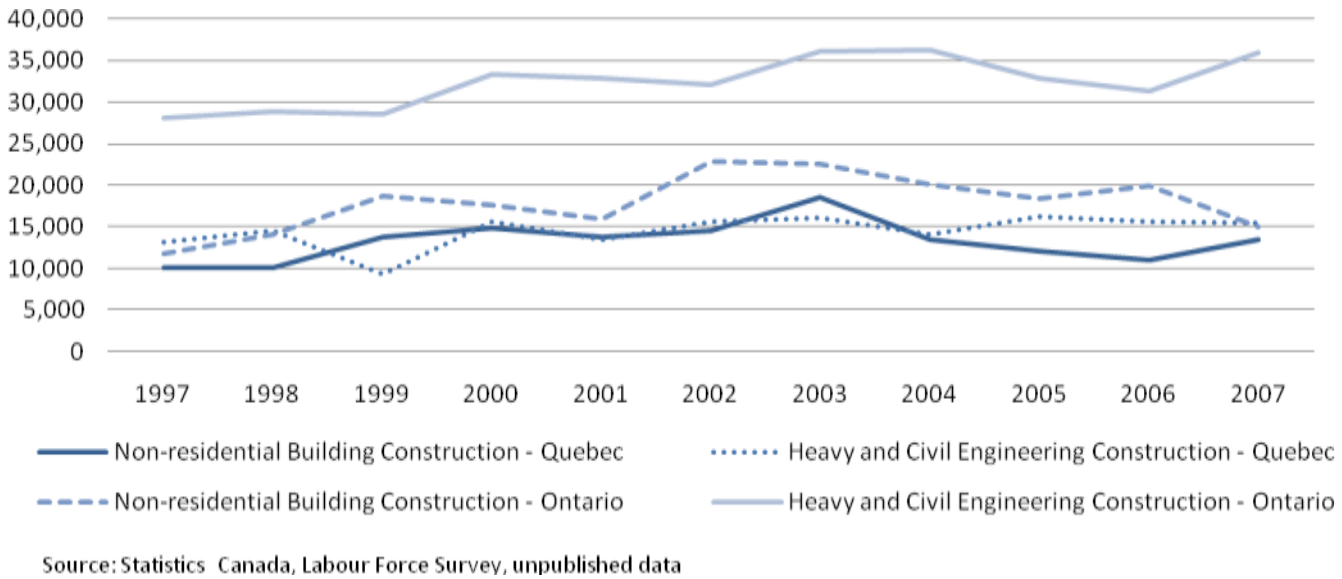
[3] Statistics Canada defines 'establishment' as a statistical unit "as the most homogeneous unit of production for which the business maintains accounting records from which it is possible to assemble all the data elements required to compile the full structure of the gross value of production (total sales or shipments, and inventories), the cost of materials and services, and labour and capital used in production. Provided that the necessary accounts are available, the statistical structure replicates the operating structure of the business. In delineating the establishment, however, producing units may be grouped. An establishment comprises at least one location but it can be comprised of many" (Statistics Canada, 2007: 7)

Table 1.1 Gateway Construction Sector Employment by Industry (2006)

	Quebec		Ontario	
	Employment	**Share of total (%)**	**Employment**	**Share of total (%)**
Non-residential building construction	**17,595**	**11.5**	**22,525**	**8.3**
Heavy and civil engineering construction	**17,275**	**11.3**	**32,035**	**11.9**
Utility system construction	4,605	3.0	9,395	3.5
Land subdivision	640	0.4	2,860	1.1
Highway, street and bridge construction	9,205	6.0	16,970	6.3
Other heavy and civil engineering construction	2,825	1.9	2,810	1.0
Specialty trade contractors	**117,660**	**77.1**	**215,255**	**79.8**
Foundation, structure, and building exterior contractors	25,015	16.4	45,515	16.9
Building equipment contractors	45,485	29.8	86,800	32.2
Building finishing contractors	25,740	16.9	59,715	22.1
Other specialty trade contractors	21,425	14.0	23,220	8.6
Gateway Construction Sector	**152,530**	**100.0**	**269,815**	**100.0**
Residential building construction	53,130		114,960	
Total Construction	**205,660**		**384,780**	
All industries	**3,929,675**		**6,473,735**	
Source: Statistics Canada, Census 2006				

Employment in the highway, street and bridge construction subsector declined between 1997 and 2007 in Quebec and increased in Ontario. However, employment in the heavy and civil engineering subsector as a whole and in the non-residential building construction subsectors increased in both provinces during this period. The evolution of employment in these subsectors is presented in Chart 1.1.

Chart 1.1 The Evolution of Employment in the Gateway Construction Subsectors (1997-2007)



Source: Statistics Canada, Labour Force Survey, unpublished data

Estimates from the Commission de la Construction du Québec (CCQ) are more detailed. These estimates show that the civil engineering and roadwork construction subsector employed 28,229 people in Quebec in 2006 (CCQ, 2007a). Over 11,000 of those employed in the sector worked in the greater Montreal region. The vast majority of those employed worked for small firms. Of the 2,000 employers in the civil engineering and roadwork sector in Quebec, 81 per cent employed ten workers or less in 2006 (CCQ, 2007b). Only 14 employers in Quebec employed over 100 workers in 2006 in the civil engineering and roadwork sector. Nevertheless, the civil engineering and roadwork subsector in Quebec is composed of large firms, relative to other construction subsectors. In 2006, the average employer in the overall construction sector in Quebec employed 4.5 workers while the average employer in the civil engineering and roadwork sector employed 8.4 workers.

A comprehensive list of the projects included in the Continental Gateway was not available at the time of writing. However, several major construction projects have been announced or are underway. In Quebec, major projects involving the construction and maintenance of highways and interchanges are slated for completion in the coming years. The largest such project is the rebuilding of the Turcot interchange in Montreal, which is expected to cost $1.5 billion and to be completed in 2015. A complementary project in terms of facilitating trade and transportation is the completion of Autoroute 30, which will allow trucks to bypass the island of Montreal. The completion of the western portion of Autoroute 30, expected to cost $1 billion, will relieve traffic congestion and provide Quebec businesses with improved access to markets in Ontario, the Maritimes and the United States (Office of the Prime Minister, 2006). The $820-million dollar refurbishment of Highway 185 (Autoroute 85 between Riviere-du-Loup and the New Brunswick border) will also improve connections between Ontario, Quebec and the Maritimes. The project involves upgrading Highway 185 from two lanes to four at Autoroute Standards. In February 2009, an investment of $224 million was announced for the Dorval interchange redevelopment project, which involves creating direct links between the Pierre Elliott Trudeau Airport and highways 20 and 520, and between the two highways. This project provides for the necessary right of way for the implementation of a future railway link between downtown Montreal, the airport and the West Island.[4] In Ontario, several projects that are in the planning state would better integrate Ontario's air, rail and road transportation systems. Improving the Windsor-Detroit crossing and the Windsor-Essex Parkway will facilitate cross border mobility of freight and passengers and contribute to the full integration of Highway 401 and Interstate 75.

In the 2009 Budget, the federal government reiterated its commitment to cost-sharing projects with the provinces, including twinning improvements to a number of segments of Highways 11 and 17 in Northern Ontario, and to Highway 185 in Quebec. The Budget also provided $212 million in funding for the restoration of Champlain Bridge, up to $15 million to reduce traffic congestion at two of the busiest Canada-U.S. border crossings (the Blue Water Bridge in Sarnia, and the Peace Bridge in Fort Erie) and up to $42 million to restore federal bridges around the National Capital Region, the

[4] http://www.tc.gc.ca/mediaroom/releases/nat/2009/09-h027e.htm

Burlington Lift Bridge in Burlington and the LaSalle Causeway in Kingston. The budget also provided funding for the repair and maintenance of small craft harbours, including the Southampton Harbour in Ontario, and three harbours in Gaspé (Department of Finance Canada, 2009: 155-157).

B. Air Transportation

This section describes the industries included in the air transportation Gateway sector and their contribution to provincial employment. It examines the evolution of the sector's activity over the past ten years, and discusses factors that may impact its labour demand in the short to medium term. It also examines regulatory changes that may have significant implications for human resource management and planning, by affecting both the level of labour demand and supply, but also the skills required.

The air transportation Gateway sector includes the scheduled and non-scheduled air transportation industries (NAICS 481), and support activities for air transportation (NAICS 4881). Workers in the air transportation Gateway sector are employed by airports or airport authorities, air carriers, the federal government, and NAV Canada, the federal Crown Corporation responsible for civil air navigation service including air traffic control. The scheduled air transportation industry had the largest share of the air transportation sector employment, with 66.6 per cent of the sector's employment in Quebec and 61.1 per cent in Ontario, in 2006 (Table 2.1). Another 7.3 per cent of air transportation workers were employed in the non-scheduled air transportation industry in Quebec and 7.1 per cent in Ontario. Both scheduled and non-scheduled air transportation industries comprise establishments primarily engaged in transporting passengers and/or goods by aircraft. Support activities for air transportation, which includes the airport operations and the air traffic control industries, accounted for 26.0 per cent of air transportation sector employment in Quebec, and 31.6 per cent in Ontario. Less than 1.0 per cent of air transportation workers were employed in the scenic and sightseeing transportation industries (NAICS 4879) in Ontario and Quebec.

Table 2.1 Air Transportation Gateway Sector Employment by Industry (2006)

	Quebec			Ontario		
	Number (2006)	Share of total in 2006 (%)	Growth (2001-2006)	Number (2006)	Share of total in 2006 (%)	Growth (2001-2006)
Scheduled Air Transportation	11,225	66.6	-11.5	17,185	61.1	-9.1
Non-Scheduled Air Transportation	1,235	7.3	-57.3	2,000	7.1	-30.4
Support Activities for Air Transportation	4,375	26.0	23.8	8,885	31.6	23.1
Scenic and Sightseeing Transportation, Other	10	0.1	-77.8	50	0.2	-23.1
Air transportation	**16,845**	**100.0**	**-12.1**	**28,120**	**100.0**	**-3.2**
All industries	**3,929,675**		**7.8**	**6,473,735**		**8.0**
Source: Statistics Canada, Census 2001 and Census 2006						

Airport governance in Canada is based on the 1994 National Airport Policy (NAP). Under the NAP, Transport Canada retained the ownership of the largest airports and all airports serving provincial capitals, but their management and operations were transferred to Canadian Airport Authorities (CAAs). Airports operated by CAAs and airports operated by Local Airport Authorities (LAAs) constitute Canada's National Airport System (NAS).[5] CAAs and LAAs are private, not-for-profit, non-share capital corporations, required to be self-financing (Padova, 2007). Some observers maintain that the transfer of airport management to these entities improved airport efficiency by integrating some private sector management practices; however, CAAs have been criticised for lacking accountability and incentives to control operating costs, which are ultimately borne by the private sector, including airlines (Burghardt, *et al.* 2007: 23). Under the NAP, the federal government sold small and remote airports to the communities they serve, transferred many remote or arctic airports to provincial or territorial governments and retained control of operations at some of these airports. There are four airports in Ontario and three airports in Quebec operated by CAAs. NAS airports in Ontario and in Quebec employed 1,972 workers in 2007, a 20 per cent increase in employment since 2001 (Transport Canada, 2007a - *Data Addendum*) In addition, each province has over 50 regional or local airports, small airports and remote airports.

NAV Canada, the owner and operator of Canada's civil Air Navigation Service (ANS), is a non-share capital corporation, financed through publicly-traded debt. Approximately 5,200 employees work in NAV Canada's area control centres, control towers, flight service stations, information and maintenance centres, and community aerodrome radio stations across the country (NAV Canada, 2008).

Air Canada, Canada's largest airline, as well as smaller WestJet and Porter Airlines, charter airlines including Air Transat, and several local air service providers, operate in Quebec and Ontario. In December 2007, the Air Canada family, which includes Air Canada, Jazz and some regional lines, represented 68.7 per cent of the Canadian airlines' capacity in Quebec and Ontario in terms of scheduled daily-seat kilometres. WestJet represented 13.7 per cent of the daily-seat kilometres capacity and Porter Airlines represented 5.9 per cent of capacity. Northern airlines and other regional or local service airlines, including Air Inuit, Bearskin, Air Creebec, Air Labrador and Provincial Airlines, represented the remaining 11.7 per cent of daily-seat kilometres capacity in the two provinces.

The number of aircraft movements at Canadian airports increased by 0.8 per cent between 1997 and 2007 (Table 2.2). During this period, aircraft movements at major airports fell by 7.0 per cent in Quebec and increased by 1.3 per cent in Ontario. Traffic decreased at all major airports in Quebec, with the exception of Pierre Elliott Trudeau International Airport in Montreal, where the number of aircraft movements increased by

[5] There are two criteria for inclusion in the NAS category: 1. Location in the national capital or in a provincial or territorial capital (sufficient for inclusion in the NAS category) and/or 2. Annual traffic of at least 200,000 passengers, maintained over three consecutive years. An airport that is *not* located in a capital has to maintain its annual traffic level above 200,000 passengers for three consecutive years to remain in the category, and conversely, is removed from the NAS category if annual traffic falls below this level for three consecutive years.

14.3 per cent, partly due to a transfer of commercial flights from Mirabel Airport. Traffic decreased significantly at the Mirabel Airport, which now predominantly handles cargo flights, and serves as a manufacturing base for Bombardier Aerospace.

Table 2.2 Aircraft Movements at Major Airports in Quebec and Ontario (1997-2007)

	All Itinerant Flights		Domestic movements		International movements			
					Transborder movements		Other international movements	
	Number (2007)	Total Growth (%, 1997-2007)	Number (2007)	Total Growth (%, 1997-2007)	Number (2007)	Total Growth (%, 1997-2007)	Number (2007)	Total Growth (%, 1997-2007)
QUEBEC								
Montréal/Pierre Elliott Trudeau International*	222,871	14.3	127,252	-6	71,769	24	23,850	899
Québec/Jean Lesage International*	88,145	-2.9	80,719	-7	6,266	62	1,160	142
Montréal/St-Hubert	68,052	-29.9	65,803	-31	2,218	40	31	158
St-Jean	30,713	-5.1	30,693	-5	20	-70	0	..
Chicoutimi/St-Honoré	24,720	-6.7	24,717	-7	3	-94	0	..
Montréal/Mirabel International*	20,161	-57.3	17,655	-44	2,438	-56	68	-99
Major airports in Quebec	**454,662**	**-7.0**	**346,839**	**-15**	**82,714**	**20**	**25,109**	**91**
ONTARIO								
Toronto/Lester B Pearson International*	424,699	7.3	191,303	-5	184,140	11	49,256	79
Ottawa/Macdonald-Cartier International*	122,319	-0.2	94,622	-7	25,571	26	2,126	275
Toronto/Buttonville Municipal	81,231	5.4	77,334	6	3,882	1	15	-46
Thunder Bay*	62,156	28.6	60,012	32	2,087	-26	57	2,750
London International*	55,400	-8.8	50,193	-2	5,122	-45	85	240
Toronto/City Centre	47,678	-22.2	45,720	-21	1,957	-37	1	-67
Kitchener/Waterloo	46,836	19.8	41,752	18	4,966	38	118	3,833
Hamilton	44,253	-10.7	36,526	-11	6,444	-26	1,283	3,788
Sudbury	31,280	-12.0	31,018	-12	240	-5	22	..
Oshawa	29,257	-14.2	28,732	-9	522	-78	3	200
Sault Ste. Marie	27,421	-4.6	27,011	-4	408	-41	2	100
Windsor	22,592	-24.0	20,766	-24	1,731	-22	95	428
Major airports in Ontario	**995,122**	**1.3**	**704,989**	**-4**	**237,070**	**6**	**53,063**	**88**
Total, all Canadian airports with NAV Canada Towers	**3,341,310**	**0.8**	**2,721,462**	**-3**	**498,890**	**13**	**120,958**	**75**

Source: Statistics Canada, CANSIM Table 4010029 - Domestic and international itinerant movements, by type of operation, airports with NAV CANADA towers, annually (Number)

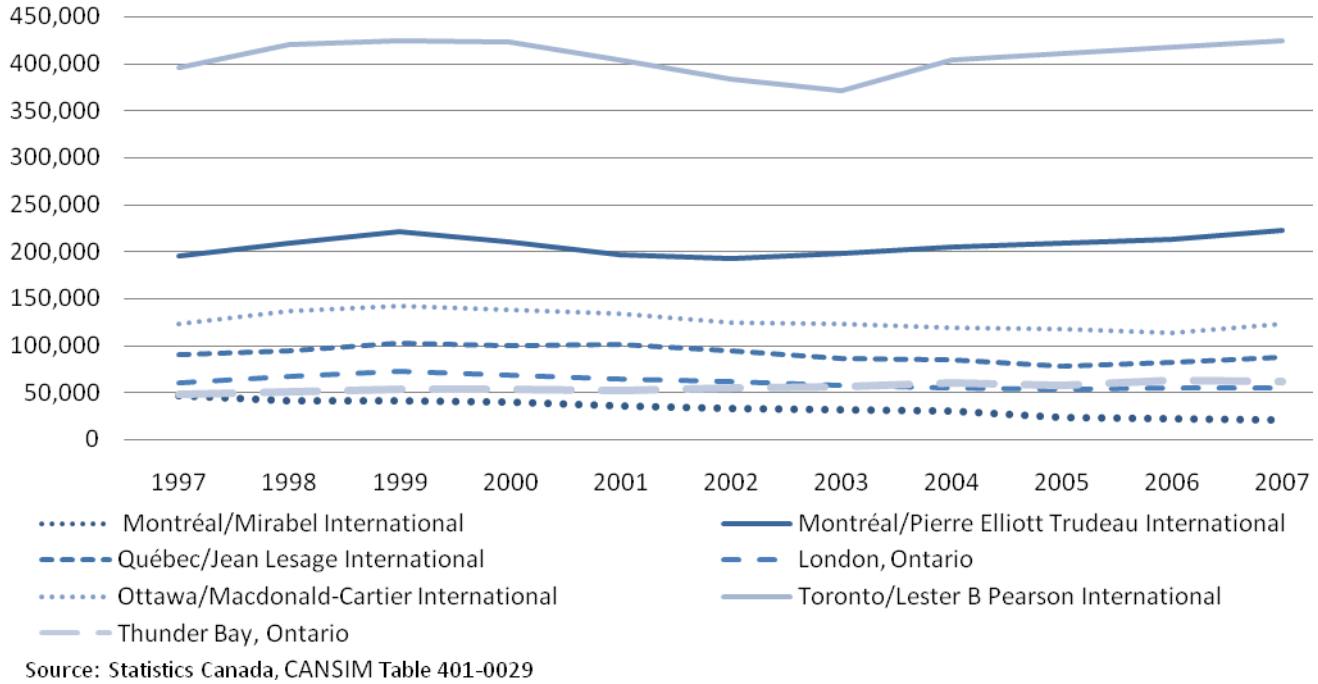
Notes: Itinerant movements: flights from one airport to another. International movements are subclassified into transborder movements (to or from a point in the United States including Alaska but excluding Hawaii) and other international movements (to or from points in countries other than Canada and the United States).

* Airport operated by a Canadian Airport Authority (CAA)

In Ontario, aircraft movements increased at Lester B. Pearson International Airport, at Toronto Buttonville Municipal Airport, at the Thunder Bay Airport and at Kitchener/Waterloo Airport. Aircraft movements at Pierre Elliot Trudeau and Lester B Pearson, the two airports with the highest traffic, decreased in the early 2000s, but have been recovering since (Chart 2.1). The number of domestic aircraft movements decreased at all major airports in Quebec, and most airports in Ontario between 1997 and 2007. The number of transborder flights increased at most airports in the two provinces during this period. The most significant increases in aircraft movements at Quebec and Ontario airports were in the flights to and from international destinations other than the United States.

Canadian airports have not succeeded in capturing their share of the growth in global air cargo. This may in part be attributable to slow growth of passenger air transportation, as more than 80 per cent of global air cargo is said to be carried in passenger airplanes (Burghardt, *et al.* 2007: 23). Although Canadian carriers have increased their cargo capacity in recent years, foreign carrier operations have been limited by restrictive legislation governing both passenger and freight carriers. Recommendations for increasing airport traffic in Canada have included revising bilateral air service agreements to allow a larger number of international carriers to serve Canadian airports, implementing open skies agreements and reducing air carrier ownership restrictions (Burghardt, *et al.* 2007). In 2007, Canada concluded expanded air service agreements with several countries, and entered into air service agreement negotiations with the European Union (Transport Canada, 2007a). On December 10, 2008, Canada signed an open skies agreement with the European Union.

Chart 2.1 Evolution of Itinerant Aircraft Movements at CAA Airports in Ontario and Quebec (1997-2007)



Source: Statistics Canada, CANSIM Table 401-0029

Canadian airports have advocated for policies that would increase air freight traffic through Canada, in addition to conducting a joint marketing campaign to increase their share in global air cargo traffic (Canadian Airports Council, 2008). Initiatives to improve Canada's competitiveness in the air freight transportation sector are underway. The international air cargo transshipment program, introduced at Mirabel Airport in 1982, was subsequently expanded to several other airports in Canada, including Hamilton (1987) , Windsor (1993) in Ontario, and Toronto Pearson airport in 2008 (Transport Canada, 2008b). This program enables foreign carriers to use the airport for the transshipping (shipping to a third country) of international cargo, with the permission of the Canadian Transportation Agency, even if these rights are not included in Canada's bilateral agreements. In addition, Airport Authorities are implementing concrete measures such as lowering cargo landing fees. For example, the Greater Toronto Airports Authority (GTAA) announced that cargo landing fees at Pearson airport, which processes more than 45 per cent of Canada's air cargo, would be reduced by 25 per cent starting January 1, 2009 (Airports Council International, 2008).

The air transportation industry in Canada is facing uncertainty. In recent years, rising fuel have decreased profits. Despite increasing aircraft fuel efficiency, airlines remain significantly vulnerable to the volatility of fuel prices; companies often "use hedging strategies to limit their exposure to volatile energy prices, but these cannot eliminate all the risks" (Conference Board, 2007: 2) and have a cost in themselves.

The appreciation of the Canadian dollar relative to the US dollar has had two effects on the Canadian air transportation industry: on one hand, it reduced tourism and travel to Canada, particularly from the United States; and on the other hand, it lessened the impact of a rise in oil prices, as oil prices are set in US dollars. Moreover, the demand for air travel by US visitors to Canada, which had been slowing down in recent years, is likely to decline further in the next few years, due to the prevailing economic conditions in the United States. It is unlikely that a higher demand from other countries such as China, India and Brazil, which had been partly offsetting the decline in demand from traditional markets in the United States and Europe, will be sustained over the coming years, as these countries are also being affected by the economic downturn. Difficult economic conditions in Canada are likely to reduce Canadians' demand for domestic and international travel. In terms of regulation, the implementation of the Western Hemisphere Travel Initiative (WHTI) in 2007, which requires all air travellers to the United States to have a passport or other secure document in their possession, may have an impact on demand (Conference Board, 2007: 2). Additional open skies agreements would increase competition in the industry, driving prices further down, while also expanding Canadian carrier's international markets.

C. Marine Transportation

This section describes the industries included in the marine transportation Gateway sector, and the contribution of these industries to provincial economic activity and employment. It examines the recent economic performance of these industries and

discusses factors and trends likely to affect their short to medium term performance, with important implications for human resource management and planning.

The marine transportation Gateway sector includes deep sea, coastal and Great Lakes water transportation (NAICS 4831), inland water transportation (NAICS 4832), and support activities for water transportation (NAICS 4883). Deep sea, coastal and Great Lakes water transportation comprises establishments engaged in the transportation of passengers and freight, including establishments operating ocean-ship cruises. In 2006, there were 1,770 workers in the deep sea, coastal and Great Lakes water transportation subsector in Quebec and 1,140 workers in Ontario (Table 3.1). Only 170 workers in Quebec and 245 workers in Ontario were employed in the inland water transportation subsector, which includes transportation within harbours. The support activities for water transportation industry group, which comprises the port and harbour operations industry, the marine cargo handling industry, and the navigational services to shipping industry (including pilotage, moorage and vessel traffic service) employed 4,585 workers in Quebec in 2006, and 1,265 workers in Ontario. In 2006, the scenic and sightseeing water transportation industry (NAICS 4872), which includes sightseeing and dinner cruises (except ocean-ship cruises, included in the deep sea, coastal and Great Lakes water transportation subsector) employed 575 workers in Quebec and 660 workers in Ontario. The marine transportation sector also includes some establishments classified under the freight transportation arrangement industry group (NAICS 4885), which is included in the multimodal/supply chain Gateway sector.

Table 3.1 Marine Transportation Gateway Sector Employment by Industry (2006)

	Quebec			Ontario		
	Number (2006)	Share of total in 2006 (%)	Growth (2001-2006)	Number (2006)	Share of total in 2006 (%)	Growth (2001-2006)
Deep sea, coastal and great lakes water transportation	1,770	24.9	-22.5	1,140	34.4	-13.0
Inland water transportation	170	2.4	-52.8	245	7.4	-10.9
Support activities for water transportation	4,585	64.6	59.8	1,265	38.2	24.0
Scenic and sightseeing transportation, water	575	8.1	53.3	660	19.9	8.2
Water transportation	**7,100**	**100.0**	**20.5**	**3,310**	**100.0**	**3.0**
All industries	**3,929,675**		**7.8**	**6,473,735**		**8.0**
Source: Statistics Canada, Census 2001 and Census 2006						

It is estimated that the Great Lakes/ St. Lawrence Seaway (GLSLS) is responsible for 36,000 direct and indirect jobs in Canada, and 150,000 jobs in the United States (*Canadian Sailings*, 2007:7). The GLSLS is an integral part of the Continental Gateway.[6]

[6] Two initiatives underway in 2007 (at the time of the signing of the Continental Gateway MOU), the St. Lawrence Great Lakes Trade Gateway and the Southern Ontario Gateway Council, were integrated under the Continental Gateway (St. Lawrence Seaway Management Corporation 2008, and Association of Canadian Port Authorities 2008). The GLSLS system is jointly administered by the St. Lawrence Seaway Management Corporation, a Canadian not-for-profit corporation, and its American counterpart, the St. Lawrence Seaway Development Corporation, a federal agency within the U.S. Department of Transportation. The GLSLS system consists of four segments: 1. The Great Lakes waterway, which links

Table 3.2 Traffic by Major Canadian Port on the Great Lakes/St. Lawrence Seaway (2007)

		Inbound				Outbound		
	Port	Shipments	Cargo Tonnes	% of Canadian ports total	Port	Shipments	Cargo Tonnes	% of Canadian ports total
1	Hamilton*	690	10,239,680	19.1	Thunder Bay*	298	585,111	10.9
2	Quebec*	149	3,474,489	6.5	Port Cartier	125	3,267,698	6.1
3	Port Cartier	102	2,412,373	4.5	Sept Iles*	91	2,374,179	4.4
4	Baie Comeau	89	2,265,690	4.2	Quebec*	130	1,685,433	3.1
5	Toronto*	91	1,269,900	2.4	Pointe Noire	58	1,519,432	2.8
6	Montreal*	58	743,326	1.4	Hamilton*	96	1,445,894	2.7
7	Cote Ste Catherine	86	716,262	1.3	Bowmanville	85	110,093	2.1
8	Clarkson	39	691,348	1.3	Goderich	70	1,081,931	2
9	Becancour	36	493,291	0.9	Windsor*	59	968,884	1.8
10	Sarnia	56	486,840	0.9	Sarnia	94	836,445	1.6
	Total	1,396	22,793,199	42.5	Total	1,106	13,875,100	37.5
Source: GLSLS, The St Lawrence Seaway Traffic Report - 2007 Navigation Season								
* Canadian Port Authority								

Under the *Canada Marine Act* of 1998, Canada's major ports are managed by Port Authorities. Five out of the 19 ports managed by Canada Port Authorities are located in the province of Quebec (Montreal, Quebec, Saguenay, Sept-Iles, and Trois-Rivieres) and 5 are in Ontario (Hamilton, Oshawa, Thunder Bay, Toronto, and Windsor). The 10 Canadian Great Lakes and St. Lawrence Seaway ports that handled the most cargo traffic in 2007, handled 42.5 per cent of inbound cargo, and 37.5 per cent of outbound cargo (Table 3.2).

Table 3.3 Vessel Transits on the St Lawrence Seaway (2007)

	Upbound	Downbound	Total Transits	% of Total	Variance % 2006
Loaded Vessels			2,571	57.8	-5.8
Cargo Vessels	1,124	1,395	2,519		
Passengers	27	25	52		
Ballast* Vessels			1,076	24.2	8
Cargo vessels	659	381	1,040		
Passenger	17	19	36		
Non-Cargo Vessels	393	410	803	18	-9.5
Total	2,220	2,230	4,450	100	-3.5
Source: GLSLS, The St Lawrence Seaway Traffic Report - 2007 Navigation Season * Empty vessels are generally required to carry ballast water (fresh, brackish or salt water) to operate safely					

Lakes Superior, Michigan, Huron and Erie, 2. the Welland Canal, linking Lake Erie to Lake Ontario, 3.the Montreal-Lake Ontario segment, and 4. the St. Lawrence ship channel which runs downstream from the Port of Montreal to the Atlantic Ocean (Transport Canada and U.S. Department of Transportation, 2007). The GLSLS comprises more than 50 ports, locks located at 16 different sites, and several bridges, tunnels, and approach roads.

A total of 4,450 vessels (including 3,559 cargo vessels and 88 passenger vessels) transited on the St. Lawrence Seaway in 2007, a 3.5 per cent decrease from 2006 (Table 3.3). The number of vessel transits on the GLSLS increased by 6.3 per cent between 2000 and 2007 (Table 3.4). Up-bound cargo tonnage transiting through GLSLS ports decreased at an average rate of 3.4 per cent during this period, while down-bound traffic increased at an average annual rate of 0.7 per cent. Overall cargo tonnage decreased by 1.1 per cent between 2000 and 2007.

Table 3.4 Growth in Vessel Transits and Cargo Tonnes on the St. Lawrence Seaway (2000-2007)

	Vessel Transits (Number)			Cargo (Million Tonnes)		
	Up-bound	Down-bound	Total	Up-bound	Down-bound	Total
2007	2,220	2,230	4,450	17.8	25.2	43.0
Total Growth 00-07	5.4	7.3	6.3	-21.3	5.2	-7.7
Average Annual 00-07	0.8	1.0	0.9	-3.4	0.7	-1.1
Source: GLSLS, The St Lawrence Seaway Traffic Report - 2007 Navigation Season						

Bulk cargo represented 62.8 per cent of total cargo traffic on the GLSLS in 2007, grains represented 24.2 per cent of cargo traffic, and coal represented 7.3 per cent (Table 3.5). General cargo represented 4.6 per cent of the total, while containerised traffic was 0.1 per cent. The negative growth in cargo tonnage on the GLSLS between 2000 and 2007 is due to an average annual decrease of 3.3 per cent in grain traffic, of 4.5 per cent in coal traffic and of 11.6 per cent in general cargo. The decrease in these three categories was not entirely offset by the 1.7 per cent average annual growth in bulk traffic, despite the large share of bulk cargo in total cargo transiting on the GLSLS.

Table 3.5 Growth in Cargo Traffic on the St. Lawrence Seaway (2000-2007)

		Bulk	Coal	Grains	Containers	General	Other*	Total Tonnes
2007	**Tonnes**	27,016,397	3,159,070	10,405,868	23,377	1,988,841	416,638	43,010,191
	Per cent of total tonnage	62.8	7.3	24.2	0.1	4.6	1.0	100
Total growth (00-07)		12.9	-27.3	-21.2	19.8	-57.7	12.2	-7.7
Average growth (00-07)		1.7	-4.5	-3.3	2.6	-11.6	1.7	-1.1
Source: GLSLS, The St Lawrence Seaway Traffic Report - 2007 Navigation Season								
*** Includes Government Aid and Steel Slabs**								

Although the share of containerised traffic on the GLSLS remains small, the 2.6 per cent average annual growth in this traffic between 2000 and 2007 is nevertheless important. This growth follows the significant global growth in containerised traffic. Global cargo traffic, measured in TEUs[7] increased at an average annual rate of 10.6 per cent between 1995 and 2007. The growth in global containerised traffic, the emergence of large Asian markets and the consequent restructuring of international marine cargo flows provide significant opportunities for the marine transportation subsector of the Ontario-Quebec Continental Gateway. In particular, due to traffic congestion at West Coast ports, shippers are increasingly searching for alternative routes to the North American market (Transport Canada and the U.S Department of Transportation, 2007).

[7] TEUs = 20-foot equivalent units. Source: United States, Transportation Statistics Annual Report 2007.

The international cruise industry on the St. Lawrence experienced significant growth in the number of passengers in recent years. This growth was most impressive at the Port of Quebec, where the annual number of cruise ship passengers increased from 40,000 to 100,000 annually within four years (CSMO-Industrie maritime du Québec, 2007). The federal government has undertaken cost analysis studies to determine required infrastructure investment in regional ports, to increase the number of cruise ship passengers on the St. Lawrence. Such investments would promote regional economic development, provide annual revenues of 200 M$ and create approximately 2,000 jobs (CSMO industrie maritime, 2007). International cruise ships transiting on the St. Lawrence create economic activity, but they generally do not hire local marine labour. Growth in this industry therefore has a limited impact on employment in marine sector occupations in Quebec and Ontario.

Table 3.6 Employment by Ferry Operators in Ontario and Quebec (2001 – 2006)

	2001	2002	2003	2004	2005	2006	Growth (2001-2006)	
							Total	Average
Ontario	313	313	264	264	265	247	-21.1	-4.6
Quebec	726	746	783	784	779	940	29.5	5.3

Notes: Data limited to members of the Canadian Ferry Operators Association (CFOA). Employment data tabulations of Canadian Ferry Operators Association (CFOA) have been revised and amended by Transport Canada to include employment data tabulations available from the Annual Reports of La Société des traversiers du Québec. Figures are likely to underestimate real employment as data was not available for all ferry operators.
Source: Transport Canada, Transportation in Canada: An Overview - Table EC41. Original source: Canadian Ferry Operators Association and La Société des traversiers du Québec

Inland passenger transportation comprises ferry boats and domestic cruises. In Quebec, economic activity in the ferry boat industry, which consists largely of ferries operated by the Société des Traversiers du Québec, has been generally stable, and is expected to remain at this level in the short term (CSMO-Industrie maritime, 2007). The number of workers employed by ferry operators increased at an average rate of 5.3 per cent between 2001 and 2006 (Table 3.6). In Ontario, employment by ferry operators decreased at an average rate of 4.6 per cent during the same period.

Domestic cruises have experienced steady growth, largely due to growth in whale watching cruises (CSMO-Industrie maritime, 2007). Growth in this industry, which largely depends on American tourism, will be slower in the near future, due to worsening economic conditions in the United States. Inland passenger transportation companies largely employ local labour; growth in this industry therefore has a direct impact on marine sector occupations in Quebec and Ontario.

Recent economic events will inevitably have a negative impact on short to medium term growth in the marine transportation industry. Forecasted growth in the Northern Quebec mining sector and in raw material exports could be revised downwards due to a slower Asian demand for these products. A lower Canadian dollar is unlikely to offset the decrease in demand for exports to the United States and overseas. There are already signs of a global slowdown in the shipping industry, which is highly dependent

on credit and therefore directly affected by tightening financial markets and a decline in global demand.

Other factors likely to have an impact on the marine transportation sector include increasing public demand for sustainable economic transportation alternatives. In Europe, this trend has resulted in policies to promote a modal shift from road freight transportation to marine freight transportation (CSMO-Industrie maritime, 2007). The marine industry in Canada has been promoting such policies. In particular, short-sea shipping, which involves transporting goods directly across lakes rather than around them by road, is being considered as an important means of relieving road and railway traffic congestion at the Windsor-Detroit and Niagara Falls border crossings (Transport Canada and the U.S Department of Transportation, 2007). This alternative would require investment in enhanced port facilities and in surface links to ports. However, regulatory obstacles, such as a cost-recovery fee levied by the Canada Border Services Agency for start-up of operations, and the U.S. Harbour Maintenance Fee, as well as a lack of policy coordination between Canada and the United States in this regard, have prevented the expansion of short-sea shipping on the Great Lakes (*Canadian Sailings*, 2007: 28-30). The Government of Quebec, where subsidies are available for companies to assist with start-ups, and the Government of Ontario have been generally supportive of short-sea shipping initiatives. The federal government has also recognised the viability of the short-sea shipping industry, but policy coordination with the United States is required for the industry to reach its potential.

D. Rail Transportation

This section describes the industry structure of the rail transportation Gateway sector, and the sector's contribution to provincial economic activity and employment. It examines employment trends and factors likely to affect the sector's performance in the short to medium term, with implications in terms of human resource management and planning.

The rail transportation Gateway sector includes the following industry groups: rail transportation (NAICS 4821) including short-haul freight rail transportation (NAICS 482112), mainline freight rail transportation (NAICS 482113), and passenger rail transportation (NAICS 482114); and support activities for rail transportation subsector (NAICS 4882). Support activities for rail transportation comprise establishments providing specialised services to the rail transportation industry, including the operation of railway terminals and stations, and the maintenance of railway tracks and structures. A small number of workers are also employed in the scenic and sightseeing transportation on land industry (included in NAICS 4871), which includes steam-train excursions. The rail transportation segment of the urban transit systems sector, such as light rail and subways is included under the road transportation Gateway sector, due to its aggregation with the bus transportation system.

In 2006, the rail transportation industries employed approximately 7,210 workers in Quebec, and 9,535 workers in Ontario (Table 4.1). The support activities for rail

transportation subsector employed 345 workers in Quebec and 1,040 workers in Ontario. Employment in the rail transportation Gateway sector fell by 18.9 per cent in Quebec and by 14 per cent in Ontario between 2001 and 2006.

Canada's transportation industry includes three Class I railways and numerous Class II railways. The Class I railways are two freight carriers, the Canadian National Railways (CN) and the Canadian Pacific Railway Company (CPR), and one passenger transportation carrier, VIA Rail.[8] The Class II railways comprise numerous regional and shortline railways. Freight transportation represents the largest share of operating revenues for Canadian railways. In 2005, freight transportation represented 89 per cent of Canadian railway operating revenues and passenger transportation represented only 3 per cent (Transport Québec, 2008).

Table 4.1 Railway Transportation Gateway Sector Employment by Industry (2006)

	Quebec			Ontario		
	Number (2006)	Share of total in 2006 (%)	Growth (2001-2006)	Number (2006)	Share of total in 2006 (%)	Growth (2001-2006)
Rail transportation	7,210	94.7	-14.9	9,535	89.3	-15.5
Support activities for rail transportation	345	4.5	-51.1	1,040	9.7	42.5
Scenic and sightseeing transportation, land	60	0.8	-71.4	100	0.9	-75.0
Gateway Rail Transportation Sector	7,615	100.0	-18.9	10,675	100.0	-14.0
All industries	**3,929,675**		**7.8**	**6,473,735**		**8.0**
Source: Statistics Canada, Census 2001 and Census 2006						

The two major Canadian Class I freight carriers – the Canadian National (CN) and the Canadian Pacific railway (CPR) – operate on the mainline transportation network in Ontario and Quebec, as well as on some regional or short-haul routes. CSX Transportation, an American Class I carrier, also serves 63 miles of railroad in Ontario, and 49 miles in Quebec (Railway Association of Canada, 2008a). CSX employed 66 Canadian workers in 2006. Norfolk Southern Railway is another American Class I carrier which operates in Ontario.

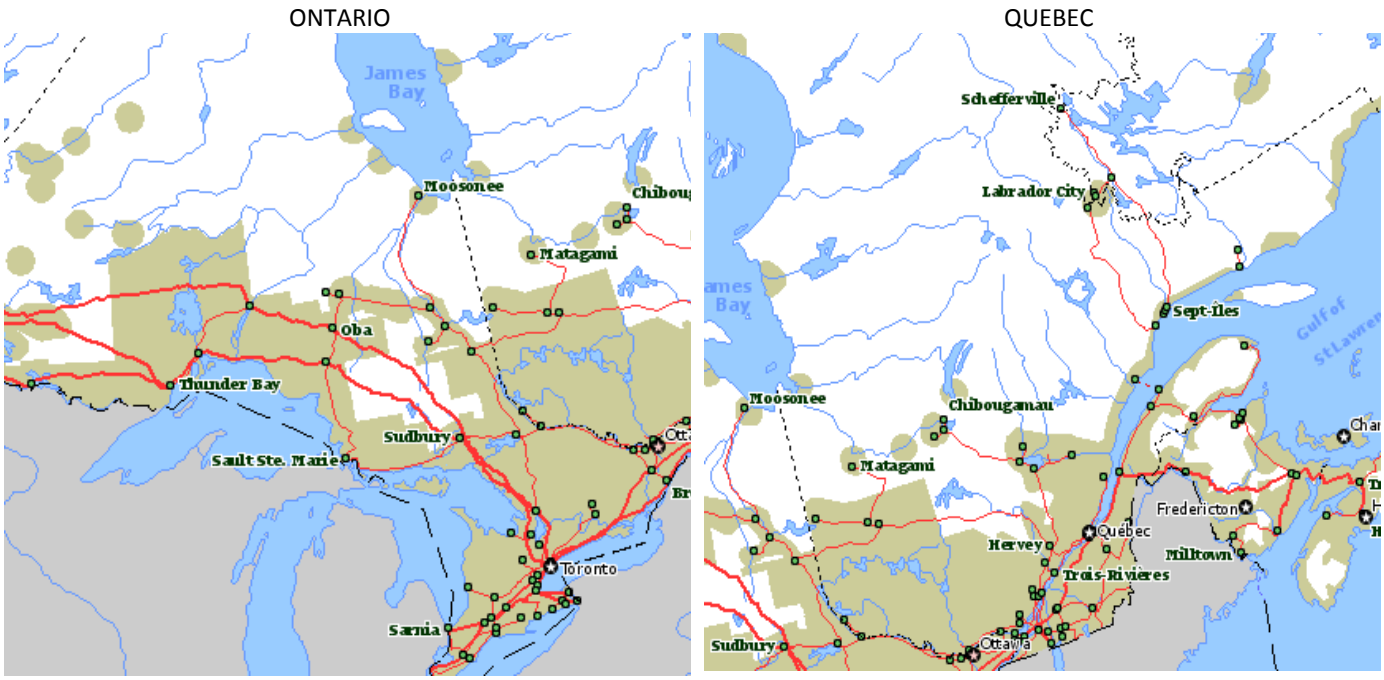
Recent major infrastructure investments by Class I carriers in Ontario and Quebec have included CN's building of a tunnel between Sarnia, Ontario and Port Huron, Michigan, CPR's investment to expand capacity in the Windsor-Detroit tunnel, and the Expressway terminal, which extends the Roll-on/Roll off technology used to move trailers in the Montreal-Toronto-Windsor-Detroit corridor.

Passenger rail transportation in Quebec and Ontario is mainly provided by VIA Rail, a Crown Corporation. The Quebec-City-Windsor Corridor represents 85 per cent of VIA Rail's traffic, and provides 70 per cent of its revenues (Railway Association of

[8] Class I railways are carriers with annual revenues of over $250 million for two consecutive years. Class II railways have annual revenues of less than $250 million. Class III railways operate bridges, tunnels and stations. Source: WESTAC: http://www.westac.com/pdfs/transrail.pdf

Canada, 2008b). VIA Rail has taken initiatives that have increased its activity in recent years. It has launched new products and services, adapted schedules to market demand, simplified tariff structures, and engaged in strategic and intermodal partnerships (Transport Québec, 2008). In 2007, the Canadian government announced $691.9 million in funding for VIA Rail Canada over 5 years. This included $516 million in investment to upgrade the track network infrastructure in the Quebec City-Windsor Corridor, improve stations and facilities, and rebuild locomotives and passenger cars, and $175.9 million to cover the shortfalls exceeding the $169 million operating funding requirement (Transport Canada, 2007a: 12). In the 2009 budget, the federal government provided $407 million of additional funding to VIA Rail for service improvement, including increasing train frequencies, speed and on-time performance, particularly along the Montreal-Ottawa-Toronto corridor. VIA Rail will also use the funds to upgrade locomotives, passenger cars, and stations, including several stations located along the Continental Gateway, namely, Montreal, Toronto, Hamilton, Belleville and Windsor (Department of Finance Canada, 2009: 153-154).

Figure 1 Mainline and Short-haul/Regional in Ontario and Quebec



Source: Natural Resources Canada, Rail Infrastructure Map: http://atlas.nrcan.gc.ca/site/english/maps/economic/transportation/pm_r

The short-haul freight rail transportation industry comprises establishments that operate railways for the transportation of goods to a point on a mainline railway or to a transhipment point onto another mode. Short line railways are important to local economies. However, their sustainability is often threatened by slim margins, significant capital reinvestment requirements and lower traffic volumes (Railway Association of Canada, 2008c). Short line railways also face competition from local and long-haul trucking. These carriers are particularly vulnerable to economic conditions due to their heavy reliance on the transportation of one or two commodities.

In 2007-08, a cost-sharing agreement was signed between the Government of Canada, the province of Quebec and shortline railways for a $75 million rail infrastructure improvement project in Quebec. The project involved investment in nine of Quebec's shortline railways to restore tracks and structures, increase load capacity and add siding which improves the efficiency of the railway system (Transport Canada, 2007a). Two of these nine railways (Chemin de fer de la Matapedia et du Golfe and Ottawa Central Railway), the New Brunswick East Coast Railway, and a ferry operation were acquired by CN from Quebec Railway Corporation (QRC) in November 2008, for $49.8 million. In the 2009 Budget, the federal government announced $7.9 million in funding to two First Nations Railways, including the Tshiuetin Rail Transportation in Quebec and Labrador. The funding will be used to repair and replace tracks, and acquire new locomotives and cars (Department of Finance Canada, 2009: 154).

Table 4.2 Railway Freight Traffic in Quebec and Ontario (2001-2006)

	From Quebec to all Destinations		From Ontario to all destinations		From all origins to Quebec		From all origins to Ontario		All origins to All Destinations	
	Million Tonnes	Share	Million Tonnes	Share	Million Tonnes	Share	Million Tonnes	Share	Million Tonnes	Share
2006	29.8	10.5	37.9	13.4	43.3	15.3	40.0	14.1	282.8	100.0
Total Growth (2001-2006)	6.0	-8.0	9.2	-5.2	8.8	-5.6	6.8	-7.2	15.2	
Average Growth (2001-2006)	1.2	-1.6	1.8	-1.1	1.7	-1.1	1.3	-1.5	2.9	

Source: Statistics Canada CANSIM Table 404-0021 - Rail transportation, origin and destination of commodities, annually (Tonnes)

Railway freight traffic in Quebec and Ontario has increased between 2001 and 2006, but at a slower rate than overall Canadian freight traffic. As a result, Quebec and Ontario's share in total traffic decreased during this period. In 2006, 29.8 million tonnes of freight travelled from Quebec by rail, representing 10.5 per cent of Canadian railway traffic and 37.9 million tonnes were transported by rail from Ontario to all destinations, which represented 13.4 per cent of railway traffic (Table 4.2). Inbound freight traffic totalled 43.3 million tonnes (15.3 per cent of total Canadian traffic) to Quebec and 40.0 million tonnes to Ontario (14.1 per cent of total freight).

Table 4.3 Share (Per cent of Total Value) of Rail Transportation in Canada-US Trade, by Canadian Province and US Region (2006 - 2007)

	United States Region				US Total
	Central	South	North-East	West	
Ontario	21	14	n.a.	33	n.a.
Quebec	21	27	10	n.a.	n.a.
Total Canada	n.a.	n.a.	n.a.	n.a.	17

Source: Transport Canada, adapted from Statistics Canada, International Trade database

Notes: U.S. Central region includes states of Michigan, Ohio, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas. U.S. North-East region includes New England states and states of NewYork, Pennsylvania and New Jersey. U.S. South region includes states from Atlantic to Gulf of Mexico. U.S. West region includes states of New Mexico, Colorado, Arizona, Utah, Nevada, Wyoming, Idaho, Montana and the Pacific states.

In 2006-2007, 17 per cent of the total value of Canada-U.S. trade was transported by rail (Table 4.3). In terms of value, rail transportation represented 33 per cent of trade between Ontario and the United States West region, 21 per cent of trade between Ontario and the Central region of the United States, and 14 per cent of trade between Ontario and the south of the United States. Rail transportation freight represented 27 per cent of Quebec's trade with the South of the U.S., 21 per cent of the province's trade with the Central U.S. region and 10 per cent of Quebec's trade with the North East of the United States.

E. Road Transportation

This section describes the industries included in the road transportation Gateway sector, and the contribution of these industries to the provincial economy in terms of output and employment. It examines the recent economic performance of these industries, and discusses trends and factors likely to affect this performance and have important implications for human resource management and planning.

The road transportation Gateway sector can be subdivided into freight truck transportation and passenger transportation by road. Freight transportation includes both the general freight trucking industry (NAICS 4841) and the specialised freight trucking industry (NAICS 4842). The general freight trucking industry is the largest sub-sector in terms of employment. In 2006, this sub-sector employed 44,760 workers in Quebec and 75,750 workers in Ontario (Table 5.1). Specialized freight trucking employed 18,550 workers in Quebec and 24,825 workers in Ontario. Freight transportation by road (including both general and specialized freight trucking) represented approximately 57 per cent of road transportation sector employment in the two provinces in 2006. Trucking comprises a variety of firms that differ considerably according to size and type of merchandise transported. Smaller size firms tend to be more dependent on a limited number of clients (Comité sectoriel de la main d'oeuvre de l'industrie du transport routier au Québec, 2005: 16).

The trucking industry can also be divided into two sectors: the for-hire sector, which includes companies that transport goods for other companies, and the private carrier sector, which consists of fleets transporting their own companies' products (*e.g.* fleets belonging to breweries or manufacturers). The for-hire carriers dominate the long-haul, international markets. These carriers tend to transport general freight, but sometimes transport specialised freight as well. Private motor carriers tend to dominate the short-haul, local and intraprovincial routes, but sometimes do interprovincial and international routes. These carriers often transport specialised freight, but not exclusively. Private motor carriers may sometimes get involved in the for-hire sector to complement their revenues. An industry representative estimates that private motor carriers represent approximately 60 per cent of trucks on the road in Canada.

Passenger transportation by road includes transit and ground passenger transportation (NAICS 485), such as the charter bus industry (NAICS 4855), urban transit systems (NAICS 4851), interurban and rural bus transportation (NAICS 4852), school

and employee bus transportation (NAICS 4854) and taxi and limousine service (NAICS 4853). Urban transit systems employed 11.3 per cent of the road transportation sector's workforce in Quebec, and 11.2 per cent of the sector's employment in Ontario in 2006; school and employee bus transportation industries employed 11.1 per cent of road transportation workers in each of the two provinces; and taxi and limousine services employed 8.5 per cent of road transportation workers in Quebec and 10.6 per cent in Ontario. The interurban and rural transportation industry employed less than 1 per cent of road transportation workers in the two provinces, with 690 workers in Quebec, and 1,240 workers in Ontario. The charter bus industry employed approximately 1 per cent of road transportation workers, with 1,005 workers in Quebec and 1,725 workers in Ontario. In 2006, 1,050 workers in Quebec and 1,785 workers in Ontario were employed in establishments providing shuttle services to airports and other facilities and special needs transportation services.

Table 5.1 Road Transportation Gateway Sector Employment by Industry (2006)

	Quebec			Ontario		
	Number (2006)	Share of total in 2006 (%)	Growth (2001-2006)	Number (2006)	Share of total in 2006 (%)	Growth (2001-2006)
Freight transportation by road	63,310	57.3	12.4	100,575	57.0	12.2
General Freight Trucking	44,760	40.5	22.9	75,750	42.9	13.1
Specialized Freight Trucking	18,550	16.8	-6.8	24,825	14.1	9.4
Passenger transportation by road	36,830	33.3	9.1	62,700	35.5	18.3
Urban Transit Systems	12,450	11.3	8.1	19,705	11.2	25.9
Interurban and Rural Bus Transportation	690	0.6	-11.5	1,240	0.7	-20.0
Taxi and Limousine Service	9,360	8.5	7.7	18,705	10.6	19.5
School and Employee Bus Transportation	12,270	11.1	11.9	19,550	11.1	11.7
Charter Bus Industry	1,005	0.9	27.2	1,725	1.0	76.9
Other Transit and Ground Passenger Transportation*	1,050	0.9	1.4	1,785	1.0	7.5
Scenic and Sightseeing Transportation, Land	60	0.1	-71.4	100	0.1	-75.0
Support Activities for Road Transportation	6,845	6.2	-16.1	7,700	4.4	14.6
Local Messengers and Local Delivery	3,500	3.2	-0.6	5,430	3.1	30.5
Road Transportation	110,545	100.0	8	176,505	100.0	14.7
All industries	**3,929,675**		**7.8**	**6,473,735**		**8.0**

Source: Statistics Canada, Census 2001 and 2006

* Includes establishments providing shuttle services to airports and other facilities and special needs transportation services

Support activities for road transportation (NAICS 4884) employed 6.2 per cent of road transportation workers in Quebec, and 4.4 per cent in Ontario, in 2007. The local messengers and local delivery industry (NAICS 4922) employed 3.2 per cent of the road transportation workforce in Quebec and 3.1 per cent in Ontario. Finally, less than 1 per cent of road transportation workers were employed in scenic and sightseeing transportation on land (included in NAICS 4871).

Truck transportation is a large contributor to economic activity in Quebec and in Ontario. Preliminary data for 2007 reveals that the GDP of Quebec's trucking industry, measured in chained 2002 dollars, amounted to 3.1 billion dollars or 1.3 per cent of the province's GDP. Ontario's trucking industry had a GDP of 5.1 billion dollars, or 1.0 per cent of the province's GDP. Between 1997 and 2007, the GDP of the truck transportation industry grew at an average annual rate of 4.5 per cent in Quebec, and 3.7 per cent in Ontario (Table 5.2).

Table 5.2 Gross Domestic Product (GDP) at Basic Prices, by Industry Group in Millions of Chained 2002 Dollars (1997-2007)

	All industries	Transportation and warehousing [48-49]	Truck transportation [484]	Transit and ground passenger transportation [485]
Quebec				
2007	245,221	10,390	3,116	1,388
Total growth (1997-2007)	30.7	24.5	55.5	..
Average growth (1997-2007)	2.7	2.2	4.5	..
Ontario				
2007	492,897	18,697	5,103	2,054
Total growth (1997-2007)	39.4	26.0	43.7	..
Average growth (1997-2007)	3.4	2.3	3.7	..
Source: Statistics Canada, CANSIM Table 3790025				

Road transportation carried 59 per cent of Canada's trade with the United States, in terms of value, in 2006-2007 (Table 5.3). A significant portion of the Canada-US trade that is transported by road passes through a border crossing in either Quebec or Ontario. In 2007, 76.2 per cent of total Canada-U.S. trade, in terms of value, passed through the eight busiest border crossing points, located in Ontario and Quebec (Table 5.4).

Table 5.3 Share (Per cent of Total Value) of Road Transportation in Canada-US Trade, by Canadian Province and US Region (2006 - 2007)

	US Total	Central	South	North-East	West
Ontario	-	75	78	84	50
Quebec	-	62	47	74	-
Total Canada	59	-	-	-	-
Source: Transport Canada, adapted from Statistics Canada, International Trade database					
Notes: U.S. Central region includes states of Michigan, Ohio, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas. U.S. North-East region includes New England states and states of New York, Pennsylvania and New Jersey. U.S. South region includes states from Atlantic to Gulf of Mexico. U.S. West region includes states of New Mexico, Colorado, Arizona, Utah, Nevada, Wyoming, Idaho, Montana and the Pacific states.					

The modal share of road transportation in total Canada-US trade is higher for Quebec and Ontario than at the national level. In terms of value, 84 per cent of trade between Ontario and the US North-East, and 74 per cent of trade between Quebec and the US North-East is transported by road. Road transportation represents 78 per cent of Ontario's trade with the South of the United States, 75 per cent of the province's trade with the Central US region and 50 per cent of its trade with the West of the United States.

Some 62 per cent of trade between Quebec and the Central US region, and 47 per cent of the province's trade with the south of the United States is transported by road.

A number of challenges face the trucking sector. A survey of trucking companies in Quebec in 2004 identified tariff competition, the lack of qualified personnel and high fuel costs as the major long term challenges (Camo-Route, 2005a). Other important factors identified were decreasing revenues, high insurance costs and regulatory costs. Stronger regulation at border crossings was a source of concern, mainly due to longer wait times to clear customs, and other associated costs. Above all, however, the major determinants of economic performance in the trucking industry are the strength of the economy and the intensity of trade flows.

Table 5.4 Canada's Road Trade with the United States, by Busiest Border Crossing Points in Ontario and Quebec (2007)

	Exports by Road ($ millions)	Imports by road ($ millions)	Total trade by road ($ millions)	Share in per cent	Cumulative share in per cent
Ontario border crossing points					
Windsor/Ambassador	60,119	57,411	117,530	35.1	35.1
Fort Erie	33,360	14,719	48,079	14.3	49.4
Sarnia	20,373	22,252	42,625	12.7	62.1
Lansdowne	7,778	4,695	12,473	3.7	65.8
Niagara Falls	31	8,320	8,351	2.5	68.3
Quebec border crossings points					
Lacolle	12,778	5,223	18,001	5.4	73.7
Philipsburg	3,545	1,951	5,497	1.6	75.3
Rock Island	2,222	562	2,784	0.8	76.1
Other border crossing points	34,110	45,779	79,888	23.9	100.0
Total Road Trade	174,316	160,912	335,228	100.0	
Source: Transport Canada, adapted from Statistics Canada, International Trade database					
Note: Preliminary data for 2007.					

The economic downturn has already led to a number of trucking company bankruptcies. An industry representative explained that the situation is not as alarming as it may seem due to the cyclical nature of the activity in the sector. Another trucking industry representative explained that the long-term performance of the trucking industry in Canada depends in part on the capacity of Canadian enterprises to develop niche markets in order to compete with emerging markets. In addition, the success of trucking companies in a highly competitive environment hinges on their adoption of state-of-the-art technologies.

The number of people using public transit to commute to work increased by 8.3 per cent in Quebec and by 9.5 per cent in Ontario between 2001 and 2006. The use of public transit as a share of transportation modes to commute to work has decreased by 0.3 per cent in Quebec and increased by 1.5 per cent in Ontario during this period. The use of public transit as a proportion of all transportation modes decreased in the Montreal and Toronto metropolitan areas, but increased in the Quebec City and Ottawa-Gatineau areas. Future trends for the use of public transit depend on various factors, including fuel prices,

and changing customer preferences (e.g. increased concern for environmental sustainability).

Table 5.5 Use of Public Transit Systems to Commute to Work in Ontario and Quebec (2001, 2006)

	2006		2001		Total Growth (2001-2006)	
	Number	% of Total Modes	Number	% of Total Modes	Total Growth in number	Total Growth modal share
Canada	**1,622,725**	**11.0**	**1,406,585**	**10.5**	**15.4**	**5.5**
Quebec	**445,255**	**12.8**	**411,180**	**12.8**	**8.3**	**-0.3**
Québec Metropolitan Area	37,060	10.2	32,000	9.8	15.8	4.1
Montréal Metropolitan Area	367,755	21.4	343,360	21.7	7.1	-1.4
Ontario	**736,060**	**12.9**	**672,305**	**12.7**	**9.5**	**1.5**
Ottawa - Gatineau Metropolitan Area	108,840	19.4	97,320	18.5	11.8	4.9
Toronto Metropolitan Area	540,495	22.2	503,795	22.4	7.3	-0.9

Source: Statistics Canada, Census 2001 and 2006

F. Multimodal Transportation/Supply Chain Sector

This section describes the industries included in the multimodal/supply chain Gateway sector, their contribution to provincial employment, the trends and factors that may have significant implications for human resource management and planning. In addition to the mode-specific Gateway transportation sectors, an important emerging sector in recent years is the supply chain sector. This sector comprises various industries along the logistics chain, from manufacturing to transportation using several modes, and warehousing. In theory, the supply chain sector should include the entire transportation and warehousing sector, in addition to other sectors engaged in goods production. For the purpose of this report, however, the supply chain sector comprises industries and occupations which cannot be classified under a single mode of transportation, such as freight transportation arrangement (NAICS 4885), support activities for transportation not included in other modes (NAICS 4889), and warehousing and storage (NAICS 4931). The freight transportation arrangement industry includes freight forwarders, marine shipping agencies and customs brokers, establishments that may offer a combination of services that span several modes of transportation. Support activities for transportation included in this sector comprise establishments engaged in preparing goods for transportation. The warehousing and storage industry group includes establishments providing storage services and often logistics services as well. In addition, postal services (NAICS 4911) and couriers (NAICS 4921) are included, as their services also often span several modes of transportation.

The transportation and warehousing sector represented 4.2 per cent of Quebec's GDP and 3.8 per cent of Ontario's GDP in 2007. The sector's GDP increased by 24.5 per cent in Quebec and by 26.0 per cent in Ontario between 1997 and 2007. The support

activities for the transportation industry sector (including support activities for all modes) experienced GDP growth of 9.6 per cent in Quebec and 26.2 per cent in Ontario during this period. The warehousing and storage sub-sector experienced GDP growth that is higher than the all-industry level, with a 54 per cent increase between 1997 and 2007. GDP data for the other subsectors was not available from Statistics Canada.

Table 6.1 Gross Domestic Product (GDP) at Basic Prices, by Industry Group in Millions of Chained 2002 Dollars (1997-2007)

	Quebec			Ontario		
	2007	Total growth (1997-2007)	Average growth (1997-2007)	2007	Total growth (1997-2007)	Average growth (1997-2007)
Transportation and warehousing	**10,390**	**24.5**	**2.2**	**18,697**	**26.0**	**2.3**
Freight transportation arrangement	..	..	..	..	..	..
Support activities for transportation	4,194	9.6	0.9	7,097	26.2	2.4
Postal service and couriers and messengers	..	..	..	2,900	..	..
Warehousing and storage	..	..	..	672	54.0	4.4
All industries	**245,221**	**30.7**	**2.7**	**492,897**	**39.4**	**3.4**
Source: Statistics Canada, CANSIM Table 3790025						

Employment in the freight transportation arrangement industry increased by 28.2 per cent in Quebec and by 36.1 per cent in Ontario between 2001 and 2006, reflecting the rising demand for multimodal transportation services (Table 6.2). During this period, employment in the warehousing and storage sector increased by 7.2 per cent in Quebec and by 11.1 per cent in Ontario. In 2006, only 4,685 workers were employed in the warehousing and storage subsector in Quebec, compared to 15,970 workers in Ontario. In 2006, the courier and postal services sector employed 26,540 workers in Quebec, and 52,070 workers in Ontario.

Multi-modal transportation and the integration of different transportation modes are intended to improve the efficiency of the overall transportation system and the flow of merchandise along the supply chain. Improved use of multimodal transportation could lead to an increase in use of some transportation modes at the expense of other modes for certain routes. A trucking industry representative explained that the emphasis on intermodal transportation involving the use of railways instead of trucks would negatively impact Canada's trucking industry and would result in "exporting trucking jobs". He explained that merchandise traditionally transported by truck to the United States would be transported across the border by train, reducing demand for trucking in Canada, while increasing the demand for trucking in the United States (for the local distributing the merchandise arriving by rail). In fact, although the impact of improved multimodal transportation on modal shares is unclear, it is likely to result in some form of market redistribution and as a result, may generate some resistance from companies and industries at risk of losing their market shares.

Table 6.2 Multimodal Transportation/Supply Chain Gateway Sector Employment by Industry Group (2006)

	Quebec		Ontario	
	2007	Total growth (1997-2007)	2007	Total growth (1997-2007)
Freight Transportation Arrangement	7,485	28.2	18,930	36.1
Support Activities for Transportation*	615	-22.6	1,535	-12.0
Postal Service	17,455	4.2	30,260	5.5
Couriers	9,085	9.5	21,810	-2.7
Warehousing and Storage	4,685	7.2	15,970	11.1
Source: Statistics Canada, Labour Force survey, Unpublished data				
*** Includes employment in support activities for transportation not classified under a specific transportation mode.**				

G. Border and Transportation Security

The border security Gateway sector comprises establishments, mainly of the federal government, which are engaged in ensuring a safe and efficient flow of people and merchandise across Canada's international borders. Border security is a subset of the federal protective services industry sector (NAICS 9112). Border security workers may also be employed in investigation and security services (NAICS 5616), as well as in the transportation sector. Canadian Border Security Agency (CBSA) and Transport Canada publications and representatives represent the major sources of data for this sector.

In 2008, CBSA employed approximately 14,500 employees across Canada. The Agency is highly decentralised, with 25 per cent of workers at the National Headquarters in Ottawa, and 75 per cent in points of service across the country.

In the 2009 Budget, the federal government allocated funding of $44 million over five years to Transport Canada for rail safety initiatives to improve its regulatory oversight and enforcement capacity, and is investing $28 million over five years to enhance the Grade Crossing Improvement Program.

III. Gateway Sectors Human Resource Situation

For the purpose of this report, 75 occupation groups at the 4-digit level of the National Occupational Classification systems (NOC and NOC-S)[9] were determined to be directly relevant to the construction or maintenance of the Continental Gateway infrastructure, or to the activities affected by the development of the Gateway, namely the transportation of goods and people. Specifically, 36 occupations or occupation groups were included in the Gateway construction sector, 37 in the Gateway transportation sector, which comprises the transportation of freight and passengers (including five occupations in air transportation, eight occupations in each of the marine and rail transportation subsectors, seven occupation groups in road transportation, nine in the multimodal/supply chain sector) and two occupation groups in the border security sector. Workers in these sectors represented approximately 13 to 14 per cent of the labour force with employment income in Quebec and Ontario in 2005 (Table 7.1).

Table 7.1 Labour Force with Employment Income* for Continental Gateway Occupations in Quebec and Ontario (2006)

	Number of Occupation Groups (4-digit NOC)	Quebec	Ontario
Construction	**36**	**221,030**	**350,565**
Passenger and Freight Transportation	**37**	**302,270**	**477,460**
Air Transportation	5	11,960	15,575
Marine Transportation	8	3,885	2,685
Rail Transportation	8	5,990	9,700
Road Transportation	7	168,725	256,680
All modes/ supply chain	9	111,710	192,820
Border Security (overestimated)	**2**	**34,800**	**49,720**
Gateway Occupations	**75**	**551,915**	**866,470**
All Occupations	**520**	**4,022,480**	**6,623,700**
Gateway Occupations Share of Total (%)	**14.4**	**13.9**	**13.3**

Source: Census 2006, Statistics Canada, Catalogue Number 97-559-XCB2006062
* 'Employment income' refers to total income received by persons 15 years of age and over during calendar year 2005 as wages and salaries, net income from a non-farm unincorporated business and/or professional practice, and/or net farm self-employment income.

The 75 Gateway occupations, described in Appendix 2, are listed under six categories according to the type of work involved. These categories are: management and administration; technical occupations; contractors and supervisors; trades people; equipment operators; and general labourers. This classification is particularly useful for the Gateway construction sector due to the large number of occupation groups included.

[9] The National Occupational Classification for Statistics (NOC-S) is Statistics Canada's occupational classification. The National Occupational Classification (NOC) is developed by the Department of Human Resources and Skills Development Canada. The two classifications differ only in the aggregation structure of the classification.

A. Construction

This section describes the occupations involved in the Gateway construction sector, provides an overview of the current human resource situation for these occupations, and an outlook for the next five years, based on current shortages and projected needs. It outlines the main labour market pressures in the sector and identifies trends by examining a range of indicators including unemployment and workforce characteristics such as educational attainment. The sector's capacity to manage these pressures – notably through their training and apprenticeship programs and ability to recruit new workers – is also discussed.

1. Employment Trends

Construction sector employment estimates for Quebec and Ontario vary depending on the data source. Service Canada data was available for Quebec only. Construction Sector Council (CSC) data, available for both provinces, covers a subset of Gateway construction sector occupations, including trades and construction labourers, but excluding important occupations such as construction estimators and civil engineers. Furthermore, CSC figures only include workers employed in the construction sector, and exclude construction workers employed in other industry sectors. As a result, CSC employment figures are lower than the Service Canada figures. Service Canada data indicate an average[10] of 200,000 workers employed in the 36 Gateway construction sector occupations between 2005 and 2007 in Quebec. CSC data cover 18 Gateway construction occupations representing roughly 80,000 employees (Table 8.1). The main difference in employment data between the two sources is attributable to the trades group.

Table 8.1 Gateway Construction Sector Employment by Occupational Group (2005-2007)

	Quebec				Ontario	
	Service Canada (2005-2007 avg.)	Share (%)	CSC (2007)	Share (%)	CSC (2007)	Share (%)
Contractors and Supervisors	31,100	15.31	14,279	17.73	29,615	17.39
Equipment Operators	18,150	8.93	11,388	14.14	15,538	9.12
Labourers	15,950	7.85	16,659	20.69	43,050	25.28
Management and Administration	10,150	5.00	9,609	11.93	23,215	13.63
Technical	12,700	6.25	-	-	-	-
Trades	115,150	56.67	28,601	35.51	58,904	34.58
Total Gateway Construction	**203,200**	**100.00**	**80,536**	**100.00**	**170,321**	**100.00**
Total Construction (CSC)	**-**	**-**	**144,017**	**55.92**	**283,063**	**60.17**
Total All Industries	**3,778,150**	**-**	**-**	**-**	**-**	**-**
Source: Service Canada and CSC (2007)						

Unemployment levels provide indications as to how well a particular occupational group will be able to withstand an increase in labour demand. Very low levels of unemployment suggest that there are few excess workers who can fill vacant positions

[10] A three year average was used due to the high variability of employment data in smaller occupations. A three year average could reduce the margin of error for the smaller occupation groups, but any trends which occurred during the three year period will be lost.

should the need arise. Conversely, high levels of unemployment suggest that there are more workers than available positions, in which case an increase in demand would cause little strain on the labour market. In Quebec, the construction sector's unemployment rate was 11.4 per cent or 4.2 percentage points higher than the all-industry rate in 2007 (Table 8.2). In Ontario, the construction sector unemployment rate was 9.1, which is 3.7 percentage points higher than the 2007 provincial rate. These high rates of unemployment can be at least partially explained by the seasonal nature of the construction industry. Unemployment rates for the Gateway construction sector (10.4 per cent in Quebec and 9.1 per cent in Ontario) are quite similar to the overall construction sector. As projected by the CSC, labour force growth is expected to outpace employment growth between 2007 and 2012, resulting in rising unemployment and a limited risk of labour shortages.

In 2007, construction managers had the lowest unemployment rate among Gateway construction occupations. The unemployment rate for construction managers was 7.3 per cent in Quebec and 4.6 per cent in Ontario. Contractors and supervisors also had low unemployment relative to other Gateway construction sector occupational groups: 7.3 per cent in Quebec and 4.6 per cent in Ontario. General labourers had the highest rates of unemployment in 2007, with 12.7 per cent in Ontario and 11.9 per cent in Ontario. In all occupational categories with the exception of trades, unemployment is projected to rise between 2007 and 2012.

Table 8.2 Gateway Construction Sector Unemployment (2007-2012)

	Unemployment Rate in 2007 (%)		Projected Unemployment Rate in 2012 (%)		Percentage Point Change (2007-2012)		Quebec-Ontario Unemployment Gap (Percentage Points)	
	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario	2007	2012
	A	B	C	D	C-A=E	D-B=F	A-B=G	D-C=G
Gateway Construction Sector	**10.4**	**8.7**	**12.5**	**9.5**	**2.1**	**0.9**	**1.7**	**2.9**
Contractors and supervisors	7.3	4.6	9.7	5.7	2.4	1.1	2.7	4.0
Equipment operators	8.5	9.5	14.8	11.8	6.3	2.3	-1.0	3.0
Labourers	12.7	11.9	15.2	12.8	2.5	1.0	0.8	2.3
Construction managers	7.2	4.6	9.5	5.9	2.3	1.3	2.6	3.6
Trades	12.2	9.7	12.2	9.7	0.0	0.0	2.5	2.5
Total Construction (CSC)	**11.4**	**9.1**	**12.3**	**9.6**	**0.9**	**0.6**	**2.3**	**2.7**
All Industries	**7.2**	**6.4**	-	-	-	-	**0.8**	-
Source: CSC (2007), CANSIM series v2171281 and v2171497								

Service Canada data does not provide unemployment figures, but rather the number of employment insurance (EI) claimants for each occupation. In general, the ratio of EI claimants to total workers[11] in the Gateway construction sector is higher than in the all-occupations average. In Quebec, approximately 3.7 per cent of all workers were on EI in

[11] This measure should not be confused with a direct measure of unemployment. This figure compares 2007 data EI claimants to the average number of employed between 2005 and 2007. Not all persons who are unemployed are eligible for employment insurance. Furthermore, this figure, used as an indicator of available worker supply, has limitations, as the available labour supply depends on several factors, including the number of graduates from training programs and the availability of workers.

2006 (Table 8.3). Conversely, over 9 per cent of the Gateway construction sector workers were on employment insurance.

Within the construction sector, there were stark differences between occupational groups. Management and administration and technical occupations had lower than average EI claimant shares, with 1.5 per cent and 1.8 per cent respectively. Contractors and supervisors also had slightly lower shares of EI claimants. All other occupation groups in the construction sector had an above average number of EI claimants. In 2007, 8,900 general labourers, or 35 per cent of the workforce, were on EI on average between 2005 and 2007. Data from the CSC and from Service Canada reveal a relatively low supply of excess workers in skilled positions including construction managers, technical occupations and some skilled trade, and higher reserves of workers in low skilled occupations such as general labour.

Table 8.3 Gateway Construction Sector Employment Insurance Recipients in Quebec (2005-2007)

	Average Employment 2005-2007	Employment Insurance Recipients (2006 monthly average)	Workers on Employment Insurance as Share of Total Workers (%)
Gateway Construction Sector	203,200	20,765	9.3
Contractors and supervisors	31,100	905	2.8
Equipment operators	18,150	2,700	13.0
Labourers	15,950	8,900	35.8
Management and administration	10,150	150	1.5
Technical	12,700	230	1. 8
Civil engineers	7,700	70	0.9
Trades	115,150	7,880	6.4
Power system electricians	1,400	35	2.4
Electrical mechanics	5,300	100	1.9
All Occupations	3,778,150	145,150	3.8

Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region

2. Short Term Labour Market Outlook

In the last quarter of 2008, construction industry concerns about potential labour shortages in certain occupations subsided, as activity in the residential construction sector came to a halt. Industrial construction, particularly around manufacturing in Ontario, also suffered greatly from the economic downturn. In Windsor, Hamilton and St. Catherine, construction sector unemployment is expected to increase during the next six months and to spread across the province. Infrastructure spending will help keep construction workers employed, but as industry representatives have pointed out, a very large scale of investment is required for an impact to be felt.

Before the economic downturn, neither the CSC nor Service Canada forecasted a significant shortage or surplus of labour over the short term for most occupations in the

Gateway construction sector. Service Canada assigns each occupation's labour market conditions a ranking from the job seeker's perspective. Between 2008 and 2012, 11 of the 36 Gateway construction occupations in Quebec had a good labour market outlook, meaning that prospective employees would have little trouble finding work, 21 occupations had a fair outlook, only three have a limited outlook, and one had an indeterminate outlook due to lack of data (Table 8.4).

Table 8.4a Short Term Labour Market Forecasts for the Gateway Construction Sector in Quebec (2008-2012)

	Employed (2005-2007 average)	Annual Requirement Attributable to Growth (2008-2012)	Annual Requirement Attributable to Attrition (2008-2012)	Total Annual Requirement (2008-2012)	Total Annual Requirement as share of 2005-2007 average employment (%)	Outlook 2008-2012*
	A	B	C	(B+C) = D	D/A*100 =E	F
Management and administration	**10,150**	**100**	**350**	**450**	**4.4**	
Construction Managers	10,150	100	350	450	**4.4**	Good
Contractors and supervisors	**31,100**	**-225**	**1,340**	**1,115**	**3.6**	
Contractors and Supervisors - Metal Forming, Shaping and Erecting	1,900	-10	70	60	**3.2**	Fair
Contractors and Supervisors, Electrical Trades and Telecomm.	4,900	-25	200	175	**3.6**	Fair
Contractors and Supervisors, Heavy Construction Equipment Crews	4,650	-150	200	50	**1.1**	Fair
Contractors and Supervisors, Mechanic Trades	10,850	45	450	495	**4.6**	Good
Contractors and Supervisors, Other Const., Install., Repair. and Serv.	6,650	-70	300	230	**3.5**	Good
Contractors and Supervisors, Pipefitting Trades	1,550	-15	100	85	**5.5**	Good
Supervisors, Machinists and Related Occ.	600	0	20	20	**3.3**	Fair
Technical Occupations	**12,700**	**220**	**550**	**770**	**6.1**	
Civil Engineers	7,700	150	300	450	**5.8**	Good
Construction Estimators	2,450	35	150	185	**7.6**	Good
Construction Inspectors	2,550	35	100	135	**5.3**	Good
Equipment operators	**18,150**	**185**	**590**	**775**	**4.3**	
Crane Operators	2,550	30	80	110	**4.3**	Fair
Drillers and Blasters - Surface Mining, Quarrying and Construction	250	5	10	15	**6.0**	Fair
Heavy Equipment Operators Except Crane	15,350	150	500	650	**4.2**	Fair

Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region

***Describes the possibility of finding employment, based on labour supply and demand variables, including employment growth, attrition, the number of Employment Insurance claimants, and economic forecasts.**

Table 8.4b Short Term Labour Market Forecasts for Gateway Construction Sector in Quebec – Continued (2008-2012)

	Employed (2005-2007 average)	Annual Requirement Attributable to Growth (2008-2012)	Annual Requirement Attributable to Attrition (2008-2012)	Total Annual Requirement (2008-2012)	Total Annual Requirement as share of 2005-2007 average employment (%)	Outlook 2008-2012*
	A	B	C	(B+C) = D	D/A*100 =E	F
Trades	**115,150**	**515**	**3,715**	**4,230**	**3.7**	
Boilermakers	150	5	0	5	**3.3**	Indeterminate
Bricklayers	3,850	-10	70	60	**1.6**	Limited
Concrete Finishers	1,400	25	25	50	**3.6**	Fair
Construction Millwrights and Industrial Mechanics Except Textile	20,150	-150	700	550	**2.7**	Fair
Electrical Mechanics	5,300	150	100	250	**4.7**	Good
Electrical Power Line and Cable Workers	2,600	-25	100	75	**2.9**	Fair
Electricians Except Industrial and Power System	11,350	80	700	780	**6.9**	Fair
Elevator Constructors and Mechanics	1,400	25	45	70	**5.0**	Good
Gas Fitters	950	10	10	20	**2.1**	Fair
Heavy-Duty Equipment Mechanics	11,900	200	450	650	**5.5**	Good
Industrial Electricians	5,050	-80	250	170	**3.4**	Fair
Insulators	900	10	15	25	**2.8**	Fair
Ironworkers	1,950	20	40	60	**3.1**	Fair
Machine Fitters	350	5	10	15	**4.3**	Fair
Machinists and Machining and Tooling Inspectors	16,450	150	400	550	**3.3**	Fair
Power System Electricians	1,400	25	50	75	**5.4**	Good
Sheet Metal Workers	3,600	60	80	140	**3.9**	Fair
Stationary Engineers and Auxiliary Equipment Operators	4,650	-200	200	0	**0.0**	Fair
Structural Metal and Platework Fabricators and Fitters	1,200	15	20	35	**2.9**	Fair
Welders and Related Machine Operators	20,550	200	450	650	**3.2**	Fair
Labourers	**15,950**	**-95**	**215**	**120**	**0.8**	
Construction trades helpers and labourers	14,350	-80	200	120	**0.8**	Limited
Other trades helpers and labourers	1,600	-15	15	0	**0.0**	Limited
All occupations	**3,778,150**	**41,550**	**108,800**	**150,350**	**4.0**	

Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region

*Describes the possibility of finding employment, based on labour supply and demand variables, including employment growth, attrition, the number of Employment Insurance claimants, and economic forecasts.

Occupations with a good rating are of particular interest as they are more susceptible to labour shortages should labour demand suddenly increase. Most prominent among the occupations with a good rating are construction managers, technical workers (civil engineers, construction estimators and construction inspectors) and some skilled trades (such as electrical mechanics). These occupations were highlighted by industry representatives from both Ontario and Quebec interviewed as occupations facing potential shortages. In particular, consulting companies have faced shortages of highway and transportation systems planning specialists and civil engineers. Construction companies' capacity gaps attributable to these shortages have resulted in project delays and cancellations.

A trend toward an excess supply of low skilled workers and a potential shortage of high skilled workers is evident in the labour projections prepared by Service Canada, Quebec Region (Table 8.4). Service Canada projects that in each year from 2008 to 2012, in Quebec, 6,760 jobs will become available due to attrition (retirement and death) and 700 jobs will become available due to increased demand in the Gateway construction sector. As a share of 2005-2007 average employment, the number of new employees required in the construction sector is close to the share required in the economy as a whole (slightly under 20 per cent). Construction managers, technical occupations, and equipment operators are all expected to have an above average demand for new workers. In 2008-2012, there is a projected average annual need for 450 new employees (4.4 per cent of 2005-2007 average employment) in management and administrative occupations, 770 new employees in technical occupations (6.1 per cent of 2005-2007 average employment) and 775 new equipment operators (4.3 per cent of 2005-2007 average employment). Contractors, supervisors and trades people are expected to have slightly lower average annual requirements for new employees (approximately 3.6 per cent), while virtually no new general labourers will be required (0.8 per cent). At a more disaggregated level, technical occupations are of particular interest. Over the next five years, Quebec will require an annual average of 450 new civil engineers, 185 new construction estimators, and 135 new construction inspectors, and a significant number of new electricians.

The CSC labour market outlook assigns each occupation a ranking of 1 through 5, with a higher ranking indicating high labour demand relative to labour supply. In Quebec, the vast majority of occupations were projected to have a ranking of 3 in 2012, indicating a balanced labour market. Construction managers were the only exception. The construction manager occupation had a ranking of 4, indicating higher demand than supply. The technical occupations identified as having high demand relative to supply in the Service Canada data, were not covered in the CSC outlook. In addition, the CSC data aggregates some skilled trades, such that the outlook provided for these occupations is not directly comparable to the Service Canada outlook.

In Ontario, the CSC projected that all construction sector occupations would have a balanced labour market in 2012. Many skilled trades, however, were expected to have periods of low labour demand relative to labour supply between 2008 and 2012. This labour market outlook was based on several different criteria including labour force age structure, retirement demand, new entrants, education, unemployment and projected

demand. The potential shortages at the managerial and supervisory levels identified in the data, were confirmed by industry representatives. Although not clearly reflected in the data, potential shortages exist at every level in the sector, according to an industry representative. A possible explanation is that although there are few shortages in terms of persons, there are shortages of skills or qualified workers.

Labour demand for construction workers in Ontario and Quebec is expected to be largely driven by infrastructure projects. Governments are planning to accelerate infrastructure projects in order to provide stimulus to the economy. Although the resulting increase in labour demand may not be sustained, it could nevertheless result in shortages that could be at least partly offset by an inflow of workers from other sectors.

As a result of the economic downturn, a decline in employment in manufacturing, and particularly in the automotive sector, could provide an additional source of labour for the construction sector. Some manufacturing workers have transferable skills and may be able to find employment in construction, although significant retraining might be required. Moreover, there are important limits to labour mobility across sectors, and even across trades within the construction sector. An industry representative from Ontario explained that the transferability of skills (skill cross-over) between different trades with compulsory certification is very limited as these trades involved defined and specific tasks. Skill cross-over occurs in the sector, when, for instance, single trade employers bid on projects that require additional trades and attempt to complete the work themselves. Skill cross-over between non-compulsory certification trades is generally higher, but varies by trade. For instance, cross-over is limited between ironworkers and carpenters, but more likely between carpenters and construction labourers.

The data presented in this section pre-dates the recent economic downturn. Since mid 2008, housing start-ups have slowed and existing projects have been put on hold. The slowdown in the residential construction sector will lead to a decline in labour demand. In non-residential construction and particularly in the transportation infrastructure sector, but also in social infrastructure, planned investments are expected to proceed. Barring an excessive increase in demand due to new infrastructure projects, the Gateway construction sector should not face major recruitment difficulties in the short-term, due to economic conditions (a recession in Canada and a high unemployment rate).

4. Retirement and Attrition

A large number of retirements are expected in construction. In particular, interviewees reported a large number of pending retirements at the management and supervisory levels. In terms of age structure, the Gateway construction sector is quite similar to the aggregate construction sector. In 2007, the average worker in both the aggregate construction sector and the Gateway construction sector was 42 years old in Quebec, and 40 years old in Ontario (Table 8.5). Within the Gateway construction sector, average age varies between 39 years, among general labourers, and 45 years among both contractors and management and administration occupations. Unsurprisingly, the occupations with the highest average age also have the highest retirement as a share of

employment in both Ontario and Quebec. In Quebec, 16.9 per cent of contractors and supervisors and 15.8 per cent of the management and administration employees are expected to retire between 2008 and 2012, compared to 13.6 per cent of all construction workers.

Table 8.5 Workforce Age Structure and Expected Retirement (2006 – 2012)

	Average Age (2006)		Total Retirement Demand (2008-2012)		Retirement as Share of 2007 Employment (%)	
	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario
Total Construction (CSC)	42.0	40.0	19,589	26,460	13.60	9.35
Total Gateway Construction	42.1	40.2	11,346	19,225	14.09	11.29
Contractors and supervisors	45.0	43.0	2,419	3,735	16.94	12.61
Equipment operators	44.1	42.9	1,863	2,175	16.36	14.00
Labourers	39.0	35.0	1,893	3,361	11.36	7.81
Construction managers	45.0	45.0	1,520	3,302	15.82	14.22
Trades	40.9	40.2	3,651	6,652	12.77	11.29
Source: Construction Sector Council (2007)						

Service Canada, Quebec Region analysis also points to high average age and high levels of attrition[12] among both the contractors and supervisors, and management and administration occupational groups (Table 8.6). Additionally, Service Canada data projects high attrition in technical occupations. In Quebec, 16.6 per cent of Gateway construction sector workers are projected to exit the labour force from 2008 to 2012. The percentage of technical workers and contractors and supervisors who are expected to retire between 2008 and 2012 years (21.7 and 21.5 per cent respectively) is higher than the all-industry average. Construction managers are also expected to experience higher than average attrition with 17.2 per cent retiring between 2008 and 2012. Not surprisingly, the average age of workforce in these occupational groups is higher. The share of workers between the ages of 45 and 65, and over 65 in the three Gateway construction sector occupational groups with the highest retirement surpassed the all-occupations average in 2006. While only 40.8 per cent of the total labour force was over 44 in 2006, 49.5 per cent of contractors and supervisors, 49.6 per cent of the construction managers and 44.9 of workers in technical occupations were over 45 years or older. In Quebec, a large proportion of equipment operators (51.6 per cent) were above 44 years old. In this occupational group, 16.3 per cent of workers are expected to retire between 2008 and 2012.

The Gateway construction sector workforce in Ontario had a similar age structure. In Ontario, 48.1 per cent of construction managers, 47.9 per cent of contractors and supervisors, 48.3 per cent of workers in technical occupations and 47.3 per cent of equipment operators were 45 years or older in 2006.

The two data sources indicate that the Gateway construction sector has a similar age structure to both the aggregate construction sector and the overall economy. The CSC data indicated high levels of retirement for construction managers and contractors and

[12] Attrition includes both those who retire from the labour force in the area and deaths.

supervisors between 2008 and 2012. Service Canada data corroborate the CSC's conclusions for Quebec. Additionally, Service Canada data reveals that workers in technical occupations are expected to retire at a 50 per cent higher rate than the all-industry average. Some representatives interviewed pointed out that the high levels of turnover expected due to demographics could be delayed for five years due to the economic downturn.

Table 8.6 Gateway Construction Sector by Occupation and Age Groups (2006)

	15-24 years (%)		25-44 years (%)		45-64 years (%)		65 years and over (%)		Annual Attrition (2008-2012)	Total Workers Exiting the Labour Force as Share of 2005-2007 Average Employment
	QC	ON	QC	ON	QC	ON	QC	ON	QC	QC
	A		B		C		D		E	(E*5)/labour force = F
Gateway Construction Sector	9.4	12.1	47.1	45.4	41.9	40.4	1.6	2.2	6,760	16.6
Construction managers	4.1	3.6	46.3	48.3	46.9	44.8	2.7	3.3	350	17.2
Contractors and supervisors	3.3	4.7	47.2	47.3	47.5	45.2	2.0	2.7	1,340	21.5
Technical occupations	3.6	4.6	51.5	47.1	41.8	44.3	3.1	4.0	550	21.7
Trades	10.6	9.3	48.3	45.9	39.9	43.0	1.2	1.8	3,715	16.1
Equipment operators	7.2	8.0	41.1	44.6	49.7	44.3	1.9	3.0	590	16.3
Labourers	23.5	31.0	42.5	41.4	33.1	26.2	1.0	1.4	215	6.7
All Occupations	14.1	15.7	45.1	45.1	38.8	36.6	2.0	2.6	108,800	14.4

Source: Statistics Canada, Census 2006 and Service Canada, Quebec Region, Socio-Economic Analysis and Evaluation Directorate

5. Skills, Training and Apprenticeship

High educational requirements make it difficult to alleviate labour shortages in the short term, due to the time and resources required to train and recruit new employees. Conversely, because workers from other sectors and workers new to the labour force can more easily fill employment gaps in low skill occupations, it may be possible to alleviate a shortage of low skilled workers - even in the short term – simply by increasing wages.

In 2006, 62.9 per cent of Gateway construction sector workers in Quebec and 51.0 per cent of the sector's workers in Ontario had a post-secondary diploma, including apprenticeships or trades certificate or diploma; college, CEGEP or other non-university certificat or diploma; and university certificate or diploma below bachelor level (Table 8.7). A small proportion of Gateway construction sector workers (6.6 per cent in Quebec and 8.6 per cent in Ontario) held at least a bachelor's degree. In fact, the majority of construction occupations require certification, but not a university degree. Several occupations within the Gateway construction sector have exceptionally high educational attainment, however, such as civil engineering, which requires extensive training. Following the completion of a

four-year university degree in engineering, prospective engineers must spend three to four years accumulating practical engineering experience and pass the professional practice exam administered by provincial engineering associations to earn the professional engineer designation required by law. In some cases, engineers earn their professional designation without having a university degree, provided they pass the exams administered by the provincial engineering associations. A very high proportion of civil engineers (89.0 per cent in Quebec and 75.2 per cent in Ontario) held at least a bachelor's degree in 2006.

Table 8.7 Educational Attainment for Gateway Construction Sector Occupations (2006)

	Less than high-school (%)		High-school (%)		Post-secondary (%) – CEGEP or Vocational School		Bachelor's or higher (%)	
	QC	ON	QC	ON	QC	ON	QC	ON
Construction Managers	9.7	13.1	17.1	23.9	52.6	44.0	20.5	19.0
Contractors and Supervisors	15.6	16.2	19.9	25.6	60.3	52.3	4.2	5.9
Technical	2.0	2.8	6.8	10.4	30.6	34.7	60.5	52.0
Civil Engineers	0.2	1.5	1.2	4.0	9.7	19.3	89.0	75.2
Construction Estimators	4.5	3.6	17.5	19.5	61.5	54.0	16.5	22.8
Construction Inspectors	5.3	5.6	13.8	19.3	64.2	58.9	16.7	16.3
Trades	12.4	11.5	11.8	17.5	74.3	66.4	1.5	4.6
Power System Electricians	1.9	0.0	8.4	5.6	86.7	89.1	3.0	4.9
Industrial Electricians	2.8	1.1	5.3	4.4	88.4	84.5	3.5	9.9
Other Electricians	2.9	2.2	5.7	13.6	90.1	78.9	1.3	5.3
Equipment Operators	32.9	30.7	20.6	31.0	45.8	36.9	0.8	1.3
Labourers	36.7	34.5	24.1	39.4	36.9	22.3	2.4	3.8
Gateway Construction Sector	**15.8**	**17.1**	**14.7**	**23.3**	**62.9**	**51.0**	**6.6**	**8.6**
All Occupations	14.1		21.9		43.1		20.9	

Source: Statistics Canada, Census 2006

Other technical occupations tend to have high educational requirements as well. Nearly 80 per cent of both construction estimators and construction inspectors in Ontario and Quebec had a post-secondary education, including over 16 per cent who held at least a bachelor's degree. The construction estimator occupation is unregulated in Canada although a voluntary certification program is administered by the Canadian Institute of Quantity Surveyors (CIQS).

In Quebec, 73 per cent of construction managers had some post-secondary education, including 20 per cent who held at least a bachelor's degree in 2006. In Ontario, 63 per cent of construction managers had completed post-secondary studies, including 19 per cent who held at least a bachelor's degree. To be a construction manager does not usually require formal training but usually requires significant work experience in construction. Training enough senior level and project managers has been a challenge for the construction industry over the past 2-3 years, and remains a challenge in the next few years, according to industry representatives. Trained senior level and project managers are

needed to oversee health and safety issues. Industry representatives have reported cases where a shortage of project managers has led contractors to refrain from bidding for infrastructure projects. As a result, governments are forced to delay projects.

Labourers, equipment operators, and most trades have below average levels of educational attainment. Electricians, however, are a notable exception. Roughly 90 per cent of industrial, power system electricians, and other electricians in Ontario and Quebec had completed some form of post-secondary education in 2006. If the planned infrastructure projects cause a significant increase in demand for technical workers, construction managers, electricians or other skilled trades people, recruiting workers from other sectors may be difficult. Instead, new workers would either have to be trained or recruited from regions with excess capacity.

Training is a key factor determining the availability of skilled labour in the coming years. Training requirements and programs differ among Gateway construction sector occupations. Most trades and heavy equipment operator occupations require the completion of an apprenticeship program. Among the largest categories of apprentices in both Ontario and Quebec are apprentice electricians. In 2007, the electricians had the most new apprentices of all Gateway construction sector occupations, with nearly 2,000 new apprentice electricians in Ontario and nearly 900 in Quebec. Other significant apprenticeship programs in Quebec include heavy equipment operators (243 new apprentices), pipefitters (443 new apprentices) and bricklayers (326 new apprentices). In Ontario, sheet metal workers (391 new apprentices), brick and stone masons (260 new apprentices) and ironworkers (193 new apprentices) each have large apprenticeship programs (CSC 2008a and 2008b). Cost may limit access to some apprenticeships, such as equipment operators. For instance, because cranes have only one seat and that a fully licensed worker is required to operate them, companies need to purchase expensive simulators to train apprentices. Occupations where access to training is restricted are more susceptible to labour shortages.

Skills required in the construction industry are adapting to constantly evolving technology (*e.g.* the "building information management" software, a successor to the AutoCAD software) and client expectations (*e.g.* LEED environmental accreditation for buildings). In Quebec, the Committee on Vocational Training in the Construction Industry (CFPIC), made up of sub-committees representing each of the construction trades, advises the CCQ on vocational issues, taking stock of new technologies affecting each trade group on an annual basis.

6. Recruitment and Retention Challenges

A CCQ representative interviewed in December 2008 reported that the construction industry in Quebec needed to recruit between 14,000 and 15,000 workers annually over the next five years to respond to demand from growing business and attrition due to retirements or to departures to other sectors. The construction sector is expected to play a major role in sustaining Quebec's economy through the economic downturn, largely through major

public-sector investment projects in infrastructure and institutional construction.[13] Labour needs are expected to be high for the civil engineering and highway construction sector, as well as institutional non-residential construction. Activity in these sectors is expected to offset the projected slowdown in residential and commercial construction. Industrial construction activity in Quebec is expected to remain generally stable in 2009.

Recruitment and retention are particularly challenging for some highly skilled trades, and trades for which employment is more seasonal. Due to labour shortages in these trades, a limited number of companions for apprentices results in a number of apprentices who are not adequately trained. In Ontario, recruitment and retention were more difficult for trades with non-compulsory licensing, such as roofers, which are characterised by a particularly high turnover rate. Conversely, attracting workers, including youth, to compulsory certified occupations such as plumbers or electricians is less challenging. Apprenticeship completion rates for non-compulsory certified occupations are also lower.

A representative of the CCQ reported that in Quebec, youth were currently not difficult to attract to the construction industry, but that there could be a shortage of youth in the future, as different sectors compete for labour to replace retired workers. Other industry representatives have pointed to social biases and a "negative perception" of trades and construction as an undesirable vocation, which discourage high school students from entering construction. All students are encouraged to pursue university studies. As a result, many people enter the sector by default, having not succeeded in other sectors. This process is reflected in an increase of the average age of entrants into apprenticeship programs over the years. An industry representative explained that "in the past, youth entered apprenticeship programs at 18 or 19 years of age, became certified at 23 or 24 years, and were experienced, seasoned workers by the time they were 27 or 28 years old… However, today, the average age of entrants into apprenticeship programs is 27 years old."

7. Regulatory Issues/ Labour Mobility

Quebec and Ontario differ significantly in terms of unionization. In Quebec, all construction trades under the CCQ are unionized and regulated, compared to approximately 25 per cent of construction trades in Ontario. However, because workers under the CCQ represent a subset of the overall construction workforce, only 57 per cent of the overall construction sector workers in Quebec were part of a union in 2007.[14] This proportion is nevertheless higher than both the Ontario construction sector unionization rate (35 per cent) and the average Canadian construction sector unionization rate (32 per cent). In all cases, construction sector unionization rates were higher than the all-industry unionization rate, which was 40 per cent in Quebec, 29 per cent in Ontario, and 32 per cent in Canada.

In addition to differences in construction sector unionization between Ontario and Quebec, there are differences regarding trades certification. In fact, unlike Quebec where all construction trades are certified and therefore built to a certain standard, in Ontario, certain trades have compulsory certification (*e.g.* plumbers and electricians) while other

[13] http://www.ccq.org/Nouvelles/2008/1201Perspectives2009.aspx?sc_lang=en&profil=GrandPublic
[14] Statistics Canada, Cansim Table 282-0077

trades do not (*e.g.* carpenters). As a result, while work and training standards are similar for trades that are certified in both provinces, there may be differences in standards for non-compulsory certified trades. Among non-compulsory trades in Ontario, trades that are unionized have higher standards (comparable to Quebec standards) than non-unionized trades, as union membership requires that contractors elevate their standards. The different certification requirements between the two provinces sometimes results in people who do not qualify for certification in Quebec entering the labour force in Ontario. As a consequence, Ontario may be operating at "sub-standard levels in certain areas relative to Quebec" according to an industry representative. In addition to having higher occupational standards, compulsory-certified trades in Ontario have higher health and safety records than non-compulsory certified trades, despite the fact that the former are often associated with higher safety risks.

An industry representative explained that intra- and inter-provincial labour mobility is crucial for the construction industry, as indicated by the term 'journeyman' or 'journeyperson', which originates from the tradition whereby trades workers moved from one location to another to acquire experience in different workshops. In the past, Quebec regulations made it difficult for Ontario contractors and construction workers to work in Quebec (Grady and Macmillan, 2007). There are few remaining regulatory impediments to recruiting workers from other provinces, however. In June 2006, the Ontario and Quebec governments passed the *Ontario-Quebec Agreement on Labour Mobility and Recognition of Qualifications, Skills and Work Experience in the Construction Industry*, which facilitates inter-provincial mobility of skilled trades people in the construction sector. Under this reciprocity agreement, the majority of construction certifications are recognized in both jurisdictions. In occupations where certification is not equivalent, trades people may submit their qualifications and experience to appropriate authorities for certification without having to undergo additional training in most cases. Nationally, most construction occupations are standardized by the Inter-provincial Standards Red Seal Program, which aims to facilitate inter-provincial mobility of skilled trades people throughout Canada. In 2007, 84 per cent of those who completed an apprenticeship program in Ontario and 86 per cent of those of completed an apprenticeship program in Quebec received certification in a Red Seal trade (Menard *et al.*, 2007a and 2007b).

In addition to existing reciprocity agreements, amendments regarding labour mobility were made to the Agreement on Internal Trade (AIT) and signed by the federal, provincial and territorial governments in January 2009.[15] A labour mobility chapter in the Ontario-Quebec Economic Partnership Agreement, which is to enter into force in September 2009, builds on the 2006 Construction Agreement and on the 2009 AIT amendments. These new agreements are an important step towards the elimination of internal trade barriers and increasing labour mobility in Canada.

Despite the reciprocity agreements, there have been a larger number of construction workers from Quebec working in Ontario, than Ontario construction workers employed in Quebec. This is attributable to several factors, including a larger demand in Ontario, different standards for certain trades for which certification is not compulsory in Ontario,

[15] http://pm.gc.ca/eng/media.asp?id=2385

and a language barrier (the construction industry in Quebec remains predominantly francophone, which may constitute an obstacle to labour movement into the province).

Despite changes in regulation facilitating inter-provincial worker mobility, Ontario and Quebec's capacity to attract skilled workers depends on demand in other parts of the country. Prior to the economic downturn, Ontario and Quebec were at risk of losing skilled workers to both Western and Maritime provinces although large outflows of workers had not materialized (CSC, 2008c).

In addition to inter-provincial agreements, a France-Québec agreement on the recognition of vocational qualifications for a number of construction trades was signed on October 17, 2008.[16] The agreement, which is an integral part of the existing *France-Québec Agreement on Mutual Recognition of Vocational Qualifications*, provides arrangements for the recognition of nine construction trades by April 30, 2009. All construction trades are to be analysed for inclusion under the agreement by the end of 2010. The implementation of this agreement further complicates construction sector labour mobility projections. Indeed, the net impact of this agreement on the construction labour market in Quebec will depend on Quebec's sustained demand for qualified foreign workers, and on the ability of Quebec's construction companies to take advantage of market opportunities in France.

8. Women, Immigrants and First Nations Peoples

Attracting workers from overseas can complement the training and recruitment of workers in Canada. Most of the Gateway construction sector occupations are categorized by Citizenship and Immigration Canada (CIC) as either skill type 0 (managerial occupations), skill level A (professional occupations) or a skill level B (technical occupations and skilled trades). Workers in these three occupational classifications are eligible to apply for immigration to Canada under programs for skilled workers and professionals. Civil engineers, construction inspectors, construction estimators, most contractor and supervisor occupations and many skilled trades such as gas fitters, pipefitters, electricians and welders are included in the program.

Thus far, however, immigrants remain underrepresented in Gateway construction sector occupations in Quebec (Table 8.8). While 12.2 per cent of the total labour force in Quebec was composed of landed immigrants or people who have held landed immigrant status, this group represented only 7.3 per cent of the Gateway construction sector in 2006. In Ontario, landed immigrants represented 30.2 per cent of the labour force and 27.8 per cent of the Gateway construction sector labour force in 2006.

Technical occupations, however, had a higher proportion of immigrants than the all industry average. In 2006, 14 per cent of those employed in technical occupations in Quebec were immigrants. In 2006, 37.1 per cent of technical occupation workers were immigrants in Ontario. The proportion is highest among civil engineers. With the exception of technical occupations, the Gateway construction in Quebec has had difficulty attracting immigrants to its labour force even though most Gateway construction sector occupations

[16] http://www.ccq.org/Nouvelles/2008/1020EntenteFranceQuebec.aspx?sc_lang=en&profil=GrandPublic

are subject to preferential immigration policy (through programs for skilled workers). Construction industry representatives from Quebec explained that the high level of regulation in the industry posed challenges for skilled immigrants. The proportion of landed immigrants in all Gateway sector construction occupations was higher in Ontario than in Quebec. Landed immigrants represented over 25 per cent of the workforce in all occupational group with the exception of equipment operators, where they represented approximately 15 per cent of the labour force.

Table 8.8 Women and Immigrants in the Gateway Construction Sector (2006)

	Females Share of Labour Force (%)		Immigrants* Share of Labour Force (%)	
	Quebec	Ontario	Quebec	Ontario
Construction managers	9.1	8.0	10.0	26.3
Technical Occupations	15.0	10.2	14.4	37.1
Civil engineers	13.9	9.9	18.5	42.9
Contractors and supervisors	6.1	4.6	6.3	24.8
Trades	3.2	3.2	7.4	29.2
Equipment operators	1.4	2.0	2.1	14.6
Labourers	6.0	5.1	7.5	27.6
Total Gateway construction	5.1	4.6	7.3	27.8
All occupations	47.1	47.7	12.2	30.2
Source: Statistics Canada, Census 2006				
*The term 'immigrant' refers to the population of people aged 15 and over who worked during the week preceding the 2006 Census and who have landed immigrant status in Canada or have had it in the past.				

Explanations for a low proportion of immigrants in the construction sector labour force at the national level have included "language barriers, concerns surrounding the recognition of credentials, safety issues, and a shortage of training in Canadian construction techniques and skills upgrading" (CSC, 2004: 2).

Despite construction industry efforts to attract women to the labour force, the sector remains largely male-dominated. In 2006, while women represented over 47 per cent of the labour force in Ontario and Quebec, they represented only 5.1 per cent of the Gateway construction sector labour force in Ontario, and 4.6 per cent in Quebec (Table 8.8). Every occupational category had a substantially below average proportion of females. Equipment operators had the lowest proportion of women at 1.4 per cent in Quebec and 2.0 per cent in Ontario, while technical occupations had the highest proportion at 15.0 per cent in Quebec and 10.2 per cent in Ontario.

There are implicit entry barriers for women in the construction sector, linked to societal and lifestyle factors. According to a study published by CSC, "both the workplace environment itself and the culture of the [construction] industry need to change to attract and retain more women" (CSC, 2004a: 2). The proportion of women in the construction sector in Quebec has increased in recent years, in part due to targeted recruitment and training efforts by the CCQ, but remains lower than that of other provinces. In addition to the need to attract more women to the construction sector, retention is also considered as a major challenge with respect to women in construction.

The Ontario Society of Professional Engineers (OSPG) has also made attracting females to the engineering profession a priority. With this goal in mind OSPG established the Women in Engineering Advisory Committee (WEAC). Through annual conferences, university outreach programs and research reports, the WEAC strives to identify and change factors which prevent women from becoming engineers.

The number of aboriginal workers in the construction industry remains small. According to CCQ representatives, the number of aboriginal people in the construction industry in Quebec increased from approximately 100 workers in 2000-2001, to some 200 workers in recent years. A number of CCQ initiatives have been aimed at increasing aboriginal participation in the construction labour force, such as the creation of a Roundtable on aboriginal issues (discussed in the Human Resources Strategies section below). The CCQ has sought to integrate aboriginal people, particularly members of the Cree Nation, who live in the James Bay area, northern Quebec, into the construction labour force to work on infrastructure projects in the region. Administrative measures were implemented to facilitate the process. It was pointed out that such initiatives may not be successful in other project locations, in areas where First Nations people are less present.

The Provincial Building and Construction Trades Council of Ontario (PBCTCO) has initiated a project to examine the determinants of aboriginal participation in trades. In particular, he PBCTCO observed different trends in participation for certain trades and locations. For instance, First Nations people represented 60 to 65 per cent of ironworkers union members in Hamilton, Ontario, compared to a negligible percentage of other trades.

9. Human Resource Strategies

The Construction Sector Council (CSC) plays a major role in gathering and providing access to labour market information, for provinces and for Ontario regions. This information allows the industry to identify and develop strategies to address its human resource needs.

To address challenges in labour force management and regulation, the CCQ has undertaken a complete – and according to industry representatives, long-overdue – reform of the apprenticeship system in Quebec. The reform, which is to be implemented in 2009, would decrease the required companion-apprentice ratio, from five companions per apprentice, to 2 companions per apprentice. The new rule is less difficult to enforce, and should expand the number of people eligible to participate in apprenticeship programs. The CCQ is also implementing an “apprenticeship record book”, which enables apprentices to record their progress in their specific trade. Apprentices will have faster access to certification exams, once they have completed 80 per cent of tasks required. Apprentices having difficulties passing the exams will be provided with additional support. The apprenticeship reform was a result of consultations and inputs from various stakeholders. In fact, representatives of labour and employer associations, and of government, sit on the CCQ board. Each of the 26 CCQ trades has a sub-committee which meets four or five times a year. These sub-committees advise the CCQ board on the needs of their respective trades.

The CCQ is working to expand the training capacity of professional schools such as to increase the number of new students trained annually from 5,000 to 7,000 over the next three years. In Quebec, employers in the commercial, industrial, and civil engineering and roadwork construction sectors wishing to organise training or skills upgrading sessions for their employees, and workers wanting to enrol in training or skills upgrading activities related to their trade or occupation can access the *Fonds de formation des travailleurs de l'industrie de la construction* (FFIC) for funding.[17] An equivalent fund, the *Plan de formation résidentiel* is in place for the residential sector. All construction companies in Quebec are required to contribute $0.20 per hour worked to one of these two large funds, created under the collective agreements of the construction industry. Other incentives have been developed to promote training and skills upgrading, such as adding hours to the worker's "insurance hours reserve" which determines their insurance plan, or adding "apprenticeship hour credits" to the worker's "apprenticeship record book".

In Ontario, some industry representatives reported that certain aspects of the apprenticeship system could be improved, and expected the Ontario College of Trades to become an important vehicle for conveying industry needs in this regard. The establishment of the College of Trades was announced in September 2008, following industry consultations. Legislation for the establishment of the College is expected to be introduced in the spring of 2009 (Ministry of Training, Colleges and Universities, 2008). The College is expected to be successful in ensuring that the apprenticeship system meets industry demands by increasing the involvement of industry in decisions regarding regulation and apprenticeship, which were previously made by the government, and that the needs of individual trades are met. The College of Trades will be a self-regulating body, responsible for elevating the profile and professionalize the industry's image and in so doing, address the challenge of attracting workers. In addition, the Provincial Building and Construction Trades Council of Ontario has identified the need to work with guidance councellors and school principals to promote work in the trades. A number of other organisations, such as Skills Canada, have been working to promote trades at high schools, and have organised events to attract women to non-traditional occupations.

The College of Trades is also expected to provide a means for the Ontario construction industry to address gaps in standards related to inconsistent certification requirements across trades. In fact, the Provincial Building and Construction Trades Council of Ontario has advocated for expanding compulsory certification of trades in Ontario, to ensure higher occupational standards (and therefore address challenges to labour mobility) and to improve the industry's health and safety records. Industry representatives also mentioned another challenge to labour mobility, namely the economic considerations underlying the decisions of workers. A construction industry representative recommended that the government provide labour mobility incentives to construction workers in the form of tax credits.

CCQ initiatives have been aimed at increasing aboriginal participation in the construction labour force, such as the creation of a Roundtable on Aboriginal Issues. The Roundtable on Aboriginal Issues is "a consensual structure that provides an opportunity to

[17] http://www.ccq.org/F_Formation/F03_MesuresIncitatives.aspx?sc_lang=en&profil=GrandPublic

exchange information with the other committees of the CCQ" with the mission to "expose the realities experienced by the Aboriginal societies of Québec and to facilitate essential interaction between Aboriginal societies and the construction industry in the formulation of the industry's policies and activities, with the goal of integrating Aboriginal workers" (CCQ, 2008). In Ontario, the PBCTCO is undertaking a study of the determinants of Aboriginal labour force participation in construction trades.

CCQ representatives have mentioned pilot projects undertaken by the Confédération des Syndicats Nationaux (CSN) to inform immigrants about work opportunities in the construction sector, and about industry rules and regulations. The CCQ has not developed similar initiatives, but is examining possibilities in this regard. The need for a 'pro-active approach to cultural sensitivities' to facilitate the integration of immigrant workers into the construction workforce was mentioned during interviews with stakeholders. An industry representative explained his perspective, that while attracting immigrant workers was important, the government should identify specific trades where there are shortages to be filled through immigration, and invest in providing credential recognition and licensing for immigrants in their countries of origin, before they arrive in Canada. He recommended that experienced trades people could be sent to the origin countries to evaluate candidates, arguing that costs of administering the tests abroad would be offset by efficiency and productivity gains. In addition to ensuring that the skills of immigrants entering Canada correspond to the needs of the construction industry, providing skills recognition and licensing to workers prior to their arrival in Canada would increase their chances of employment, and protect them from potential exploitation, whereby they are paid lower wages under the pretext that they lack the required qualification.

In the short-term, during the economic downturn, there is a need for strategies to prevent a reduction of the workforce. Concerns in this regard seem more relevant for Ontario than for Quebec, where construction activity is expected to remain strong, largely driven by significant investment in public infrastructure. Strategies to prevent a reduction of the workforce in Ontario could involve work-sharing measures (*e.g.* decreasing individual work hours, increasing shift work, avoiding overtime work unless absolutely necessary) and flexibility around work hours. An industry representative from Ontario explained that during previous economic downturns, compulsory certification trades generally fared better than non-compulsory certification trades in terms of job maintenance. For instance, in the early 1990s, there were 300-400 job losses out of some 6,000 jobs for some unionized trades with compulsory certification (such as electricians or pipefitters), compared to 2,500 job losses (approximately half of union members) for non-compulsory certification (*e.g.* carpenters). A decrease in the labour force during the recession has significant cost implications, including the need to recruit and train a new workforce to substitute for the departures of experienced workers and the skill loss this represents.

B. Air Transportation

This section describes the occupations involved in the Gateway air transportation subsector, and provides an overview of the current human resource situation for these occupations, with an outlook for the next five years, based on current shortages and

projected needs. Quantitative data from several sources is used to examine employment trends and to draw a profile of the Gateway workforce, including employment distribution across industries, age structure, educational attainment and workforce composition. Qualitative data from a literature review and insight gathered from the stakeholders interviewed are also presented to describe the human resource challenges facing these occupations, including skills/certification-related issues, regulatory obstacles to certification or to labour mobility, recruitment and retention, and labour relations.

The air transportation Gateway sector comprises five major occupation groups under the National Occupational Classification (NOC) system: aircraft instrument, electrical and avionics mechanics, technicians and inspectors (NOC 2244), responsible for the installation and repair of instrument, electrical and avionics systems on aircrafts; aircrafts mechanics and inspectors (NOC 7315), responsible for the maintenance of structural mechanical and hydraulic systems on aircrafts; air pilots, flight engineers and flying instructors (NOC 2271); air traffic controllers and related occupations (NOC 2272); and air transport ramp attendants (NOC 7437). In addition, airport managers are included under facility operation and maintenance managers (NOC 0721) and airline managers are included under transportation managers (NOC 0713).

1. Employment Trends

These occupations do not comprise the entire air transportation sector workforce, and workers in these occupations may be employed in other industry sectors. In 2006, the largest proportion of air pilots, flight engineers and flying instructors (77 per cent in Ontario and 67 per cent in Quebec) were employed in the air transportation industries. However, only 17 per cent of aircraft instrument, electrical and avionics mechanics, technicians and inspectors in Quebec, and 26 per cent in Ontario, were employed in the air transportation sector. Air transportation employed 40 per cent of aircraft mechanics and aircraft inspectors in Quebec, and 36 per cent in Ontario.

The largest share of aircraft instrument, electrical and avionics mechanics, technicians and inspectors (53 per cent in Quebec and 31 per cent in Ontario), were employed in transportation equipment manufacturing. Transportation manufacturing industries also employed a large proportion of aircraft mechanics and inspectors (38 per cent in Quebec and 22 per cent in Ontario). The large proportion of air transportation sector workers in Quebec employed in the manufacturing sector is largely attributable to the presence of Bombardier Aerospace.

The federal government employed 22 per cent of aircraft instrument, electrical and avionics mechanics, technicians and inspectors in Ontario, and 10 per cent of this occupational group in Quebec in 2006.

In 2006, support activities for transportation industries employed the largest proportion of air traffic controllers and related workers (70 per cent in Quebec and 73 per cent in Ontario). Six per cent of workers in this occupational group were employed by the federal government in 2006. Air traffic controllers and related workers include NAV

Canada employees, armed forces personnel, and flight dispatchers employed by airline and air service companies.

Table 9.1 Industry-Occupation Employment Matrix for the Air Transportation Sector: Per cent of Occupation by Industry Group (2006)

	Aircraft instrument, electrical and avionics mechanics, technicians and inspectors (2244)		Air Pilots, Flight Engineers and Flying Instructors (2271)		Air Traffic Control and Related Occupations (2272)		Aircraft Mechanics and Aircraft Inspectors (7315)		Air Transport Ramp Attendants (7437)	
	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC
Transportation Equipment Manufacturing	31	53	2	7	1	2	22	38	1	1
Air Transportation	26	17	77	63	14	15	36	40	54	47
Support Activities for Transportation	10	6	5	13	73	70	17	7	32	43
Federal Government Public Administration	22	10	2	2	6	6	9	3	1	1
Other	10	14	14	15	6	7	15	12	12	8
Total	100	100	100	100	100	100	100	100	100	100
Source: Statistics Canada, Census 2006										

A large proportion of air transport ramp attendants were employed in air transportation (54 per cent in Ontario and 47 per cent in Quebec) and in support activities for air transportation (32 per cent in Ontario and 47 per cent in Quebec) in 2006.

In 2006, 9 per cent of all transportation managers in Quebec and 7 per cent of transportation managers in Ontario were employed in the air transportation sector as airline managers. Airport managers constitute a very small proportion of facility operation and maintenance managers. Air transportation and airport managers are excluded from Table 9.1, due to the unavailability of disaggregated data. The industry distribution for the aggregate transportation managers' and facilities operations and maintenance managers' occupational groups is presented in Table 13.1 of this report (in the multimodal transportation/ supply chain section).

The number of workers with reported employment income in air transportation occupations decreased by 4.4 per cent in Quebec and by 7.2 per cent in Ontario, between 2000 and 2005 (Table 9.2). The number of air pilots, flight engineers and flying instructors increased by 2.2 per cent in Quebec during this period, but decreased by 9.7 per cent in Ontario. Average earnings for these occupations in Quebec increased by 24.9 and decreased by 6.7 per cent in Ontario per cent between 2000 and 2005.

Table 9.2 Population with Employment Income and Average Earnings in Constant 2005 Dollars in the Gateway Air Transportation Sector (2000-2005)

	2000		2005		Total Growth 2000-2005 (%)	
	Population 15 years and over with employment income*	Average employment income (constant 2005 $)	Population 15 years and over with employment income*	Average employment income ($)	Population 15 years and over with employment income*	Average employment income ($)
QUEBEC						
Aircraft instrument, electrical and avionics mechanics, technicians and inspectors	3,760	51,081	3,665	52,962	-2.5	3.7
Air pilots, flight engineers and flying instructors	2,540	68,068	2,595	85,050	2.2	24.9
Air traffic control and related occupations	920	67,812	885	81,353	-3.8	20.0
Aircraft mechanics and aircraft inspectors	4,065	52,888	3,615	57,189	-11.1	8.1
Air transport ramp attendants	1,220	34,849	1,200	30,108	-1.6	-13.6
Air transportation	12,505	54,766	11,960	61,010	-4.4	11.4
All occupations	3,739,245	33,373	4,022,480	33,958	7.6	1.8
ONTARIO						
Aircraft instrument, electrical and avionics mechanics, technicians and inspectors	2,540	55,684	1,990	56,527	-21.7	1.5
Air pilots, flight engineers and flying instructors	5,050	88,732	4,560	82,807	-9.7	-6.7
Air traffic control and related occupations	1,610	70,223	1,500	80,057	-6.8	14.0
Aircraft mechanics and aircraft inspectors	4,020	51,432	4,465	53,413	11.1	3.9
Air transport ramp attendants	3,555	35,236	3,060	31,004	-13.9	-12.0
Air transportation	16,775	61,676	15,575	60,580	-7.2	-1.8
All occupations	6,212,485	39,886	6,623,700	40,983	6.6	2.8

Source: Census 2006, Statistics Canada, Catalogue Number 97-559-XCB2006062

* 'Earnings or employment income' refers to total income received by persons 15 years of age and over during calendar year 2005 as wages and salaries, net income from a non-farm unincorporated business and/or professional practice, and/or net farm self-employment income. 'Average income of individuals' refers to the weighted mean total income of individuals 15 years of age and over who reported income for 2005.

Wage increases have been higher for occupations requiring air transportation industry-specific skills, than for occupations involving general skills. The average employment income in constant 2005 dollars for air transportation-industry specific occupations increased by 11.4 per cent in Quebec, and decreased by 1.8 per cent in Ontario between 2000 and 2005 (Table 9.2). The average weekly earnings for all employees, also measured in constant 2005 dollars, increased by 4.0 per cent in the overall air transportation industry during the same period.[18] The difference in the growth in average earnings

[18] Calculated from CANSIM Table 2810027, adjusted using CPI. The corresponding average weekly earnings data for the air transportation industry in Ontario was unavailable.

between air transportation occupations and the overall air transportation industry in Quebec suggests a trend whereby wage increases in air transportation are higher for specialised and technical occupations than for occupations involving general skills such as retail or administrative occupations.

Table 9.3 Gateway Air Transportation Sector Employment Insurance Recipients in Quebec (2006)

	Average Employment 2005-2007	Employment Insurance Claimants (2006 monthly average)	Workers on Employment Insurance as Share of Total Workers (%)
Aircraft instrument, electrical and avionics mechanics, technicians and inspectors	2,350	50	2.1
Air pilots, flight engineers and flying instructors	1,250	80	6.4
Air traffic control and related occupations	750	10	1.3
Aircraft mechanics and aircraft inspectors	2,450	80	3.3
Air transport ramp attendants	1,550	15	1.0
Air transport Gateway sector occupations	8,350	235	2.8
All occupations	3,778,150	145,150	3.8
Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region			

In the absence of unemployment figures, the proportion of employment insurance (EI) claimants is used as a measure of workforce reserves for each occupation.[19] All of the air transportation Gateway sector occupations had a ratio of EI claimants to total workers that was lower than the all-occupations average in Quebec, with the exception of the pilots, flight engineers and flying inspectors group (Table 9.3). The high proportion of pilots, flight engineers and flying inspectors who are EI recipients suggests that labour shortages in this occupational group are not a major concern in Quebec. In fact, the shortage of commercial pilots, which has been a major concern for the air transportation sector across North America (Ray Barton Associates, 2008), seems less acute in Quebec.

2. Short Term Labour Market Outlook

Some labour shortages have been identified in technical occupations, including aircraft inspectors and aviation mechanics, and air traffic controllers in Canada (Ray Barton Associates, 2008). The number of workers with employment income in these occupations decreased in Quebec and Ontario between 2000 and 2005, despite an increase in average earnings. The most significant decline in the number of people with employment income (21.7 per cent) has been in the Aircraft instrument, electrical and avionics mechanics, technicians and inspectors occupation in Ontario (Table 9.2).

[19] This measure should not be confused with a direct measure of unemployment. This figure compares 2007 data EI claimants to the average number of employed between 2005 and 2007. Not all persons who are unemployed are eligible for employment insurance. Furthermore, this figure, used as an indicator of available worker supply, has limitations, as the available labour supply depends on several factors including the number of graduates from training programs and the availability of workers.

Table 9.4 Short Term Labour Market Forecasts for Air Transportation Occupations in Quebec (2008-2012)

	Employment (2005-2007 average)	Average Annual Growth Rate 2008-2012 (%)	Annual Requirement Attributable to Growth (2008-2012)	Annual Requirement Attributable to Attrition (2008-2012)	Total Annual Requirement (2008-2012)	Total Annual Requirement as share of 2005-2007 average employment (%)	Outlook 2008-2012*
	A	B	C	D	E = C+D	F = E/A*100	G
Aircraft instrument, electrical and avionics mechanics, technicians and inspectors	2,350	3.13	80	60	140	6.0	Good
Air pilots, flight engineers and flying instructors	1,250	-0.60	-5	30	25	2.0	Fair
Air traffic control and related occupations	750	1.41	10	10	20	2.7	Fair
Aircraft mechanics and aircraft inspectors	2,450	2.25	60	80	140	5.7	Good
Air transport ramp attendants	1,550	1.39	20	35	55	3.5	Good
Air transport Gateway sector occupations	8,350	1.9	165	215	380	4.6	
All occupations	3,778,150	1.1	41,550	108,800	150,350	4.0	

Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region

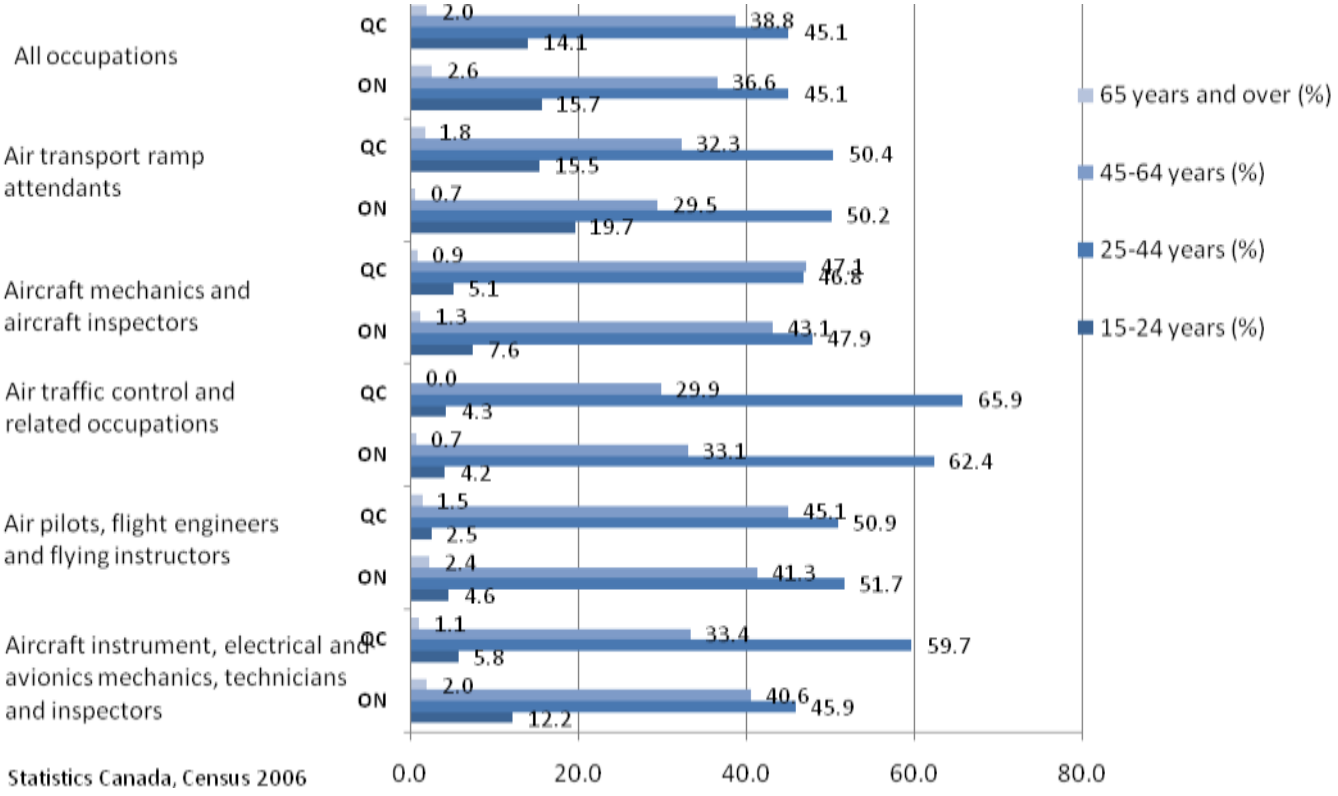
*Describes the possibility of finding employment, based on labour supply and demand variables, including employment growth, attrition, the number of Employment Insurance claimants, and economic forecasts.

Short-term labour market forecasts prepared by the Socio-Economic Analysis and Evaluation Directorate of Services Canada, Quebec Region project negative average annual growth in employment over the 2008-2012 period for air pilots, flight engineers and flying instructors in Quebec (Table 9.4). A number of new entrants falling short of the number of departures would still result in a balanced labour market, which suggests a lower demand for these occupations in the short term. The labour market outlook, which takes into account employment growth, attrition, labour market conditions for graduates and other variables, indicates that chances of finding employment in this occupation group will be 'fair' between 2008-2012.

In Quebec, in 2006, approximately 46.7 per cent of pilots, flight engineers and flying instructors, and 48 per cent of aircraft mechanics and aircraft inspectors were over 45 years old (Chart 9.1). In Ontario, 43.7 per cent of pilots, flight engineers and flying instructors, and 44.4 per cent of aircraft mechanics and aircraft inspectors were over 45 years old. The mandatory retirement age for pilots was extended from 60 to 65 years, and subsequently eliminated in most provinces including Quebec and Ontario in 2007. Because the expected retirement levels did not materialise, few labour shortages have been identified. As a result, pilots have been remaining in the labour force for a longer time. An industry representative reported that in the aircraft maintenance sector, a large proportion of workers were of retirement age, but had not yet left the workforce. This is largely attributable to a change in lifestyle preferences, whereby workers of a certain age prefer to

continue working with flexible and reduced work hours rather than retire. It is difficult to predict at which point these workers will leave the labour force, which complicates human resource planning. In addition, it was pointed out that previously expected retirements over the next years may be revised downwards due to the economic situation; workers having lost some of their savings (due to declines in housing prices and to stock markets losses) may wish to work for more years. Respondents interviewed in the course of this study explained that potential pilot shortages in the near future should not be ignored during the economic downturn.

Chart 9.1 Age Distribution for Air Transportation Occupations (2006)



The economy will remain the main driver of human resource needs in the air transportation sector during the next five years. According to industry representatives, employment is expected to decline in all sub-sectors (air transportation, maintenance and manufacturing), with the possible exceptions of niche areas, such as maintenance for regional and propeller airplanes.

3. Skills, Training, and Certification

Most occupations in the air transportation sector require significant technical knowledge and require post-secondary training. In Quebec and Ontario an entry level position as a pilot, flight engineer or flight instructor requires a secondary school diploma,

a diploma from a certified flying or aviation school or a diploma of collegial studies (DEC) in flying (Quebec), a Commercial Pilot's License and additional licenses and requirements depending on the type of aircrafts. Educational requirements also vary depending on the size of the company, and a university degree may be required.[20] In 2006, approximately 24 per cent of air pilots, flight engineers, and flying instructors in Ontario, and 18 per cent of workers in this occupational group in Quebec, held a university degree (Chart 9.2). A large proportion of air pilots, flight engineers and flying instructors (72.2 per cent in Quebec and 56.5 per cent in Ontario) held a post-secondary degree, which includes College, CEGEP or any other non-university certificate or diploma; university certificate or diploma below the bachelor level.

High training costs and service requirements constitute significant barriers to entry for pilots, particularly in light of low entry-level wages. Training costs are generally borne up-front by the candidate. The number of pilots trained in Canada decreased from approximately 4,500 in 2002 to 3,100 in 2006 (Ray Barton Associates, 2008).

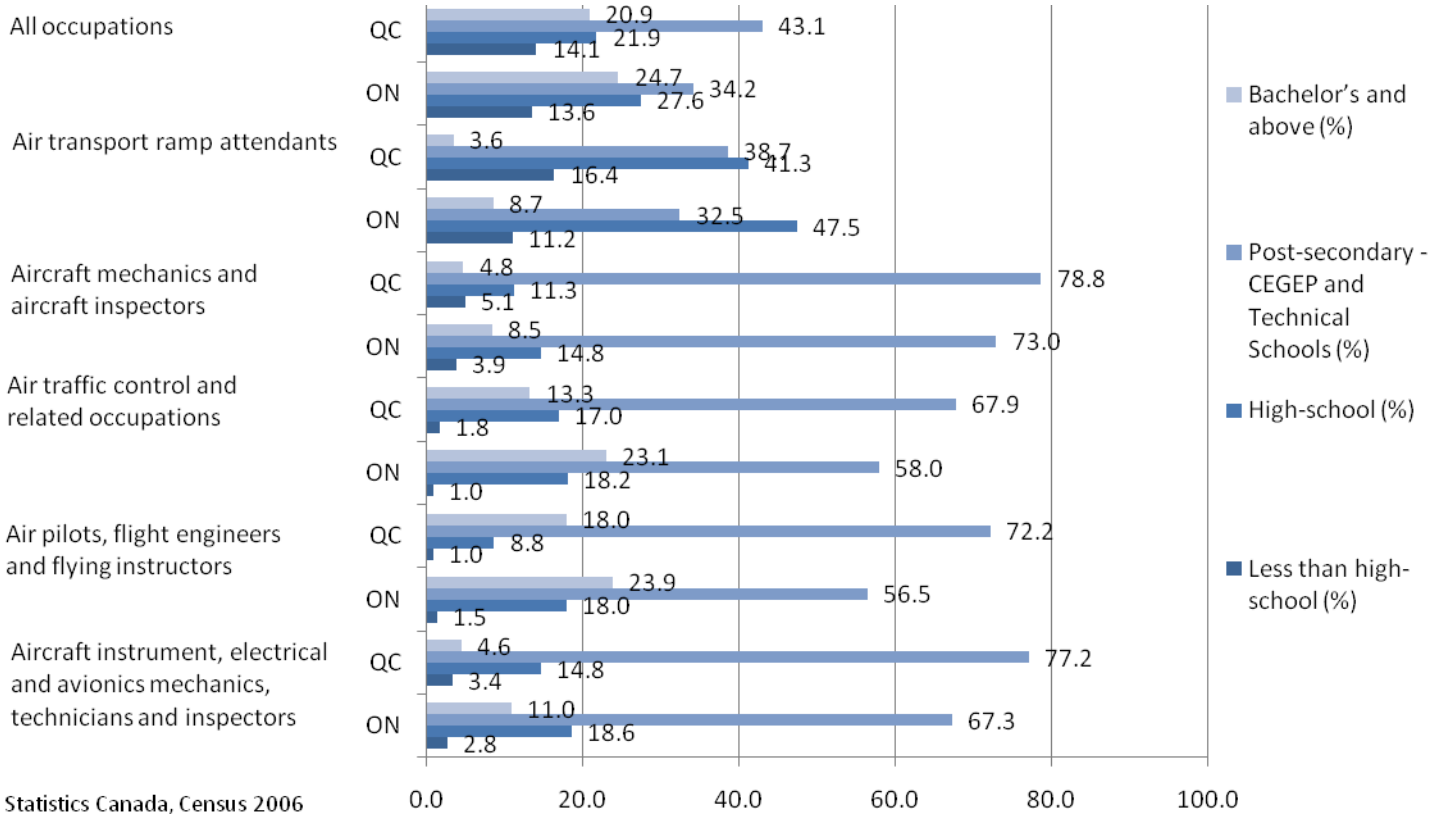
In Quebec, a DEC in Flying is offered at the Chicoutimi CEGEP. Related diplomas include an Attestation of Collegial Studies (AEC) in Helicopter Piloting, Bush Piloting and Multiengine Aircraft Piloting, offered by the Chicoutimi CEGEP; the AEC in Aviation Management for commercial Pilots offered by the John Abbott CEGEP, in collaboration with Laurentide Aviation and Aero Club Montreal; and the "pilotage professional d'aéronefs" AEC offered by the Institut Grasset and College Lafleche. Employers generally provide on-the-job and pre-employment training.

In Ontario, in 2006, 11 per cent of aircraft instrument, electrical and avionics mechanics, technicians and inspectors, and 8.5 per cent of aircraft mechanics and aircraft inspectors held a university degree. In Quebec, approximately 5 per cent of workers in these two occupational groups held a university degree. A larger number of workers in these occupations held a non-university post-secondary degree in Quebec (77.2 per cent for aircraft instrument, electrical and avionics mechanics, technicians and inspectors, and 78.8 per cent for aircraft mechanics and aircraft inspectors) than in Ontario (67.3 per cent for aircraft instrument, electrical and avionics mechanics, technicians and inspectors, and 73.0 per cent for aircraft mechanics and aircraft inspectors).

In Quebec, the aircraft instrument, electrical and avionics mechanics, technicians and inspectors occupation, generally requires a DEC in avionics, which is provided by the Edouard-Montpetit CEGEP. Entry to this occupation may be possible with a vocational diploma (DEP) in wiring and circuit assembly. Membership in the "Ordre des technologues professionels du Québec" is considered an asset. Employers generally provide on-the-job training. After gaining some work experience in this occupation, candidates can take the required exams and obtain an avionics licence from Transport Canada.

[20] HRSDC, Service Canada, Job Futures-Quebec http://www150.hrdc-drhc.gc.ca/asp/emploi/emploiAG.asp?page=listeprofessionsAG.asp& and Job Futures, Ontario http://www.ontariojobfutures.ca/profile2271.html

Chart 9.2 Educational Attainment for Air Transport Sector Occupations (2006)



In Ontario, aircraft instrument and avionics mechanics and technicians are required to have completed a two to three-year college program in avionics or electronics, or a four-year apprenticeship program. The completion of a specialised college program in aviation is generally required for aircraft electronic mechanics. On-the-job training is generally provided by employers. Some mechanics and technicians are required to take Transport Canada examinations and obtain an Aircraft Maintenance Engineer (AME) licence. Avionics inspectors are required to complete a two to three-year program in avionics or electronics, three to five years of work experience as an avionics mechanic or technician, obtain an AME license, and sometimes additional certification for a broad range of avionics systems.

The Edouard-Montpetit CEGEP is the only institution in Quebec that offers a DEC in aircraft maintenance techniques and avionics techniques, which is a requirement for the aircraft mechanics and aircraft inspectors occupation in the province. Employers generally provide on-the-job training. Candidates, having acquired some work experience, can take the Transport Canada examinations and obtain an aircraft maintenance license. In Ontario, aircraft maintenance and aircraft structure technicians are required to complete high school and a community college certificate in aircraft maintenance or aircraft structures. Most colleges are accredited by Transport Canada and by the Canadian Aviation Maintenance Council (CAMC). Students enrolled in these colleges can therefore obtain credits toward

AME licensing and toward CAMC certification. Avionics mechanics are required to have a high school degree with a strong math and physics component, and a community college certificate or completion of a recognised apprenticeship program. Aircraft maintenance engineers are required to have completed their high school education and hold an AME license or CAMC certification, and have work experience as aircraft maintenance technicians or in performing related tasks. An apprenticeship program exists in Ontario for this occupation, but the completion of this program is not a compulsory requirement for work in the province. Entry into apprenticeship usually requires the completion of grade 12, but students having completed grade 10 may register under the Ontario Youth Apprenticeship program, or alternatively, undertake pre-apprenticeship training.

In air traffic control and related occupations, 23 per cent of workers in Ontario and 13.3 per cent of workers in Quebec held a university degree in 2006. A large number of workers in these occupations (67.9 per cent in Quebec and 58.0 per cent in Ontario) held a post-secondary degree. Although a secondary school diploma (DES) is the minimal requirement for entry in this occupation, a vocational diploma (DEP) in flight dispatching is a major asset for flight dispatchers and flight service specialists. This DEP is offered at the Transportation Training Centre in Charlesbourg, and by the Premieres Seigneuries School Board. Flight dispatcher training is also offered, however, by the Quebec Aviation Training Centre at the Chicoutimi CEGEP. Air traffic controllers and flight service specialists must also pass Transport Canada examinations. Flight dispatchers may be required to have a Private Pilot's Licence. Air traffic controllers must hold an air traffic controller license. In addition, NAV Canada administers examinations and offers a training program at the NAV Canada Training Institute. Depending on the positions, the program varies in duration from several months to two or three years.

In the air transport ramp attendants occupation in Quebec, 41.3 per cent of workers had a high school degree, and only 38.7 per cent had a post-secondary diploma in 2006. In Ontario, 47.5 of air transport ramp attendants held a high school degree, 32. Per cent held a post-secondary diploma, and 8.5 per cent held a university degree.

4. Recruitment and Retention Challenges

Competition with other sectors, particularly the high-tech industry can pose recruitment challenges for the sector. In addition, lifestyle preferences have changed; the frequent travel associated with working in certain occupations in the sector is often perceived more negatively. One challenge to recruiting qualified workers is the lack of qualification recognition between training institutions and across air transportation sub-sectors. For instance, retiring aircraft mechanics from the defence sector face difficulties in finding employment in the civil aviation sector (Ray Barton Associates, 2008: 33).

Retention problems have been attributed to inadequate remuneration for highly skilled occupations. Increasing flexibility in terms of work hours for pilots and maintenance workers has been identified as an important retention strategy.

5. Regulatory Issues/ Labour Mobility

There are few regulatory obstacles to labour mobility due to the fact that aviation is a federally regulated industry.

6. Women, Immigrants and First Nations Peoples

Male workers constitute a large majority of the air transportation occupations, particularly for occupations with high technical skill requirements. In 2006, males constituted 91.7 per cent of aircraft instrument, electrical and avionics mechanics, technicians and inspectors in Quebec, and 94.6 percent in Ontario (Table 9.5). Males represented 95.5 per cent of aircraft mechanics and aircraft inspectors in Quebec and 96.2 per cent in Ontario, and approximately 93 per cent of air pilots, flight engineers and flying instructors in both provinces.

In Quebec, the air transport occupations with the largest shares of immigrants (workers who have or have had landed immigrant status in Canada) in 2006 were aircraft mechanics and aircraft inspectors (19.3 per cent) and air transport ramp attendants (19.1 per cent). The percentage of immigrants in air pilots, flight engineers and flying instructors occupations was 12.5 per cent, and in aircraft instrument, electrical and avionics mechanics, technicians and inspectors was 12.2 per cent, and 7.9 per cent of air traffic controllers and related occupations.

In Ontario, landed immigrants represented 34.4 per cent of aircraft instrument, electrical and avionics mechanics, technicians and inspectors, 35.1 per cent of aircraft mechanics and aircraft inspectors, and 38.3 per cent of air transport ramp attendants in 2006. Landed immigrants represented 16.4 per cent of air pilots, flight engineers and flying instructors in Ontario. It has been noted that foreign students, who constitute a large proportion of commercial pilot graduates, often return to their home country after their training. Industry representatives have reported challenges with respect to credential recognition for immigrant workers.

Table 9.5 Women and Immigrants in the Gateway Air Transportation Sector (2006)

	Females Share of Labour Force (%)		Immigrants* Share of Labour Force (%)	
	Quebec	Ontario	Quebec	Ontario
Aircraft instrument, electrical and avionics mechanics, technicians and inspectors	8.3	5.4	12.2	34.4
Air pilots, flight engineers and flying instructors	7.0	6.1	12.5	16.4
Air traffic control and related occupations	27.5	17.8	7.9	15.0
Aircraft mechanics and aircraft inspectors	4.5	3.8	19.3	35.1
Air transport ramp attendants	15.4	11.8	19.1	38.3
Air transport Gateway Sector	9.0	7.6	15.2	20.9
All occupations	47.1	47.7	12.2	30.2
Source: Statistics Canada, Census 2006				
*The term 'immigrant' refers to the population of people aged 15 and over who worked during the week preceding the 2006 Census and who have landed immigrant status in Canada or have had it in the past.				

Quantitative data is unavailable on the presence of First Nations people in the air transportation labour market in Quebec and Ontario. However, several airlines are owned by First Nations people, such as Air Creebec.

7. Human Resource Strategies

The Air Transportation Association of Canada (ATAC) has approached Human Resources and Skills Development Canada (HRSDC) to evaluate the possibility of developing a formal apprenticeship system in the air transportation sector. The introduction of the Multi-Crew Pilots License (MPL) through the International Civil Aviation Organization (ICAO) enables companies to provide on-the-job training by matching less-experienced with more experienced pilots.

The Canadian Aviation Maintenance Council (CAMC) is undertaking several initiatives to address human resource issues in the aviation maintenance and aerospace manufacturing industries. The scope of CAMC's work is being expanded to include the pilots occupation. CAMC projects underway, which are largely funded through the federal government's Sector Council Program, include the development of an internet-based labour market information system (LMIS); the development, review and update of labour standards for certain occupations; and initiatives to promote safety Management Systems (SMS) in the sector. In addition, CAMC is working to attract youth to the aviation and aerospace industry through its Skilled Workforce for the Future – Youth Internship Program (YIP) program, and providing financial incentives (wage subsidy funding) for employers in the aviation maintenance and aerospace manufacturing industry to hire post-secondary graduates.[21] CAMC has requested proposals for the development of a 'career and sector information' video to be used for career promotion in various settings.[22]

CAMC's Prior Learning Assessment and Recognition (PLAR) program involves the development of a systematic approach to evaluate candidates, including candidates with foreign credentials for specific occupations.

CAMC, in partnership with the Canadian Auto Workers (CAW) is experimenting with projects to 're-skill' workers from other sectors to work in the air transportation sector. One such initiative involved the retraining of unemployed painters from the automotive sector to work in aircraft maintenance. These initiatives have not been primarily demand-driven, but are significant attempts at finding creative solutions and strategies to address economic challenges.

C. Marine Transportation

This section describes the occupations involved in the Gateway marine transportation subsector, provides an overview of the current human resource situation for these occupations, and an outlook for the next five years, based on current shortages and

[21] http://www.camc.ca/en/62
[22] http://www.camc.ca/en/104.html

projected needs. Quantitative data from several sources is used to examine employment trends and draw a profile of the Gateway workforce, including employment distribution across industries, age structure, educational attainment and workforce composition. Qualitative data from a literature review and insight gathered from the stakeholders interviewed are also presented to describe the human resource challenges facing these occupations, including skills/certification-related issues, regulatory obstacles to certification or to labour mobility, recruitment and retention, and labour relations.

The marine transportation Gateway sector comprises eight major occupations. Deck officers (NOC 2273) operate ships or self-propelled vessels to transport passengers and freight on oceans, coastal, and inland waters, and supervise and coordinate the activities of deck crew (NOC 7433), who operate and maintain deck equipment and perform other duties aboard ships and vessels. Engineer officers (NOC 2274) operate, maintain and repair engines, machinery and auxiliary equipment on ships and vessels, and supervise and coordinate the activities of engine room crew (NOC 7434). Other marine transportation and equipment operators included in this Gateway sector are boat operators (NOC 7436), who operate small boats to transport passengers and freight, cable ferry operators and related occupations (NOC 7435), and longshore workers (NOC 7451) who work on docks and transfer cargo onto and from ships and other vessels. Finally, the sector includes marine traffic regulators (included in NOC 2275), who monitor coastal and inland marine traffic within assigned waterways.

Port and harbour authority managers are included under facility operation and maintenance managers (NOC 0721) and shipping line operations managers and freight traffic managers are included under transportation managers (NOC 0713). These occupations, as well as customs, ship and other brokers (NOC 1236), are classified under the supply chain/multimodal transportation Gateway sector for the purpose of this report.

1. Employment Trends

The eight major occupation groups listed in this section do not comprise the entire marine transportation sector workforce, and workers in these occupations may also be employed in other industry sectors.

In Quebec, 39 per cent of deck officers, and 42 per cent of deck crew worked in water transportation in 2006 (Table 10.1). In Ontario, 30 per cent of deck officers, and 47 per cent of deck crew worked in water transportation. These workers are generally employed by marine transportation companies. Water transportation industries also employed approximately 30 per cent of water engineer officers in Ontario and Quebec in 2006. In Quebec, 56 per cent of engine room crew were employed in water transportation compared to a third of engine room crew in Ontario.

The support activities for water transportation industries employed 17 per cent of deck officers and 17 per cent of engineer officers in Quebec. In Ontario, 12 per cent of deck officers, 17 per cent of engineer officers and 19 per cent of engine room crew were employed in the support activities for transportation industries.

Table 10.1 Industry-Occupation Employment Matrix for the Marine Transportation Gateway Sector: Per cent of Occupation by Industry Group (2006)

	Deck Officers (2273)		Engineer Officers (2274)		Marine Traffic Regulators * (2275)		Deck Crew (7433)		Engine Room Crew (7434)		Lock and Cable Ferry Operators and Related Occupations (7435)		Boat Operators (7436)		Longshore Workers (7451)	
	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC
Support Activities for Mining and Oil and Gas Extraction	2								17							
Transportation Equipment Manufacturing				15		4		2	17						2	1
Rail Transportation					71	60										1
Water Transportation	30	39	31	28		4	47	42	33	56	10	22	8	26	8	3
Truck Transportation	2	2				4						6		11	2	2
Transit and Ground Passenger Transportation					4	4	3						11			
Scenic and Sightseeing Transportation	12	13	4				12	4					11		2	
Support Activities for Transportation	12	17	17	17	4	12	10	13		19	24	47		32	46	66
Heritage Institutions	2										29	11	5			
Amusement, Gambling and Recreation Industries	5	2	3				3	2			4		37	11	2	
Federal Government Public Administration	22	23	17	25	9	4	14	27	17		8			11	3	1
Other	14	5	27	16	11	10	10	10	17	26	24	14	29	11	35	27
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Statistics Canada, Census 2006

*Includes Railway Traffic Controllers

In Quebec, the federal government employed 23 per cent of deck officers, 25 per cent of water engineer officers, and 27 per cent of deck crew in 2006. In Ontario, the federal government employed 22 per cent of deck officers, 17 per cent of engineer officers, 17 per cent of engine room crew and 14 per cent of deck crew. A large number of these workers are employed by the Canadian Coast Guard.

Lock and cable ferry operators and related workers were mainly employed in water transportation and support activities for water transportation in Ontario and Quebec. A proportion of these workers were also employed in heritage institutions.

In Quebec, boat operators were employed primarily in support activities for transportation (32 per cent) and in water transportation industries (26 per cent) in 2006. In Ontario, the largest proportion of boat operators were employed in amusement and recreation industries (37 per cent), including in marinas.

The support activities for water transportation industries (including marine cargo handling companies, shipping lines and shipping agencies) employed 66 per cent of longshore workers in Quebec, and 46 per cent of longshore workers in Ontario.

In 2007, the St. Lawrence Seaway Management Corporation employed 545 permanent workers, including 9 management positions, 84 administrative positions and 452 workers involved in Seaway operations (Table 10.2). Employment by the St. Lawrence Seaway Management Corporation decreased at an annual average rate of 0.7 per cent between 2001 and 2007. Employment of temporary workers decreased more significantly during this period.

Table 10.2 Employment by Category, St. Lawrence Seaway Management Corporation (2001 - 2007)

	Management	Administration	Operations	Total	Temporary
Employment in 2007	9	84	452	545	8
Total Growth (2001-2007)	-18.2	25.4	-7.8	-4.0	-74.2
Average Growth (2001-2007)	-3.3	3.8	-1.3	-0.7	-20.2
Source: St. Lawrence Seaway Management Corporation					

Port authorities employ a diverse workforce, including managers, professionals, and administrative personnel, a small number of sailors, and blue collar workers employed mainly in the maintenance of terminals (*e.g.* electronic technicians, plumbers, and truck drivers). The Port of Montreal also employs railway workers. Port authority workers in different occupational groups fall under different unions.

The working age population with employment income in the marine transportation Gateway sector occupations decreased by 10.6 per cent in Quebec and 18.1 per cent in Ontario, between 2000 and 2005 (Table 10.3). Average employment income for these occupations, measured in constant 2005 dollars, increased by 8.1 per cent in Quebec and fell by 11.5 per cent in Ontario during this period.

Table 10.3 Population with Employment Income and Average Earnings in Constant 2005 Dollars in the Marine Transportation Gateway Sector (2000-2005)

	2000		2005		Total Growth 2000-2005 (%)	
	Total - Population 15 years and over with employment income*	Average employment income (constant 2005 $)	Total - Population 15 years and over with employment income*	Average employment income ($)	Total - Population 15 years and over with employment income*	Average employment income ($)
QUEBEC						
Deck officers, water transport	920	58,337	715	49,416	-22.3	-15.3
Engineer officers, water transport	365	51,093	425	50,454	16.4	-1.3
Marine traffic regulators[a]	375	61,203	260	65,817	-30.7	7.5
Deck crew, water transport	830	27,734	715	33,010	-13.9	19.0
Engine room crew, water transport	n.a	n.a.	n.a	n.a.	n.a	n.a.
Lock and cable ferry operators and related occupations	300	38,175	n.a	n.a.	n.a	n.a.
Boat operators	n.a	n.a.	n.a	n.a.	n.a	n.a.
Longshore workers	1,555	52,511	1,770	60,366	13.8	15.0
Marine Transportation Occupations [b]	4,345	48,653	3,885	52,597	-10.6	8.1
All occupations	3,739,245	33,373	4,022,480	33,958	7.6	1.8
ONTARIO						
Deck officers, water transport	635	62,664	710	45,273	11.8	-27.8
Engineer officers, water transport	420	58,145	385	62,638	-8.3	7.7
Marine traffic regulators[a]	500	57,380	n.a.	n.a.	n.a.	n.a.
Deck crew, water transport	460	30,833	390	26,342	-15.2	-14.6
Engine room crew, water transport	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lock and cable ferry operators and related occupations	400	32,160	375	32,540	-6.3	1.2
Boat operators	n.a.	n.a.	250	17,852	n.a.	n.a.
Longshore workers	865	27,220	575	35,999	-33.5	32.3
Marine Transportation Occupations [b]	3,280	43,748	2,685	38,696	-18.1	-11.5
All occupations	6,212,485	39,886	6,623,700	40,983	6.6	2.8

Source: Census 2006, Statistics Canada, Catalogue Number 97-559-XCB2006062

* 'Earnings or employment income' refers to total income received by persons 15 years of age and over during calendar year 2005 as wages and salaries, net income from a non-farm unincorporated business and/or professional practice, and/or net farm self-employment income. 'Average income of individuals' refers to the weighted mean total income of individuals 15 years of age and over who reported income for 2005.

[a] Data is for NOC code 2275, which includes railway traffic controllers

[b] Total or weighted average calculated for occupations with available data only.

A report entitled *Marine Transportation, Ports and Ocean Technology Situational Analysis*[23] which examined the marine sector labour market at the national level, identified

[23] Report prepared for HRSDC by CPCS Transcom Ltd., May 2008

the need for engineer officers as "the number one priority across the industry, followed closely by deck officers, and their respective crews" (CPCS Transcom Limited, 2008: 4). In Quebec and Ontario, the study reported an increasing demand for engineer officers and deck officers (CPCS Transcom Limited, 2008: 19). There seems to have been a geographical shift in the deck officer workforce, which fell by 22.3 per cent in Quebec and increased by 11.8 per cent in Ontario during this period. In 2005, the deck officer occupation represented 18.4 per cent of the marine transportation sector population with employment income in Quebec and the largest share (26.4 per cent) of the marine workforce with employment income in Ontario. The engineer officer workforce represented approximately 11 per cent of the marine workforce with employment income in Quebec, and 14 per cent in Ontario in 2005. Between 2000 and 2005, the engineer officer workforce increased by 16.4 per cent in Quebec, and decreased by 8.3 per cent in Ontario (Table 10.2). The deck crew occupation group represented 18.4 per cent of the marine transportation sector population with employment income in 2005 in Quebec and 14.5 per cent in Ontario. Between 2000 and 2005, the number of deck crew workers fell by 13.9 per cent in Quebec and by 15.2 per cent in Ontario. The average employment income for this occupation increased by 19 per cent in Quebec during this period, and decreased by 14.6 per cent in Ontario. Data for the engine crew occupation group was unavailable for both provinces.

Table 10.4 Gateway Marine Transportation Sector Employment Insurance Recipients in Quebec (2006)

	Average Employment 2005-2007	Employment Insurance Claimants (2006 monthly average)	Workers on Employment Insurance as Share of Total Workers (%)
Deck officers	1,100	90	8.2
Engineer officers	200	80	40.0
Marine traffic regulators[a]	600	0	0.0
Deck crew, water transport	600	200	33.3
Engine room crew	100	35	35.0
Lock and cable ferry operators and related occupations	200	30	15.0
Boat operators	100	35	35.0
Longshore workers	1,450	100	6.9
Marine transportation Gateway sector occupations	4,350	570	13.1
All occupations	3,778,150	145,150	3.8

Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region
[a] Data is for NOC code 2275, which includes railway traffic controllers

In Quebec, longshore workers were the largest marine transportation occupation group in 2005, representing 45.6 per cent of the working age population with employment income in marine transportation Gateway sector occupations. In Ontario, longshore workers represented 21.4 per cent of the sector's workforce with employment income in 2005. Between 2000 and 2005, the number of longshore workers grew by 13.8 per cent in Quebec and fell by 33.5 per cent in Ontario (Table 10.3). During this period, the average employment income for this occupation group increased by 15 per cent in Quebec, and 32.3

per cent in Ontario. However, the higher percentage increase in Ontario is from a lower base, and an important income differential remains between longshore workers in the two provinces: In 2005, the average employment income for longshore workers in Ontario was equal to approximately 60 per cent of the average employment income for longshore workers in Quebec.

The railway and marine traffic regulators workforce decreased by 30.7 per cent in Quebec between 2000 and 2005. During this period, the average employment income for this occupation increased by 7.5 per cent. Data for this occupational group was unavailable for Ontario.

In 2006, all of the marine transportation Gateway sector occupations had a ratio of employment insurance (EI) claimants to total workers considerably higher than the corresponding all-occupations average in Quebec, with the exception of marine traffic regulators (Table 10.4). In the absence of unemployment figures, the proportion of EI claimants is used as a measure of workforce reserves for each occupation.[24] The high proportion of marine workers who were EI recipients suggests that labour shortages in the sector are unlikely to be a major concern in Quebec.

2. Short Term Labour Market Outlook

Short-term labour market forecasts prepared by Service Canada suggest little growth in marine transportation occupations in Quebec, with the exception of longshore workers, for whom employment is forecasted to grow at an average annual rate of 2.2 per cent between 2008 and 2012 (Table 10.5). In all other major marine transportation Gateway sector occupations in Quebec, short-term labour needs are entirely attributable to attrition. In the marine transportation sector in Quebec, longshore workers and marine traffic regulators were identified as the marine occupations with the most favourable prospects for job seekers. The short- to medium term employment outlook for deck officers and deck crew is expected to be average in Quebec. The outlook for engineer officers, engine room crew, boat operators, lock and cable ferry operators and related occupations could not be determined for the forecast period. The corresponding short-term occupational forecasts were unavailable for the province of Ontario at the time of writing this report.

An aging workforce has been a concern for the marine transportation industry, particularly within some occupations. In particular, 84.6 per cent of engine room crew workers in Quebec were between 45 and 65 years of age in 2006 (Chart 10.1). In Ontario, the engine room crew workforce was considerably younger: over 15 per cent of engine room crew in Ontario were below 25 years of age, and only 38.5 per cent of engine room crew in the 45-65 years old category.

[24] This measure should not be confused with a direct measure of unemployment. This figure compares 2007 data EI claimants to the average number of employed between 2005 and 2007. Not all persons who are unemployed are eligible for employment insurance. Furthermore, this figure, used as an indicator of available worker supply, has limitations, as the available labour supply depends on several factors including the number of graduates from training programs and the availability of workers.

The proportion of workers who were 45 years or older in Quebec was 67.2 per cent for engineer officers and 77.8 per cent for boat operators. Many workers in these occupations can be expected to retire in the near future. Average annual attrition rate for the 2008-2012 period is estimated at 7.5 per cent for engineer officers in Quebec, and 5 per cent for boat operators and engine room crew (calculated from Table 10.5). In Ontario, although the smaller proportion of engineer officers over 45 years old was lower than in Quebec, the subset of workers over 65 years old was higher in Ontario (8.3 per cent). The boat operators' workforce was younger in Ontario, with only 51.2 per cent of workers over 65 years old.

Although 62.5 per cent of marine traffic regulators and railway traffic controllers in Quebec were between 45 and 65 years of age, the estimated average annual attrition rate for this occupational group was relatively low (2.5 per cent) between 2008 and 2012. In Ontario, only 47.8 per cent of marine traffic regulators and railway traffic controllers were between 45 and 65 years of age in 2006.

Table 10.5 Short Term Labour Market Forecasts for Marine Transportation Gateway Sector Occupations in Quebec (2008-2012)

	Employment (2005-2007 average)	Average Annual Growth Rate 2008-2012 (%)	Annual Requirement Attributable to Growth (2008-2012)	Annual Requirement Attributable to Attrition (2008-2012)	Total Annual Requirement (2008-2012)	Total Annual Requirement as share of 2005-2007 average employment (%)	Outlook 2008-2012*
	A	B	C	D	E = C+D	F = E/A*100	G
Deck officers	1,100	0.0	0	60	60	5.5	Average
Engineer officers	200	0.0	0	15	15	7.5	Indeterminate
Marine traffic regulators[a]	600	0.0	0	15	15	2.5	Fair
Deck crew, water transport	600	0.0	0	20	20	3.3	Average
Engine room crew	100	0.0	0	5	5	5.0	Indeterminate
Lock and cable ferry operators and related occupations	200	0.0	0	10	10	5.0	Indeterminate
Boat operators	100	0.0	0	5	5	5.0	Indeterminate
Longshore workers	1,450	2.2	35	90	125	8.6	Fair
Marine transportation Gateway sector occupations	4,350	0.8	35	220	255	5.9	
All Occupations	3,778,150	1.1	41,550	108,800	150,350	4.0	

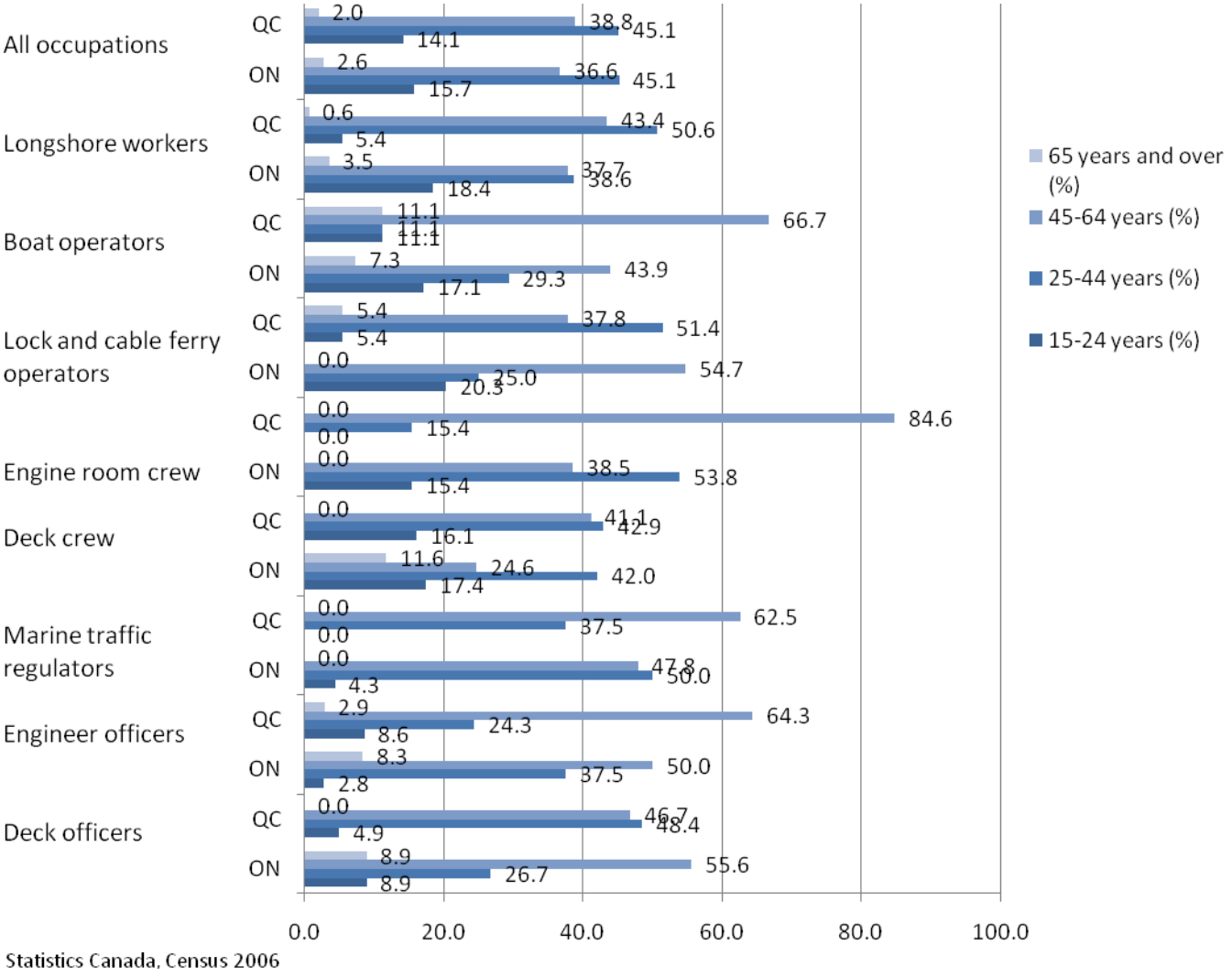
Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region
*Describes the possibility of finding employment, based on labour supply and demand variables, including employment growth, attrition, the number of Employment Insurance claimants, and economic forecasts.
[a] Data is for NOC code 2275, which includes railway traffic controllers

Lock and cable ferry operators in Quebec are also expected to have a high average rate of attrition (5 per cent), as 5.4 per cent of workers in this occupation were 65 years of age or older in 2006. In Ontario, although there were no lock and cable ferry operators

above 65 years of age, a relatively larger proportion of them were between 45 and 65 years old (approximately 55 per cent). However, lock and cable ferry operators had a high proportion of workers (20.3 per cent) below the age of 25 years.

Longshore workers and deck officers, the two largest marine occupations in terms of employment in Quebec, are also expected to have relatively high annual average attrition rates (6.5 per cent for longshore workers and 5.5 per cent for deck officers) between 2008 and 2012. In Quebec, high attrition rates are less critical for these occupations than for other occupations, where the average age is relatively low. In Ontario, however, the deck officers' aging workforce could lead to a high level of retirements in the coming years. In 2006, 64.4 per cent of deck officers in Ontario were over 45 years old, including 8.9 per cent of workers above 65 years old.

Chart 10.1 Age Distribution in Marine Transportation Gateway Sector (2006)



Statistics Canada, Census 2006

The Maritime Employers Association was not concerned about high attrition in the longshore workers occupation due to retirements, because of a downward trend in the

average age of longshore workers: the average age of the reserve labour pool (35 years) is significantly lower than that of the current workforce (47 years) (Canadian Sailings, 2007). In 2006, 44.0 per cent of longshore workers in Quebec, and 41.2 per cent of longshore workers in Ontario were over 45 years of age. In Ontario, 18.4 per cent of longshore workers were below 25 years of age.

The significance of retirement demand varies across the marine transportation sector. A Hamilton Port Authority representative, for example, explained that retirement demand was not a major concern for the Port Authority. In the short and medium term, the biggest factor driving performance and therefore human resource needs in the marine transportation industry is the economy. Due to the downturn, ports may have to struggle to keep their workforce employed. To remain competitive in the long term, the Port of Hamilton intends to diversify its cargo line, adopting new business models, develop its container capacity and develop short-sea shipping. These initiatives have human resource implications in terms of labour force and skills requirements.

3. Skills, Training, and Certification

Management, finance and administration positions in the marine industry, such as those associated with port management and operations, generally do not require industry-specific skills, but require on-the-job training to gain familiarity with the industry and port operations (CPCS Transcom Limited, 2008). Port authorities also employ workers with technical and professional skills for the maintenance of facilities, such as welders or electricians. These workers are generally available from the construction industry (CPCS Transcom Limited, 2008).

Deck officers and engineer officers are often trained in post-secondary school programs at marine training institutions. In Quebec in 2006, 81.9 per cent of deck officers had completed post-secondary education, including 10.2 per cent who had completed university studies (Chart 10.2). In Ontario, 69.6 per cent of deck officers held a post-secondary degree, including approximately 26 per cent who held a university degree.

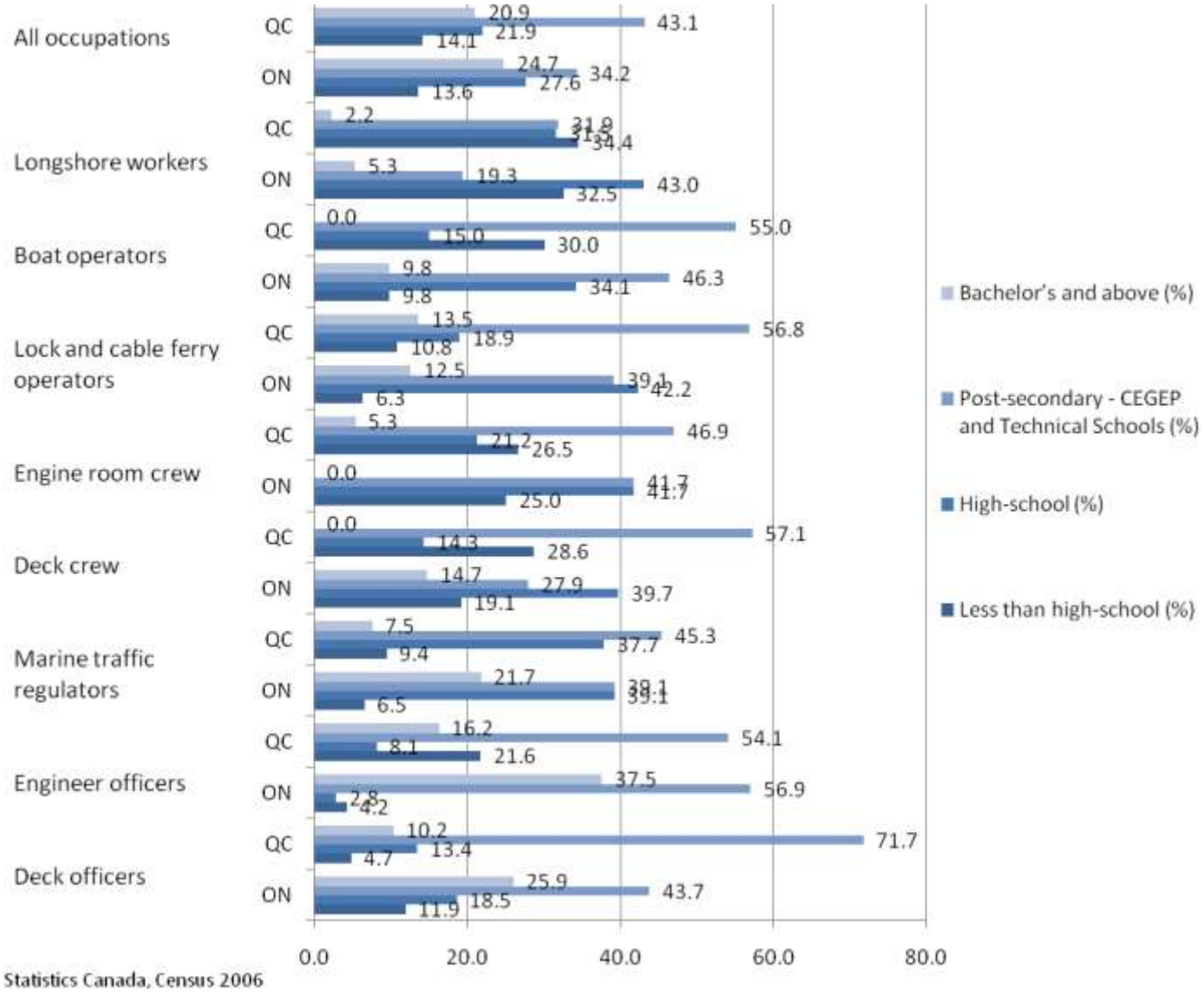
In Quebec, the Institut Maritime de Rimouski is the only institution providing a diploma of collegial studies (DEC) in navigation, in addition to development courses for officers and sailors. Obtaining a DEC is an asset for the deck officer occupation in Quebec. However, the deck officer occupation generally requires a secondary school diploma, and either the completion of a deck cadet program from a nautical institution approved by Transport Canada, or a minimum of two years of experience as a member of a deck crew and Transport Canada certification.[25] Certificates required include marine security and other certificates depending on the rank of the officer and the type of navigation (long distance, inland, cabotage, etc.)

In the engineer officer occupation, 70.3 per cent of workers had completed post-secondary education, including 16.2 per cent who had obtained at least a bachelor's degree in Quebec in 2006 (Chart 10.2). In Ontario, educational attainment for this occupation was

[25] Job Futures, Quebec website: http://www150.hrdc-drhc.gc.ca/asp/emploi/emploiAG.asp?page=rechercheCodeAG.asp

exceptionally high, with 94.4 per cent of workers having completed post-secondary studies, including 37.5 per cent of workers holding a university degree in 2006.

Chart 10.2 Educational Attainment for Gateway Marine Transportation Sector (2006)



Statistics Canada, Census 2006

In Quebec, there are four certification levels for the engineer officer occupation. An entry level position in the engineer officer occupation (fourth class) requires a secondary school diploma and one of three following options: the completion of a three-year program in marine mechanical engineering from an approved marine institute (such as the DEC in marine mechanical engineering offered by the Institut Maritime de Rimouski in Quebec); three years of experience as an engine room crew member and six months of official training from a recognized naval institute; or three years of experience as an engine

mechanic coupled with six months of experience as an engine room crew member.[26] Additional experience, training and the completion of examinations are required for progression to higher certification levels. Certification is provided by Transport Canada. Certification for senior level deck officers or engineer officers requires on average 10 to 15 years of work experience in addition to training (CPCS Transcom Limited, 2008).

There are three training institutions in Ontario offering the post-secondary marine mechanic program, which has an apprenticeship component: Georgian College, Sault College in Sault St. Marie, and Canadore College in North Bay.[27] The Great Lakes International Marine Training Centre of Georgian College offers marine navigation technology and marine engineering technology programs, both of which include a co-operative education component.[28] The Ontario Ministry of Transportation contributed $3 million to the $8 million total investment in the Great Lakes International Marine Simulation and Research Centre, developed in partnership with the Georgian College, Transport Canada and various industry stakeholders. The Great Lakes International Marine Simulation and Research Centre was officially opened on November 21, 2008.

Education and training is a provincial jurisdiction and as a result training funding differs across regions in Canada (CPCS Transcom Limited, 2008). Low funding levels can constitute a significant barrier for students and workers in light of the significant training costs, including tuition fees, high costs of transportation to a marine training institute and associated costs. The availability and flexibility of courses and programs also constitute barriers to training.

Because acquiring experience is essential for entry and advancement in marine occupations, having sufficient and adequate cadet programs is crucial to meeting the industry's labour force needs. A majority of stakeholders interviewed in CPCS Transcom's *Situational Analysis of Human Resources in the Marine Sector* reported the need for additional cadet programs in Central Canada. Employers cited several impediments to hiring cadets, including rules preventing cadets from performing certain functions in unionized positions, contracts preventing companies from hiring cadets without their clients' approval, and the absence of subsidies or other financial initiatives (CPCS Transcom Limited, 2008).

The other major occupations in the marine Gateway sector do not require extensive training or certification. The deck crew and engine crew occupations require Marine Emergency Duty Training, provided by technical marine training institutes, and the completion of six months of sea time (CPCS Transcom Limited, 2008). In Quebec, 57.1 per cent of engine crew and 52.2 per cent of deck crew held a post-secondary degree in 2006. In Ontario, 41.7 per cent of engine crew and 42.6 per cent of deck crew held a post-secondary degree.

[26] Job Futures, Quebec website: http://www150.hrdc-drhc.gc.ca/asp/emploi/emploiAG.asp?page=rechercheCodeAG.asp
[27] http://www.careersinboating.com/TrainingPrograms/tabid/331/Default.aspx
[28] http://marinetraining.ca/marine-programs/

The longshore workers occupation generally had a lower educational attainment level than the other major marine occupations, with 34.4 percent of workers not having completed high school, and only 31.5 per cent having a secondary school diploma in Quebec in 2006 (Chart 10.2). Similarly in Ontario, 32.5 per cent of longshore workers had not completed high school, and 43.0 per cent held at most a high school degree in 2006.

The marine industry's training needs are growing, and include advanced training in information and navigation technologies, as well as continuous training in safety management and quality assurance (Canada's Marine Industry Alliance, 2005). An increase in training requirements has led ports to invest in new technologies, such as simulation hardware and software. The availability of these technologies limits the time that front-line equipment is taken out of service to be used in training (*Canadian Sailings*, 2007).

Emerging skills requirements and related positions identified by marine industry stakeholders included sustainable development, risk management, and project management. Continuous changes in skill requirements create an ongoing need for training. A Port Authority representative reported looking for workers who can work with new approaches and business models adapted to a changing environment, people who would be "dynamic" rather than "reactive" leaders. Internal resistance to the process of organisational change is a challenge, however.

4. Recruitment and Retention Challenges

Employers in Quebec and Ontario have not reported difficulties in recruiting deck crew and engineer crew, despite and increasing demand for these occupations at the national level (CPCS Transcom Limited, 2008). Recruitment of longshore workers has not been a source of concern for employers. Organizations including the Maritime Employer Association (MEA) and the International Longshore and Warehouse Union in Canada, reported receiving a large number of applicants through their recent recruitment campaigns (*Canadian Sailings*, 2007). The marine industry competes for workers with other industry sectors, but offers competitive wages. Marine occupations for which Quebec and Ontario employers reported difficulties recruiting included marine crane operators, marine electrical/electronics technicians, instrumentation technicians, marine superintendents/operations managers, and safety managers (CPCS Transcom Limited, 2008).

The recruitment of youth to marine training programs has been identified as an important human resource challenge for the marine industry (Canada's Marine Industry Alliance, 2005). There are recruitment difficulties for marine engineers, and marine maintenance and operations workers. The Canadian Coast Guard has faced difficulties recruiting qualified workers.

Representatives of port authorities interviewed have reported recruitment and retention difficulties for specialised occupations such as civil engineers and information technology specialists. A major reason for these shortages is that ports are at a disadvantage with other industries when competing for these workers, because they are typically looking to fill a small number of positions and can provide little career advancement opportunities

for these workers relative to other sectors. The Hamilton Port Authority has difficulties finding specialised workers with a combined knowledge in real estate and port operations, and had difficulties filling port security positions. A representative of the Port Authority explained that this was due to the unavailability of adequate specialised training, and to competition for labour due to the proximity of the large Greater Toronto area market.

At the Port of Montreal, the difficulty of recruiting civil engineers is expected to increase due to large planned infrastructure projects. The location of the port also determines the size of the available labour pool for certain occupations. For instance, the Montreal Port Authority has only one 'marine operations' position to fill, but has difficulty finding a suitable candidate due to a limited labour pool in the Montreal area. The Port of Montreal has also faced shortages of railway workers.

A negative image or perception of the marine industry, linked to the difficult lifestyle of marine workers, also puts the industry at a disadvantage vis-à-vis other sectors with respect to recruitment.

5. Women, Immigrants and First Nations Peoples

There is a growing interest in recruiting First Nations people and women, who are largely absent from the industry workforce (CPCS Transcom Limited, 2008). In Quebec, in 2006, women represented 4 per cent of deck officers, 8 per cent of deck crew, and 5.0 per cent of longshore workers (Table 10.6). There were virtually no women employed as engineer officers or as engine room crew. In Ontario, women represented 4.1 per cent of engineer officers and 14.1 per cent of deck officers, 8.7 per cent of deck crew, 15.4 per cent of engine room crew and 5.3 per cent of longshore workers. In 2006, 9.6 per cent of marine traffic regulators and railway traffic controllers in Quebec and 34 per cent in Ontario were female. The corresponding data for First Nations peoples, were not available at the time of writing of this report.

Table 10.6 Women and Immigrants in the Marine Transportation Gateway Sector (2006)

	Females Share of Labour Force (%)		Immigrants* Share of Labour Force (%)	
	Quebec	Ontario	Quebec	Ontario
Deck Officers	3.7	14.1	7.1	23.5
Engineer Officers	2.5	4.1	15.1	39.7
Marine traffic regulators*	9.6	34.0	7.8	6.4
Deck Crew	6.3	8.7	3.6	13.2
Engine Room Crew	0.0	15.4	26.7	15.4
Lock and Cable Ferry Operators and Related Occupations	14.3	18.5	0.0	18.8
Boat Operators	0.0	17.5	21.1	12.2
Longshore Workers	4.7	5.3	3.2	12.3
Marine transportation Gateway sector	5.1	12.8	6.2	19.1
All Occupations	47.1	47.7	12.2	30.2

Source: Statistics Canada, Census 2006

*The term 'immigrant' refers to the population of people aged 15 and over who worked during the week preceding the 2006 Census and who have landed immigrant status in Canada or have had it in the past.

[a] Includes railway traffic controllers and marine traffic regulators

The difficulty of attracting women to non-traditional sectors has been emphasised by industry stakeholders interviewed. In particular, although women represent approximately 25 per cent of employees at the Montreal Port Authority, which follows Gender Equity policies for recruitment, few of the women are in 'non-traditional occupations'. With respect to First Nations peoples, a representative from the Montreal Port Authority reported that very few members of this minority group were available in the labour pool. On the other hand, she mentioned that immigrant workers did not face major labour force integration problems.

Immigrants are generally more represented than women in the marine sector workforce. In Ontario, landed immigrants represented approximately 40 per cent of engineer officers, 15.4 per cent of engine room crew, 23.5 per cent of deck officers and 13.2 per cent of deck crew in 2006. A smaller proportion of marine traffic regulators and railway traffic controllers (6.4 per cent), boat operators (12.2 per cent), and longshore workers (12.3 per cent) were landed immigrants in 2006.

In Quebec, they represented 15.1 per cent of engineer officers, 26.7 per cent of engine room crew, 7.1 per cent of deck officers and 3.6 per cent of deck crew in 2006. Immigrants represented 7.8 per cent of the marine traffic regulators and railway traffic controller occupation group, 21.1 per cent of boat operators, and 3.2 per cent of longshore workers.

While immigration is generally accepted as a source of labour for marine occupations, there has been resistance to the recruitment of immigrants by some employers, who claim that inadequate language skills represent a safety hazard in these occupations (CPCS Transcom Limited, 2008). Bilingualism is often a requirement for deck officers, and a third language is considered an asset.[29]

Three marine occupations are classified as 'skilled occupations' by Citizenship and Immigration Canada (CIC): deck officers, engineer officers, and marine traffic regulators. Foreign workers in these occupations who meet additional CIC requirements qualify for immigration to Canada under the Skilled Worker Program.

The marine industry has highlighted the need to facilitate the entry of foreign workers in the Canadian marine industry labour market, as well as to remove professional mobility barriers to the transfer of qualified workers from international to Canadian agencies or branches (Canada's Marine Industry Alliance, 2005).

6. Labour Relations

Extensive labour negotiations took place over several months in 2008, between the St. Lawrence Seaway Management Corporation and the Canadian Auto Workers (CAW) union, which represents the Seaway's 445 unionized employees. The Seaway's attempt at introducing new technology that would have replaced some unionized workers met solid

[29] http://www150.hrdc-drhc.gc.ca/asp/emploi/emploiAG.asp?page=listeprofessionsAG.asp&

opposition from the union, which argued that the new technology did not meet adequate safety standards. The union came close to declaring a strike but the parties finally reached a three-year agreement, which provides job guarantees and wage increases.[30]

The marine industry has raised the need to review the Labour Code governing Canadian port operations, arguing that existing legislation does not reflect current industry realities (Canada's Marine Industry Alliance, 2005). For instance, under existing legislation, each port is governed by one collective agreement, which provides little flexibility in addressing terminal specialization or technological innovation. A Port Authority representative reported the need to renegotiate with unions to come up with solutions to some of the human resource challenges. For instance, regulation could be amended to allow longshore workers to work part-time, which would alleviate potential labour shortages. Some representatives reported that labour relations between ports and labour unions were at times challenging.

Another legislation that has stirred controversy in the marine industry is the Pilotage Act, under which ships are required to use pilots to navigate the Great Lakes and St. Lawrence Seaway. Industry representatives have argued that pilotage services in Canada are at best inefficient and at worse unnecessary due to technical innovation and the availability of state-of-art navigation equipment (*Canadian Sailings*, 2007). Pilotage Authorities have also called for revisions to the Act that would enable them to achieve financial self-sustainability as required by their status as Crown Corporations[31]. The federal government undertook consultations with industry stakeholders in this regard in February and March 2007, and a bill to amend the Pilotage Act (Bill C-4) was introduced in the House of Commons in October 2007. Bill C-4 had not become law before the 39th Parliament ended in September 2008. Opposition members and industry stakeholders expressed concerns regarding the Bill's focus on the financial self-sufficiency of the pilotage authorities rather than on the reforms needed to achieve the Act's objectives of providing efficient pilotage services. The number of pilots and pilotage authority workers has not changed significantly between 2001 and 2007 (Table 10.7). In 2007, the Great Lakes pilotage authorities employed 80 workers, including 61 pilots, and the Laurentian pilotage authorities employed 233 workers, including 190 pilots.

Table 10.7 Employment by Canadian Pilotage Authorities (2001 - 2007)

	Great Lakes Pilotage		Laurentian Pilotage		Atlantic Pilotage	
	Pilots	Total Employed	Pilots	Total Employed	Pilots	Total Employed
2007	61	80	190	233	56	85
Total Growth (2001-2007)	-11.6	-10.1	7.3	5.0	1.8	3.7
Average Growth (2001-2007)	-2.0	-1.8	1.2	0.8	0.3	0.6

Source: Pilotage Authorities
Note: The number of pilots includes contract pilots. The total employed includes administrative staff, dispatch, pilot boat and other unspecified services.

[30] The Financial Post "St. Lawrence Seaway, union deal averts strike" (Tuesday October 14, 2008)
[31] http://www.parl.gc.ca/39/2/parlbus/chambus/house/bills/summaries/c4-e.pdf

7. Human Resource Strategies

The marine transportation sector has been successful in developing and providing high quality training programs. A representative interviewed explained that the sector was "ahead of the game" in that regard. Training needs have been partly addressed through coordination between industry and training institutions. For instance, the Hamilton Port Authority has partnered with neighbouring training colleges offering apprenticeship programs, including McMaster University and the Mohawk College in Hamilton.

Industry stakeholders have initiated programs aimed at raising awareness of marine sector occupations and attracting new entrants, particularly among the youth. Career promotion strategies have included Georgian College's development of a handbook on marine careers and the CSMO Industrie maritime du Québec's "A Seaful of Opportunity" DVD (CPCS Transcom Limited, 2008). In addition to informing the public about marine career opportunities, such initiatives address the 'perception issue' linked to the difficult lifestyle of marine workers, which stakeholders consider as an impediment to recruitment (CPCS Transcom Limited, 2008). Industry representatives interviewed highlighted the CSMO Industrie Maritime's efforts in this regard.

Best practices for recruitment and retention strategies in the industry include the design of attractive leave systems, and policies and programs to ensure an adequate work-life balance. The Hamilton Port Authority engages in job enrichment, which involves providing additional training and expanding the responsibilities of employees when promotions are not possible.

Port authorities, operating within the framework of the federal government, are somewhat limited in the design of incentives schemes to address retention issues. The Port of Montreal has commissioned an external consulting firm to develop a strategy to address the ageing workforce issue. The Hamilton Port Authority has developed a strategic human resources plan for the next five years entitled "Seaway to Success", in which policies, benefits and incentive structures are examined to ensure that the needs of the workforce are adequately addressed. The Hamilton Port Authority has also changed its recruitment philosophy in recent years, shifting from 'expanded recruitment' to 'targeted recruitment' as a means of obtaining qualified candidates, and sometimes candidates with a "good fit with the organisation" even if these workers do not exactly have the required skill set, in which case they are given on-the-job training. Examples of recruitment strategies that were successful included advertising positions with the Association of Canadian Port Authorities (ACPA) and word-of-mouth.

D. Rail Transportation

This section describes the occupations involved in the Gateway rail transportation subsector, providing an overview of the current human resource situation for these occupations, and an outlook for the next five years based on current shortages and projected needs. Quantitative data from several sources is used to examine employment trends and

draw a profile of the Gateway workforce, including employment distribution across industries, age structure, educational attainment and workforce composition. Qualitative data from a literature review and insight gathered from the stakeholders interviewed are also presented to describe the human resource challenges facing these occupations, including skills/certification-related issues, regulatory obstacles to certification or labour mobility, recruitment and retention, and labour relations.

The major occupations of the rail transportation Gateway sector are supervisors of railway transport operations (NOC 7221), railway carmen/women (NOC 7314), railway and yard locomotive engineers (NOC 7361), railway conductors and brakemen /women (NOC 7362), railway yard workers (NOC 7431), railway track maintenance (NOC 7432), railway traffic controllers (included in 2275) and railway labourers (included in NOC 7622). Railway transportation companies also employ heavy-duty equipment mechanics (NOC 7312), included under the construction Gateway sector. Railway transport operations managers (included in NOC 0713) and freight traffic managers (included in NOC 0713) are classified under the multimodal/ supply chain sector for the purpose of this report.

1. Employment Trends

In 2006, the rail transportation industries employed 78 per cent of railway transport operations supervisors in Quebec, and 76 per cent of railway transport operations supervisors in Ontario (Table 11.1). Six per cent of railway transport operations supervisors were employed in the support activities for transportation industries.

The railway transportation industries employed the largest share of railway and yard locomotive engineers (86 per cent in Ontario, and 71 per cent in Quebec) and railway conductors and brakemen/women (97 per cent in Ontario and 75 per cent in Quebec). Railway carmen/ women were primarily employed in rail transportation (56 per cent of railway carmen/women in Ontario, and 60 per cent in Quebec) and in transit and ground passenger transportation (27 per cent in Ontario, and 19 per cent in Quebec) in 2006.

Rail transportation industries also employed the largest share of railway yard workers (65 per cent in Ontario and 69 per cent in Quebec) and railway track maintenance workers (71 per cent in Ontario and 51 per cent in Quebec) in 2006. Support activities for transportation employed 13 per cent of railway yard workers in Ontario, and 12 per cent of railway yard workers in Quebec. Transit and ground passenger transportation employed 17 and 18 per cent of railway track maintenance workers in Ontario and Quebec, respectively.

Railway and motor transport labourers were largely employed in rail transportation industries (37 per cent in Ontario and 14 per cent in Quebec), and in truck transportation (20 per cent in Ontario and 34 per cent in Quebec). Railway traffic controllers who represented approximately 71 per cent of workers in their occupational group in Ontario, and 60 per cent in Quebec, were employed in the rail transportation industries in 2006.

Table 11.1 Industry-Occupation Employment Matrix for the Rail Transportation Gateway Sector: Per cent of Occupation by Industry Group (2006)

	Supervisor, Railway Transport Operations (7221)		Railway Carmen/ women (7314)		Railway and Yard Locomotive Engineers (7361)		Railway Conductors and Brakemen/ women (7362)		Railway Yard Workers (7431)		Railway Track Maintenance Workers (7432)		Railway Labourers (7622) [a]		Railway Traffic Controllers (2275) [b]	
	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC
Mining (except Oil and Gas)				5	1	8		6				7	2			4
Heavy and Civil Engineering Construction	7										1		2			6
Rail Transportation	**78**	**76**	**56**	**60**	**86**	**71**	**97**	**75**	**65**	**69**	**71**	**51**	**37**	**14**	**71**	**60**
Truck Transportation		4	1			1		1					20	34		4
Transit and Ground Passenger Transportation		6	27	19	2		1	3	6		18	17	8		4	4
Support Activities for Transportation	6	6	6		3	5	1	4	13	12	7	6	7	7	4	12
Federal Government Public Administration				3								2			9	4
Other	8	9	10	13	9	15	2	11	17	20	3	17	25	45	11	8
All Industries	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Statistics Canada, Census 2006

Notes: [a] Data is for NOC code 7622, which includes motor transport labourers
[b] Data is for NOC code 2275, which includes marine traffic regulators

The labour force with employment income in the rail transportation Gateway sector occupations decreased between 2000 and 2005, by 31 per cent in Quebec, and by 22.9 per cent in Ontario (Table 11.2). In fact, the rail transportation sector in Canada has experienced a steady decline in employment since the early 1990s. Rail transportation sector employment in Canada fell from over 67,000 employees in 1995 to less than 35,000 employees in 2005 (Transport Québec, 2008: 16). In 2005, there were 3,820 rail workers with employment income in Quebec and 7,085 in Ontario. Between 2000 and 2005, average employment income in the rail transportation sector occupations increased by 13.2 per cent in Quebec and by 1 per cent in Ontario.

The railway transportation supervisors workforce with employment income decreased by 13.4 per cent in Quebec, between 2000 and 2005, and by 36.7 per cent in Ontario. The rail transportation equipment operators and labourers workforce also decreased significantly. In particular, employment fell sharply in the railway and yard locomotive engineers occupation, which had been the most important occupational group in terms of railway transportation sector employment in 2000, representing nearly a quarter of the sector's workforce in Quebec and Ontario. The number of railway and yard locomotive engineers with employment income fell by approximately 37 per cent in both Quebec and Ontario, while the average employment income for these occupations increased by

approximately 13 to 14 per cent in both provinces. A shortage of locomotive engineers has been identified in both provinces and at the national level (Ray Barton Associates, 2008).

Table 11.2 Population with Employment Income and Average Earnings in Constant 2005 $ in the Railway Transportation Gateway Sector (2000-2005)

	2000		2005		Total Growth 2000-2005 (%)	
	Total - Population 15 years and over with employment income*	Average employment income (constant 2005 $)	Total - Population 15 years and over with employment income*	Average employment income ($)	Total - Population 15 years and over with employment income*	Average employment income ($)
QUEBEC						
Supervisors, railway transport operations (7221)	410	58,688	355	72,029	-13.4	22.7
Railway carmen/women (7314)	745	48,738	595	54,879	-20.1	12.6
Railway and yard locomotive engineers (7361)	1,295	57,965	820	66,100	-36.7	14.0
Railway conductors and brakemen/women (7362)	730	60,973	825	61,957	13.0	1.6
Railway yard workers (7431)	365	48,748	n.a	n.a.	n.a	n.a.
Railway track maintenance workers (7432)	735	40,120	455	46,730	-38.1	16.5
Railway labourers (7622) [a]	1,260	23,868	770	21,945	-38.9	-8.1
Railway traffic controllers (2275) [b]	375	61,203	260	65,817	-30.7	7.5
Railway Transportation Gateway Sector Occupations[c]	**5,540**	**50,587**	**3,820**	**57,281**	**-31.0**	**13.2**
All occupations	**3,739,245**	**33,373**	**4,022,480**	**33,958**	**7.6**	**1.8**
ONTARIO						
Supervisors, railway transport operations (7221)	695	65,289	440	71,331	-36.7	9.3
Railway carmen/women (7314)	1,180	52,439	1,155	54,304	-2.1	3.6
Railway and yard locomotive engineers (7361)	2,325	71,325	1,475	80,533	-36.6	12.9
Railway conductors and brakemen/women (7362)	1,715	65,150	1,590	64,971	-7.3	-0.3
Railway yard workers (7431)	530	50,104	400	52,026	-24.5	3.8
Railway track maintenance workers (7432)	1,410	46,358	1,180	53,527	-16.3	15.5
Railway labourers (7622) [a]	1,340	28,529	845	27,311	-36.9	-4.3
Railway traffic controllers (2275) [b]	500	57,380	n.a	n.a.	n.a	n.a.
Railway Transportation Gateway Sector Occupations[c]	**9,195**	**59,125**	**7,085**	**59,738**	**-22.9**	**1.0**
All occupations	**6,212,485**	**39,886**	**6,623,700**	**40,983**	**6.6**	**2.8**

Source: Census 2006, Statistics Canada, Catalogue Number 97-559-XCB2006062

Notes: * 'Earnings or employment income' refers to total income received by persons 15 years of age and over during calendar year 2005 as wages and salaries, net income from a non-farm unincorporated business and/or professional practice, and/or net farm self-employment income. 'Average income of individuals' refers to the weighted mean total income of individuals 15 years of age and over who reported income for 2005.

[a] Data is for NOC code 7622, which includes motor transport labourers. [b] Data is for NOC code 2275, which includes marine traffic regulators . [c] Total or weighted average calculated for occupations with available data only.

Railway conductors and brakemen/women are the only occupational groups that had an increase in the workforce with employment income in Quebec, between 2000 and 2005. This group became the largest occupational group in the rail transportation sector in 2005, with 21.6 per cent of the rail transportation workforce with employment income in Quebec, and 22.4 per cent in Ontario. The high demand for this occupation led to a 13 per cent increase in the number of railway conductors and brakemen/women with employment income in Quebec. In Ontario, in 2005, the railway conductor and brakemen/women workforce was 7.3 per cent smaller than in 2000. Railway conductors are the entry-level position for railway engineers. An increase in the railway conductor workforce can therefore reduce the potential for a shortage of engineers.

The railway carmen/women population with employment income in Quebec fell by 20.1 per cent between 2000 and 2005, while their average income increased by 12.6 per cent. In Ontario, the drop in the labour force for this occupation was less significant (2.1 per cent) and the growth in average employment income was slower as well (3.6 per cent). The railway track and maintenance workforce with employment income fell by 38.9 per cent in Quebec and by 16.3 per cent in Ontario between 2000 and 2005. The average employment income for these occupations increased by 16.5 per cent in Quebec and by 15.5 per cent in Ontario over the same period.

Between 2000 and 2005, the number of railway transportation labourers dropped significantly, by 38.9 per cent in Quebec, and by 36.9 per cent in Ontario. The decrease in workforce for this occupation was due to a slower labour demand. The average employment income of labourers fell by 8.1 per cent in Quebec, and by 4.3 per cent in Ontario.

Table 11.3 Gateway Rail Transportation Sector Employment Insurance Recipients in Quebec (2006)

	Average Employment 2005-2007	Employment Insurance Claimants (2006 monthly average)	Workers on Employment Insurance as Share of Total Workers (%)
Supervisors, railway transport operations (7221)	550	10	1.8
Railway carmen/women (7314)	550	5	0.9
Railway and yard locomotive engineers (7361)	1,250	10	0.8
Railway conductors and brakemen/women (7362)	850	10	1.2
Railway yard workers (7431)	150	15	10.0
Railway track maintenance workers (7432)	550	35	6.4
Railway labourers (7622) [a]	850	400	47.1
Railway traffic controllers (2275) [b]	600	0	0.0
Railway Transportation Gateway Sector Occupations	5,350	485	9.1
All occupations	3,778,150	145,150	3.8

Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region
[a] Data is for NOC code 7622, which includes motor transport labourers
[b] Data is for NOC code 2275, which includes marine traffic regulators

The railway traffic controllers and marine traffic regulators (aggregated together in the Census data) workforce with employment income fell by 30.7 per cent in Quebec between 2000 and 2005. The decline was steeper in Ontario, where the number of workers fell by 50 per cent. During this period, average employment income for this occupation group increased by 7.5 per cent in Quebec.

In Quebec, the number of workers with employment income in all Gateway rail transportation sector occupation, with the exception of railway conductors and brakemen/women, decreased between 2000 and 2005 (Table 11.2). This decline was reflected in an increase in unemployment for some occupations, and a drop in the labour force for other occupations. In particular, despite a significant decline in employment for supervisors of railway transport operations, railway carmen and women, railway and yard locomotive engineers, and railway traffic controllers, the proportion of employment insurance claimants in these occupations was lower than the all occupations average in 2006 (Table 11.3). This suggests that workers who have lost their jobs have dropped out of the labour force for these occupations. On the other hand, nearly half of railway and motor transport labourers in Quebec were EI claimants in 2006. A relatively large proportion of railway yard workers (10 per cent) and railway track maintenance workers (6.4 per cent) were on employment insurance as well. In the absence of unemployment figures, the proportion of EI claimants is used as a measure of workforce reserves for each occupation.[32] Labour shortages are unlikely to occur for occupations with a high proportion of EI recipients.

2. Short Term Labour Market Outlook

Labour market forecasts for the province of Quebec project employment in the railway sector to decline over the 2008-2012 period, at an average annual rate of 5.0 per cent (Table 11.4). In particular, employment in the railway track maintenance workers and railway transport labourers occupations are expected to fall at an average annual rate of 2.1 per cent. As few workers are expected to leave these occupations in the next year, employment prospects for job seekers are limited for these occupations. A 1.0 per cent average annual decrease in employment is also expected in the railway yard and locomotive engineer occupation between 2008 and 2012. Nevertheless, a high level of attrition in this occupation will lead to a high demand for rail engineers. In fact, 68.5 per cent of railway and yard locomotive engineers in Quebec are 45 to 65 years of age (Chart 11.1). In Ontario, the railway and yard locomotive engineers' occupation has a very similar age structure. At the national level, the number of locomotive engineers, equipment and operations workers retiring in the next five years is also reported to be large (Ray Barton Associates, 2008).

In most of the rail transport and equipment operations occupations in Quebec, including railway carmen/women, railway conductors and brakemen/women, and rail yard workers, employment is expected to remain at the current levels. The railway

[32] This measure should not be confused with a direct measure of unemployment. This figure compares 2007 data EI claimants to the average number of employed between 2005 and 2007. Not all persons who are unemployed are eligible for employment insurance. Furthermore, this figure, used as an indicator of available worker supply, has limitations, as the available labour supply depends on several factors including the number of graduates from training programs and the availability of workers.

carmen/women and railway conductors and brakemen/women occupations will face relatively high attrition levels in the next five years leading to good prospects of finding employment in these occupations. In fact, a significant proportion of railway carmen/women (75.9 per cent) and more than half of conductors and brakemen/women (53.2 per cent) were between 45 and 65 years of age in Quebec in 2006. On the other hand, although 56 per cent of rail yard workers in Quebec were between 45 and 64 years of age in 2006, few of them are expected to leave the occupation in the next 5 years, and the labour market outlook for this occupation cannot be determined.

Table 11.4 Short Term Labour Market Forecasts for Rail Transportation Gateway Sector Occupations in Quebec (2008-2012)

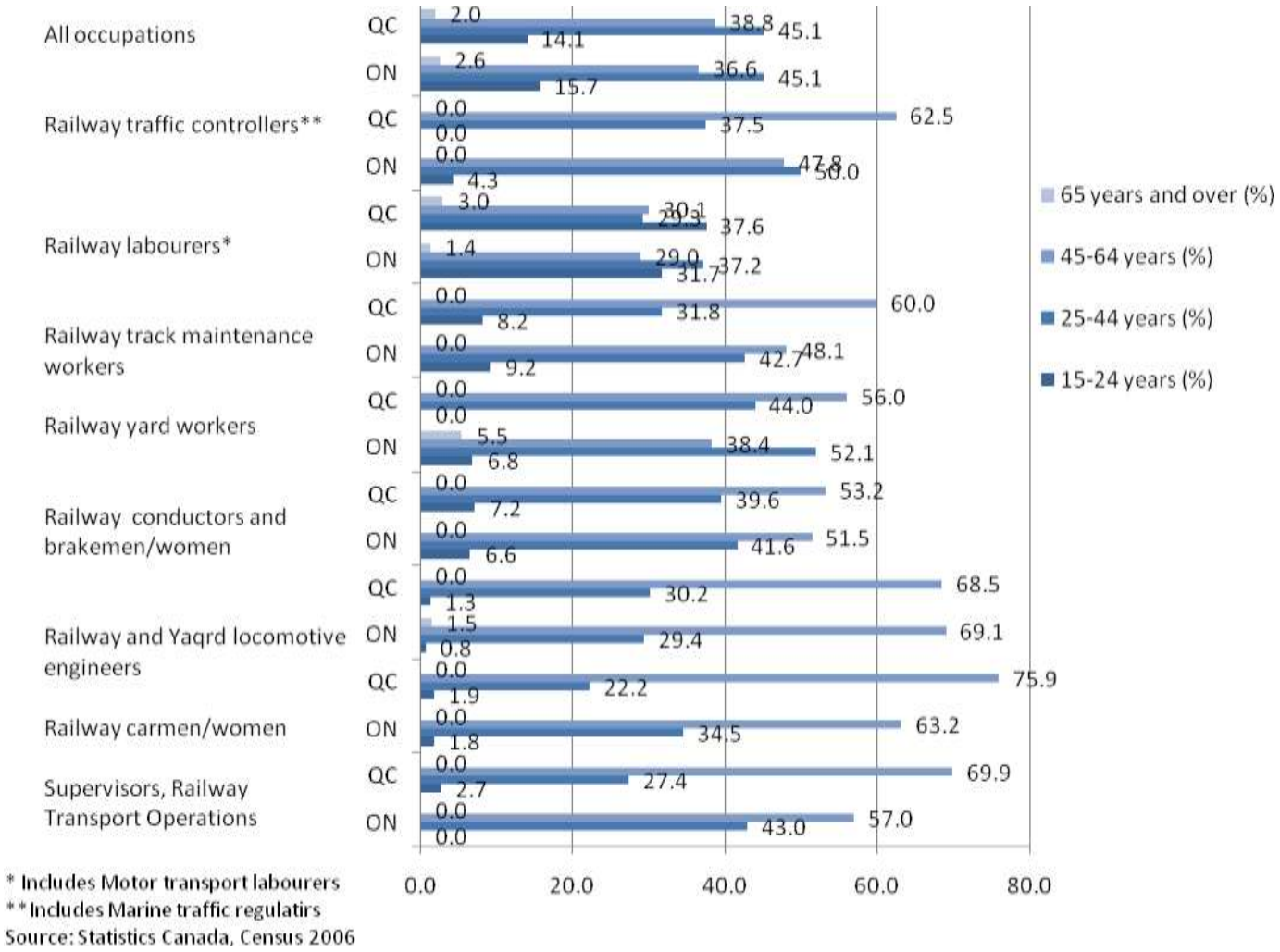
	Employment (2005-2007 average)	Average Annual Growth Rate 2008-2012 (%)	Annual Requirement Attributable to Growth (2008-2012)	Annual Requirement Attributable to Attrition (2008-2012)	Total Annual Requirement (2008-2012)	Total Annual Requirement as share of 2005-2007 average employment (%)	Outlook 2008-2012*
	A	B	C	D	E = C+D	F = E/A*100	G
Supervisors, railway transport operations (7221)	550	0.0	0	20	20	3.6	Average
Railway carmen/women (7314)	550	0.0	0	20	20	3.6	Fair
Railway and yard locomotive engineers (7361)	1,250	-1.0	-10	50	40	3.2	Fair
Railway conductors and brakemen/women (7362)	850	0.0	0	25	25	2.9	Fair
Railway yard workers (7431)	150	0.0	0	0	0	0.0	Indeterminate
Railway track maintenance workers (7432)	550	-2.1	-10	5	-5	-0.9	Limited
Railway labourers (7622) [a]	850	-2.1	-15	15	0	0.0	Limited
Railway traffic controllers (2275) [b]	600	0.0	0	15	15	2.5	Fair
Railway Transportation Gateway Sector Occupations	5350	-0.8	-35	150	115	2.1	
All occupations	3,778,150	1.1	41,550	108,800	150,350	4.0	

Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region

Notes: *Describes the possibility of finding employment, based on labour supply and demand variables, including employment growth, attrition, the number of Employment Insurance claimants, and economic forecasts.
[a] Data is for NOC code 7622, which includes motor transport labourers
[b] Data is for NOC code 2275, which includes marine traffic regulators

In Ontario, 63.2 per cent of railway carmen/women, and 51.5 per cent of railway conductors and brakemen/women were between 45 and 65 years of age in 2006. Although only 38.4 per cent of railway yard workers were between 45 and 65 years old, a number of workers (5.5 per cent) were over 65 years old.

Chart 11.1 Age Distribution for Rail Transportation Gateway Sector Occupations (2006)



* Includes Motor transport labourers
** Includes Marine traffic regulatirs
Source: Statistics Canada, Census 2006

The employment prospects for railway supervisors in Quebec over the next few years are 'average'. The demand for this occupation is expected to remain constant, but attrition is expected to be high, with 69.9 per cent of workers in the 45-65 years of age category. In Ontario, 57 per cent of railway supervisors were between 45 and 65 years old.

In Quebec, railway traffic controllers, together with marine traffic regulators, are expected to have relatively high attrition levels, as 62.5 per cent of the labour force was between 45 and 65 years old in 2006. Therefore, although employment is generally expected to remain constant for this occupation group, retirements are expected to result in a high demand in Quebec. In Ontario, the railway traffic controllers and marine traffic regulators was relatively younger, with only 47.8 per cent of workers between the ages of 45 and 65 years old in 2006.

Although shortages of locomotive engineers, railway conductors, heavy-duty mechanics, and skilled trades in bridges and structures have been identified at the national

level (Ray Barton Associates, 2008), the rail transportation sector in Ontario and Quebec is not expected to face major labour shortages in the next five years. In general, although the rail sector workforce is aging, and facing a decrease in labour supply, labour shortages are not expected to arise in rail transportation occupations in Quebec. If massive departures were to occur, however, the sector could experience temporary labour market imbalances. The rail transportation sector in Quebec is not in a job creation phase, but rather in a workforce renewal phase (CSMO-Rail, 2007: 12).

Representatives of the sector explained that although replacement needs were not necessarily "on a 1:1 basis", recruiting and training new employees to replace the experienced workers entering retirement was a major challenge for the rail transportation sector prior to the economic downturn. However, the deteriorating economic situation, which already resulted in a number of lay-offs for the Canadian National (CN) and the Canadian Pacific railway (CPR), has since become the primary concern.

3. Skills, Training, and Certification

To attract new entrants and ensure a supply of required skills, industry stakeholders have developed and introduced railway industry work at the community and CEGEP levels, and in industrial training centres (Ray Barton Associates, 2008). In Quebec in 2006, 54.4 per cent of railway and yard locomotive engineers, 46.4 per cent of railway conductors and brakemen/women, and 48.2 per cent of railway carmen/women had completed CEGEP or other non-university post-secondary training. In Ontario, 48.3 per cent of railway and yard locomotive engineers, 37.5 per cent of railway conductors and brakemen/women, and 62.9 per cent of railway carmen/women held a non-university post-secondary degree. Between two and five per cent of workers in these occupations held university degrees in Ontario and Quebec in 2006.

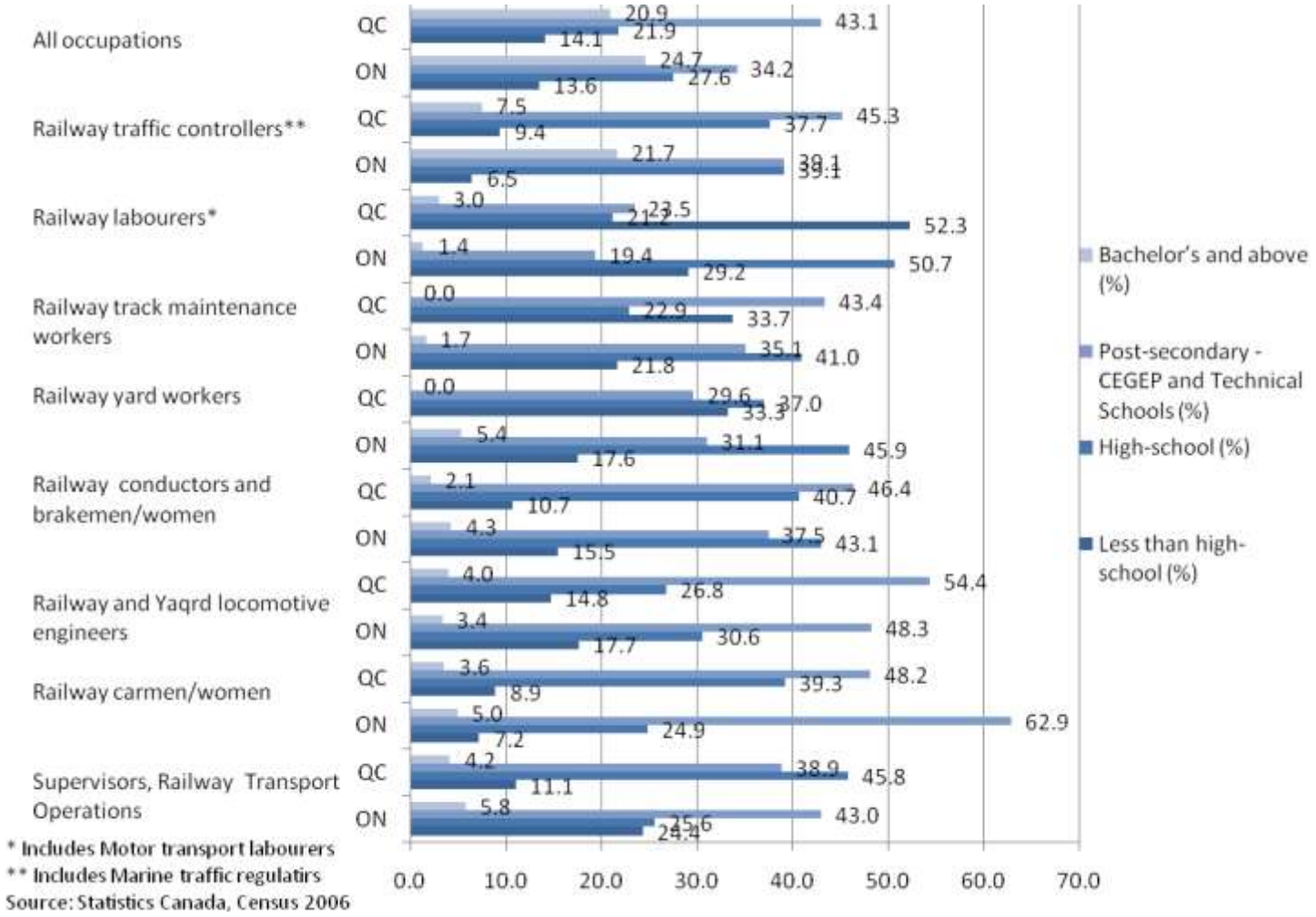
In Quebec, in 2006, approximately one third of railway yard workers and railway track maintenance workers, and 52.3 per cent of railway transportation labourers had not completed high school. In Ontario, the proportion of workers with less than a high school degree was lower, with 17.6 per cent of railway yard workers, 21.8 per cent of railway track maintenance workers, and 292 per cent of railway transportation labourers.

Railway companies generally offer internal training programs as well as on-the-job training. Class I railways have integrated training programs and large training budgets. Short line railways tend to use the same training material as Class I railways and complement the training by employing company instructors. Short line railways have a smaller training ability than Class I railways. Industrial railways provide on-the-job training (CSMO-Rail, 2007).

The Railway Association of Canada (RAC) has developed post-secondary training programs for railway conductors, which are offered at eight schools across Canada, including Cegep André-Laurendeau and Cégep de Sept-Iles in Quebec, and Confederation

College and George Brown in Ontario.[33] The duration of these pre-employment training programs depends on the institution, but ranges from ten weeks to four months.

Chart 11.2 Educational Attainment for Rail Transportation Gateway Sector Occupations (2006)



The Port of Montreal outsources its railway workers training program to a private company CANAC, which provides training development and delivery services, including instructor-led,on-the-job training and technology-based training.[34]

4. Recruitment and Retention Challenges

Railway engineering occupations involves long and irregular work hours; incentives are needed to attract new workers to these occupations (Ray Barton Associates, 2008).

[33] http://www.irtcanada.net/site/onboard/training_prog.htm
[34] http://www.canac.com/serv_training.shtml

Short line railways have more recruitment difficulties and are therefore more likely to face labour shortages than the Canadian National (CN) or the Canadian Pacific Railway (CPR).

5. Regulatory Issues/ Labour Mobility

There are no barriers to labour mobility across provinces in the railway transportation sector.

6. Women, Immigrants and First Nations Peoples

Women represented a small proportion of the rail transportation sector workers in Quebec and Ontario in 2006. Railway traffic controllers (including marine traffic regulators) had the largest share of women among the sector's occupations, with to 9.6 per cent in Quebec and 34 per cent in Ontario (Table 11.5).

In Quebec, people with landed immigrant status or who have held landed immigrant status in the past represented 9 per cent of railway carmen/women, 7.8 per cent of railway traffic controllers (including marine traffic regulators), 5.7 per cent of railway transport operations supervisors and approximately 5.0 per cent of railway conductors and brakemen/women, track maintenance workers and labourers. Only 1.3 per cent of railway and yard locomotive engineers were landed immigrants in Quebec. The share of landed immigrants in the railway sector labour force in Ontario was relatively higher for railway transport operations supervisors (16.3 per cent), railway labourers (15.2 per cent), railway carmen/women (25.0 per cent), and railway track and maintenance workers (15.9 per cent) in 2006.

Table 11.5 Women and Immigrants in the Rail Transportation Gateway Sector (2006)

	Females Share of Labour Force (%)		Immigrants* Share of Labour Force (%)	
	Quebec	Ontario	Quebec	Ontario
Supervisors, Railway Transport Operations	0.0	5.8	5.7	16.3
Railway Carmen/women	0.0	2.3	9.0	25.0
Railway and Yard Locomotive Engineers	4.6	3.4	1.3	9.8
Railway Conductors and Brakemen/women	2.9	4.9	5.0	3.6
Railway Yard Workers	7.7	6.8	0.0	10.8
Railway Track Maintenance Workers	3.4	0.8	4.8	15.9
Railway and Motor Transport Labourers	6.6	5.6	5.3	15.2
Railway Traffic Controllers and Marine Traffic Regulators	9.6	34.0	7.8	6.4
Rail transportation Gateway sector	4.4	4.6	4.0	5.0
All Occupations	47.1	47.7	12.2	30.2

Source: Statistics Canada, Census 2006

Notes: *The term 'immigrant' refers to the population of people aged 15 and over who worked during the week preceding the 2006 Census and who have landed immigrant status in Canada or have had it in the past.
[a] Data is for NOC code 7622, which includes motor transport labourers
[b] Data is for NOC code 2275, which includes marine traffic regulators

While data on the proportion of First Nations people in rail transportation occupations is unavailable, First Nations people are represented in the sector through the ownership and operation of Tshiuetin Rail Transportation, a short line railway in Quebec. This railway which provides access to remote communities in Quebec, Manitoba, Newfoundland and Labrador, received $8 million funding from the federal government in 2007/08 (Transport Canada, 2007a: 12).

7. Human Resource Strategies

Challenges related to an aging workforce are being addressed through the targeted recruitment and training of young workers. In addition, railway companies are working with the Railway Association of Canada (RAC) to attract youth to the sector. RAC has launched a website[35] to provide information and promote railway careers to young Canadians (age 16-22), and to more mature prospective workers. This initiative has been successful, with over 5,000 individuals having registered for the electronic newsletter while visiting the site. The RAC also collects labour market data and works with its member organisations to develop training programs, occupational standards and strategies to address human resource challenges.

The RAC has worked with the National Aboriginal Achievement Foundation (NAAF) to identify schools in regions with a high proportion of aboriginal students, to inform them about employment opportunities in the railway sector.[36]

The demand for many rail transportation occupations is limited. For this reason, training schools have little incentives to develop and offer suitable programs – a challenge that the industry needs to address. The RAC has developed pre-employment training programs for railway conductors, which are offered at two schools in Ontario and two schools in Quebec. As railway companies often have to resort to specialised firms to develop their training programs and the overall costs of providing training are high, companies are interested in exploring alternative training models, such as programs offered by CSMO-Rail in various regions.

E. Road Transportation

This section describes the occupations involved in the Gateway road transportation subsector, provides an overview of the current human resource situation for these occupations, and an outlook for the next five years, based on current shortages and projected needs. Quantitative data from several sources is used to examine employment trends and draw a profile of the sector's workforce, including employment distribution across industries, age structure, educational attainment and workforce composition. Qualitative data from a literature review and insight gathered from the stakeholders interviewed are also presented to describe the human resource challenges facing these

[35] www.careerontrack.ca
[36] http://www.sait.ca/pages/about/organization/departmentlistings/transportation/crtt/pdfs/RACQ_0404_27-28.pdf

occupations, including skills/certification-related issues, regulatory obstacles to certification or to labour mobility, recruitment and retention, and labour relations.

Road transportation Gateway sector occupations include truck drivers (NOC 7411), bus drivers, subway and other transit operators (NOC 7412), taxi and limousine drivers and chauffeurs (NOC 7413), and delivery and courier service drivers (NOC 7414). They include transportation managers (NOC 0713) involved in the planning, organisation and control of bus lines, municipal transportation systems and trucking companies, as well as supervisors in motor transport and other ground transit operators (NOC 7222) who supervise and coordinate transportation activities, as well as motor transport labourers (included in NOC 7622). Other occupations involving vehicle maintenance and inspection are also included, such as automotive service, technicians, truck and bus mechanics and mechanical repairers (NOC 7321), motor vehicle body repairers (NOC 7322) and motorcycle and related mechanics (NOC 7334).

1. Employment Trends

Workers in road transportation occupations are employed in various industry sectors. In 2006, 33 per cent of supervisors of motor transport and other transit operators worked in the truck transportation industry in Ontario and Quebec (Table 12.1). Transit and ground passenger transportation employed 38 per cent of supervisors of motor transport and other transit operators in Ontario, and 29 per cent of this occupational group's workers in Quebec.

In 2006, 61 per cent of truck drivers in Ontario and Quebec were employed in the truck transportation industries. The largest proportion of bus drivers and subway and other operators (91 per cent in Ontario and 94 per cent in Quebec) were employed in the transit and ground passenger transportation industries. Similarly, 80 per cent of taxi and limousine drivers and chauffeurs in Ontario, and 84 per cent of taxi and limousine drivers in Quebec worked in the transit and ground passenger transportation industries in 2006.

The couriers and messengers industries employed 27 per cent of delivery and courier service drivers in Ontario, and 17 per cent of delivery and courier service drivers in Quebec. Other delivery and service courier services drivers were employed across various industry sectors.

Automotive service technicians, truck and bus mechanics and mechanical repairers were mainly employed in the repair and maintenance sector (49 per cent in Ontario and 51 per cent in Quebec) and in the motor vehicles and parts dealers industries (21 per cent in Ontario and 24 per cent in Quebec) in 2006.

Although not featured in Table 12.1, in 2006, 24 per cent of all transportation managers in Ontario and 30 per cent of transportation managers in Quebec were employed in the truck transportation industries. The transit and ground passenger industries employed 9 per cent of transportation managers in the two provinces. The industry distribution for the aggregate transportation managers' occupational group is presented in Table 13.1 of this report (in the multimodal transportation/ supply chain section).

Table 12.1 Industry-Occupation Employment Matrix for the Road Transportation Gateway Sector: Per cent of Occupation by Industry Group (2006)

	Supervisors, Motor Transport and Other Ground Transit Operators (7222)		Truck Drivers (7411)		Bus Drivers and Subway and Other Transit Operators (7412)		Taxi and Limousine Drivers and Chauffeurs (7413)		Delivery and Courier Service Drivers (7414)		Automotive Service Technicians, Truck and Bus Mechanics and Mechanical Repairers (7321)		Motor Transport Labourers (7622)*	
	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC
Motor Vehicle and Parts Dealers		1			2		3	2	3	3	21	24		
Rail Transportation													37	14
Truck Transportation	33	33	61	61			1		2	6	4	4	20	34
Transit and Ground Passenger Transportation	38	29	1	1	91	94	80	84			4	4	8	
Support Activities for Transportation	3	4	5	3	1		1	1	1	1	1	1	7	7
Couriers and Messengers	2	6	1						27	17			2	2
Food Services and Drinking Places									8	12				
Repair and Maintenance				1					1	1	49	51		
Other	24	28	31	34	6	5	15	13	57	60	21	16	27	44
All Industries	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Statistics Canada, Census 2006

Notes: *Data is for NOC code 7622, which includes motor transport labourers

The road transportation sector workforce (the total workers in the road transportation sector occupations, excluding management and administrative staff) grew by 11.3 per cent in Quebec and by 12 per cent in Ontario between 2000 and 2005 (Table 12.2). During this time, average employment income in the sector fell by 3.6 per cent in Quebec and by 6.3 per cent in Ontario.

Truck drivers are the largest occupation in terms of employment in the road transportation Gateway sector. In 2005, there were 65,480 truck drivers in Quebec, representing 38.8 per cent of the road transportation sector workforce with employment income. In Ontario, there were 109,925 truck drivers, representing 42.8 per cent of the road transportation sector's population with employment income. Between 2000 and 2005, the number of truck drivers with employment income increased by 9.1 per cent in Quebec and their average income declined by 1.5 per cent. During this period, the truck driver workforce in Ontario increased by 16.5 per cent, which led to a 9.6 per cent decrease in average employment income, measured in constant 2005 dollars. Despite the greater decrease in employment income in Ontario, the average income for truck drivers remained higher in that province than in Quebec.

Table 12.2 Population with Employment Income and Average Earnings in Constant 2005 Dollars in the Road Transportation Sector (2000-2005)

	2000		2005		Total Growth 2000-2005 (%)	
	Total - Population 15 years and over with employment income*	Average employment income (constant 2005 $)	Total - Population 15 years and over with employment income*	Average employment income ($)	Total - Population 15 years and over with employment income*	Average employment income ($)
QUEBEC						
Supervisors, motor transport and other ground transit operators (7222)	2,195	48,022	1,910	45,869	-13.0	-4.5
Truck drivers (7411)	60,010	33,357	65,480	32,873	9.1	-1.5
Bus drivers and subway and other transit operators (7412)	17,770	30,586	19,035	29,723	7.1	-2.8
Taxi and limousine drivers and chauffeurs (7413)	9,385	21,450	10,190	14,643	8.6	-31.7
Delivery and courier service drivers (7414)	29,005	25,318	33,490	23,944	15.5	-5.4
Automotive service technicians, truck and bus mechanics and mechanical repairers (7321)	32,015	31,455	37,850	31,309	18.2	-0.5
Motor transport labourers (7622)[a]	1,260	23,868	770	21,945	-38.9	-8.1
Road transportation Gateway sector occupations[b]	151,640	30,490	168,725	29,391	11.3	-3.6
All occupations	**3,739,245**	**33,373**	**4,022,480**	**33,958**	**7.6**	**1.8**
ONTARIO						
Supervisors, motor transport and other ground transit operators (7222)	2,840	50,252	2,615	54,084	-7.9	7.6
Truck drivers (7411)	94,350	41,696	109,925	37,691	16.5	-9.6
Bus drivers and subway and other transit operators (7412)	28,195	27,284	32,725	27,336	16.1	0.2
Taxi and limousine drivers and chauffeurs (7413)	15,160	23,950	19,800	16,423	30.6	-31.4
Delivery and courier service drivers (7414)	38,440	28,461	34,670	25,575	-9.8	-10.1
Automotive service technicians, truck and bus mechanics and mechanical repairers (7321)	48,905	39,260	56,100	40,134	14.7	2.2
Motor transport labourers (7622)[a]	1,340	28,529	845	27,311	-36.9	-4.3
Road transportation Gateway sector occupations[b]	229,230	36,040	256,680	33,760	12.0	-6.3
All occupations	**6,212,485**	**39,886**	**6,623,700**	**40,983**	**6.6**	**2.8**

Source: Census 2006, Statistics Canada, Catalogue Number 97-559-XCB2006062

* 'Earnings or employment income' refers to total income received by persons 15 years of age and over during calendar year 2005 as wages and salaries, net income from a non-farm unincorporated business and/or professional practice, and/or net farm self-employment income. 'Average income of individuals' refers to the weighted mean total income of individuals 15 years of age and over who reported income for 2005.

[a] Data is for NOC 7622, which includes railway labourers

[b] Total or weighted average calculated for occupations with available data only.

The decline in average employment income for drivers in Quebec and Ontario may have contributed to the widespread shortage of truck drivers – particularly of long-distance drivers – identified by industry stakeholders, including the Canadian Trucking Human Resources Council (CTHRC) and the Comité sectoriel de la main-d'oeuvre du transport routier au Québec (Camo-Route 2005a and Ray Barton Associates, 2008). These shortages have affected small and large enterprises, albeit to different extents.

The number of bus drivers, subway and other transit operators increased by 7.1 per cent in Quebec and 16.1 per cent in Ontario between 2000 and 2005. The average employment income for this occupation decreased by 2.8 per cent in Quebec, and increased by 0.2 per cent in Ontario.

The taxi and limousine drivers workforce increased by 8.6 per cent in Quebec and by 30.6 per cent in Ontario between 2000 and 2005. The average employment earnings for this occupational group decreased by 31.7 per cent in Quebec, and by 31.4 per cent in Ontario during the same period. These decreases may partly reflect shifting work patterns in the taxi and limousine services industry, whereby drivers work less hours on average.

The delivery and courier service drivers workforce with employment income grew by 15.5 per cent in Quebec between 2000 and 2005. The average employment income for this occupation declined by 4.5 per cent during this period. In Ontario, the number of delivery and courier service drivers fell by 9.8 per cent, and their average employment income declined by 10.1 per cent during this period.

The number of automotive service technicians, truck and bus mechanics and mechanical repairers with employment income increased by 18.2 per cent in Quebec and 14.7 per cent in Ontario between 2000 and 2005. The average employment income for this occupation group fell by 0.5 per cent in Quebec, and increased by 2.2 per cent in Ontario. Some automotive service technicians, truck and bus mechanics and mechanical repairers do not work in the transportation sector, but in the repair and maintenance or manufacturing sector. Workers within an occupational group that spans several industries however, can generally move across these industries, and are included in the road transportation Gateway sector occupations.

The number of motor transport labourers with employment income, aggregated with railway labourers in the Census data, decreased significantly between 2000 and 2005 in both Quebec and Ontario. The average employment income for this occupation group declined as well during this period.

In 2006, all of the road transportation Gateway sector occupations had a ratio of employment insurance (EI) claimants to total workers that is higher than the all-occupations average in Quebec, with the exception of supervisors, motor transportation and other ground transit operators, and automotive service technicians, truck and bus mechanics and mechanical repairers (Table 12.3). The highest proportion of workers on EI was highest for railway and motor transport labourers (47.1 per cent) and for taxi and limousine

drivers (13.2 per cent). In the absence of unemployment figures, the proportion of EI claimants is used as a measure of workforce reserves for each occupation.[37] The high proportion of EI recipients suggests that labour shortages in these occupations are unlikely to be a major concern in Quebec.

Table 12.3 Gateway Road Transportation Employment Insurance Recipients in Quebec (2006)

	Average Employment 2005-2007	Employment Insurance Claimants (2006 monthly average)	Workers on Employment Insurance as Share of Total Workers (%)
Supervisors, motor transport and other ground transit operators (7222)	6,950	80	1.2
Truck drivers (7411)	61,300	3,250	5.3
Bus drivers and subway and other transit operators (7412)	17,800	1,200	6.7
Taxi and limousine drivers and chauffeurs (7413)	7,950	1,050	13.2
Delivery and courier service drivers (7414)	19,900	1,150	5.8
Automotive service technicians, truck and bus mechanics and mechanical repairers (7321)	34,750	900	2.6
Motor transport labourers (7622)[a]	850	400	47.1
Road transportation Gateway sector occupations	149,500	8,030	5.4
All occupations	3,778,150	145,150	3.8

Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region
[a] Data is for NOC code 7622, which includes railway transport labourers

The proportion of truck drivers receiving EI benefits (5.3 per cent) seems somewhat large given the identified labour shortages for this occupation. The figure may be inflated by recipients enrolling in driver training courses to continue qualifying for EI. Based on his personal experience, a trucking industry representative explained that many people enrolling in training programs for this reason did not remain in the industry for long, because of a mismatch between their expectations and what the occupation actually entails.

However, the large proportion of EI recipients among truck drivers may support the claim made by employers interviewed for this study, that a driver shortage is attributable to a lack of *qualified* drivers. In fact, the issue of whether the often reported 'driver shortage' refers to the 'quantity' or 'quality' of available drivers has been debated extensively within the trucking sector. This debate is directly tied to the driver training and testing issues discussed in the section below.

[37] This measure should not be confused with a direct measure of unemployment. This figure compares 2007 data EI claimants to the average number of employed between 2005 and 2007. Not all persons who are unemployed are eligible for employment insurance. Furthermore, this figure, used as an indicator of available worker supply, has limitations, as the available labour supply depends on several factors including the number of graduates from training programs and the availability of workers.

2. Short Term Labour Market Outlook

Service Canada projects a labour shortage in the supervisors for motor transportation and ground and transit operators occupations in Quebec, between 2008 and 2012. This projected shortage is largely attributable to a high level of attrition (an annual average of 5 per cent). In Quebec, 49.7 per cent of supervisors for motor transportation and ground and transit operators were above 45 years of age (Chart 12.1). In Ontario, this occupational group had a similar age distribution, with 52.0 per cent of workers above 45 years old.

An average annual growth of 1.3 per cent in employment in the truck drivers occupation was projected for Quebec between 2008 and 2012 (Table 12.4). This growth has to be revised downwards due to a slowdown in trade and economic activity in Canada and in the United States. In the short-run, truck driver shortages are expected to be less acute than they have been in recent years. Industry representatives interviewed in December 2008 indicated that the economic situation had already resulted in an excess supply of drivers that would last until the economy begins to recover.

The concern that driver shortages could be more severe when the economy starts to recover was widely shared among industry representatives interviewed. Several respondents argued that the slowdown would cause drivers to exit the trucking industry to find employment in other industries such as infrastructure construction or utilities, and that these drivers would be unlikely to return to trucking when the economic activity resumed, due to relatively lower wages and more difficult working conditions. The impact of the economic slowdown on the labour market in the trucking industry would therefore be permanent and severe. While labour needs attributable to the growth projected prior to the onset of the current economic crisis may not materialize, the replacement needs due to retirements will continue. In fact, anticipated labour shortages are exacerbated by an aging workforce, and a very small proportion of youth. In 2006, in Ontario and Quebec, nearly 50 per cent of truck drivers were above 45 years of age, and only 3.5 to 4.0 per cent were below the age of 25 years (Chart 12.1). The small proportion of youth in the truck driver occupation is due to difficulties attracting youth on the one hand, and implicit entry barriers to youth on the other. This issue is discussed further in the Recruitment and Retention section below.

Industry representatives described a “false sense of security” due to the current lack of truck driver shortages attributable to the economic downturn. Currently, attrition levels for truck drivers mirror those of the economy as a whole. Driver demand is declining, as is driver supply, due to the number of workers exiting the labour force. When the economy recovers, however, the demand for drivers is expected to increase again, while driver supply is expected to continue along a downward trend, resulting in a large gap. The size of this gap – or the severity of the driver shortage – will depend on the characteristics of the economy that emerges after the downturn. Industry representatives explained that the current economic crisis is likely to result in major economic restructuring. In particular, the impact of the current crisis on the manufacturing sector in Ontario and Quebec, and on the

automotive sector in particular, would have consequences for economic activity and therefore for the labour market in the trucking industry.

Table 12.4 Short Term Labour Market Forecasts for Road Transportation Gateway Sector Occupations in Quebec (2008-2012)

	Employment (2005-2007 average)	Average Annual Growth Rate 2008-2012 (%)	Annual Requirement Attributable to Growth (2008-2012)	Annual Requirement Attributable to Attrition (2008-2012)	Total Annual Requirement (2008-2012)	Total Annual Requirement as share of 2005-2007 average employment (%)	Outlook 2008-2012*
	A	B	C	D	E = C+D	F = E/A*100	G
Supervisors, motor transport and other ground transit operators (7222)	6,950	1.0	70	350	420	6.0	Fair
Truck drivers (7411)	61,300	1.3	800	1,600	2,400	3.9	Average
Bus drivers and subway and other transit operators (7412)	17,800	1.3	250	850	1,100	6.2	Fair
Taxi and limousine drivers and chauffeurs (7413)	7,950	0.8	60	450	510	6.4	Fair
Delivery and courier service drivers (7414)	19,900	-1.1	-200	500	300	1.5	Average
Automotive service technicians, truck and bus mechanics and mechanical repairers (7321)	34,750	1.3	450	650	1,100	3.2	Fair
Motor transport labourers (7622)[a]	850	-2.1	-15	15	0	0.0	Limited
Road transportation Gateway sector occupations	149,500	0.9	1,415	4,415	5,830	3.9	
All occupations	3,778,150	1.1	41,550	108,800	150,350	4.0	

Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region

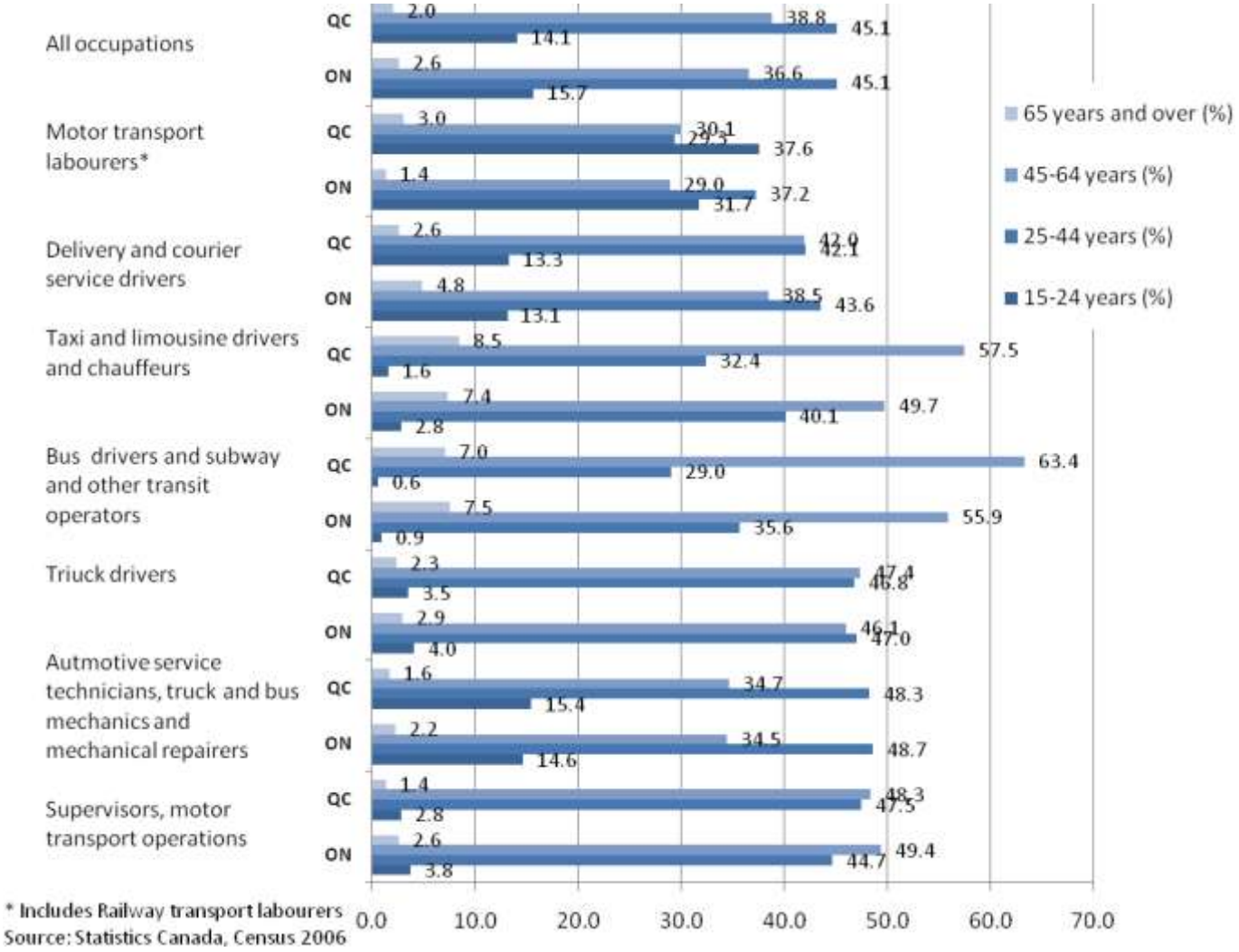
Notes: *Describes the possibility of finding employment, based on labour supply and demand variables, including employment growth, attrition, the number of Employment Insurance claimants, and economic forecasts.
[a] Data is for NOC code 7622, which includes railway labourers

Shortages of bus drivers and subway and other transit operators, and taxi and limousine drivers and chauffeurs are also anticipated in Quebec between 2008 and 2012. These two occupation groups have high levels of attrition with an annual average of 4.8 per cent of workers leaving the bus drivers and subway and other transit operators occupation, and 5.7 per cent of workers leaving the taxi and limousine drivers occupation during this period. An aging workforce and a small proportion of youth have been highlighted as a cause for concern in the road passenger transportation industry (Camo-Route, 2005b).

In 2006, 63.4 per cent of bus drivers and subway and other transit operators in Quebec were between 45 and 65 years of age, and 7 per cent were over 65 years old (Chart 12.1). The taxi and limousine driver occupation had a similar profile with 57.5 per cent of

workers falling in the 45 to 65 years of age category, and 8.5 per cent of workers over 65 years of age. In Ontario, approximately 56 per cent of bus drivers and subway and other transit operators were between 45 and 64 years of age, and 7.5 per cent were above 65 years of age in 2006. Nearly half of the taxi and limousine drivers were between 45 and 65 years old, and 7.4 per cent were above 65 years old. Workers below the age of 45 represented a small proportion of bus drivers and transit operators (only 29.6 per cent in Quebec and 36.3 per cent in Ontario) and of taxi and limousine drivers (34 per cent in Quebec, and 42.9 per cent in Ontario).

Chart 12.1 Age Distribution in the Road Transportation Gateway Sector (2006)



* Includes Railway transport labourers
Source: Statistics Canada, Census 2006

In Quebec, the employment level in the delivery and courier service drivers occupation is projected to decline between 2008 and 2012. The labour market is expected to remain generally balanced, and labour demand will largely consist of positions becoming available due to attrition. The level of attrition is not expected to be very high as the delivery and courier service drivers workforce is relatively young with 13.3 per cent of workers between the ages of 15 and 24 years, and 42.1 per cent of workers between 25 and

44 years in Quebec, in 2006. The age distribution for delivery and courier service drivers was similar in Ontario.

Automotive service technicians, truck and bus mechanics and mechanical repairers have good prospects of finding employment in the next few years. In particular, trucking industry representatives cited recruitment difficulties for truck and trailer mechanics, as an important human resource issue. The workforce for this occupational group is quite young in Ontario and Quebec, with approximately 15 per cent of workers between the ages of 15 and 24 years, and approximately 48 per cent of workers between the ages of 25 and 44 years in both provinces.

The motor transport labourers and railway labourer occupational group is expected to have a decline in employment level in Quebec. Little labour demand is expected for this occupational group. This group has a very young workforce, with more than a third of workers between 15 and 24 years of age in Quebec. The proportion of motor transport labourers and railway labourers below 25 years of age was also relatively high in Ontario, with 31.7 per cent of workers.

3. Skills, Training, and Certification

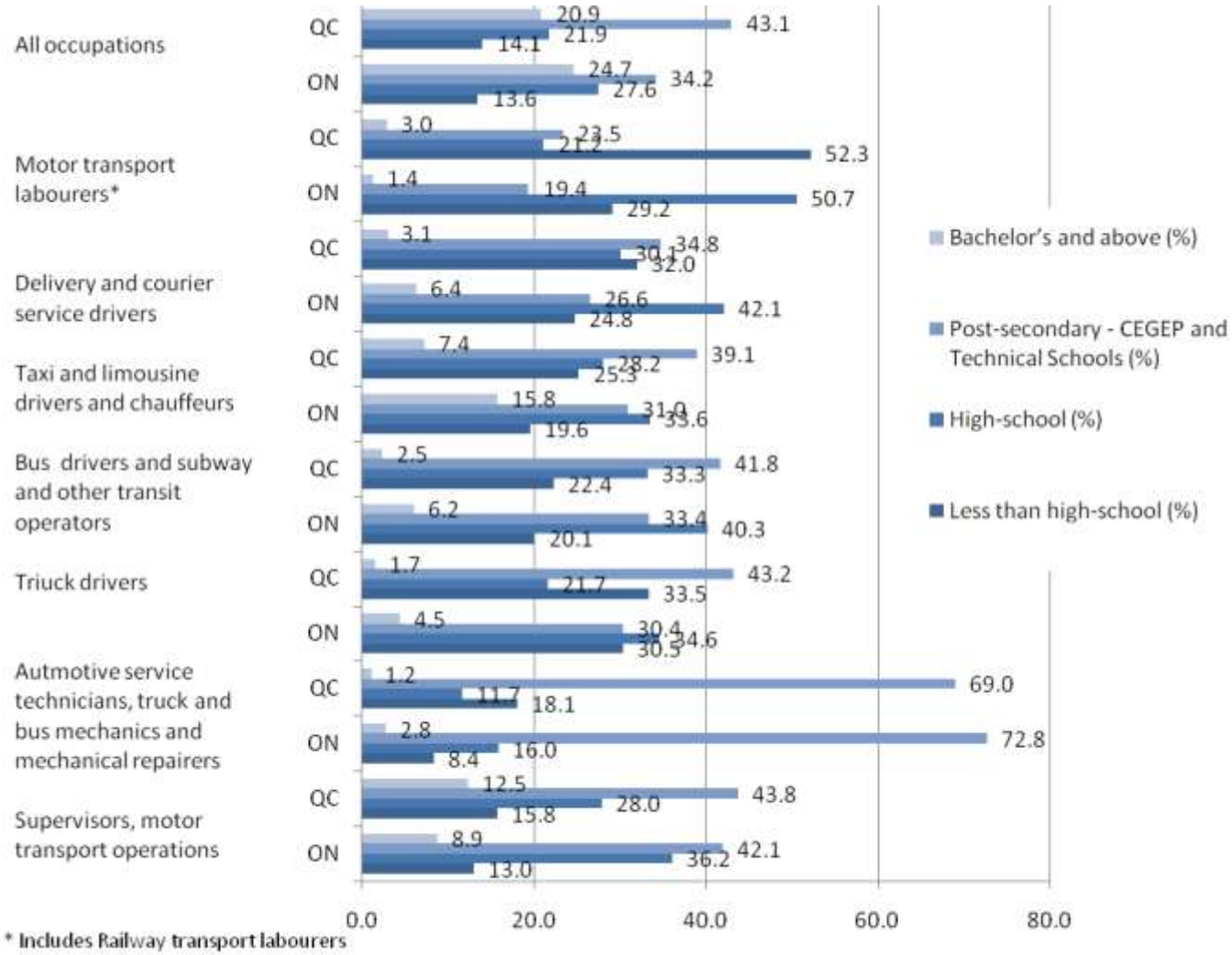
Most road transportation occupations do not require high academic qualifications. In 2006, in Ontario and Quebec, more than 50 per cent of truck drivers, bus drivers and subway and other transit system operators, taxi and limousine drivers, delivery and courier service drivers and motor and rail transport labourers had only completed high school or did not have a high school diploma (Chart 12.2).

Automotive service technicians, truck and bus mechanics are required to possess a qualification certificate or be registered as apprentices. In 2006, a large proportion of workers in this occupation (69.0 per cent in Quebec and 72.8 per cent in Ontario) held a post-secondary diploma, which includes apprenticeships or trades certificate or diploma; College, CEGEP or other non-university certificate or diploma; or university certificate or diploma below the bachelor level. Mechanics are increasingly required to acquire new skills and adjust to new engine technologies and requirements for compliance with environmental standards. Workers therefore need continuous training to remain abreast of developments.

A trucking company representative from Quebec reported a need for specific training programs for dispatchers, such as a vocational diploma in truck dispatching. Dispatchers generally have training in transportation logistics, which is very broad. This has implications for the retention of dispatchers in the face of competition from other sectors. Due to increased competition from other companies and from the rail transport sector, the operating range of companies has decreased (to an average of 600-800 kilometres). This has resulted in a faster-pace environment in which dispatchers need to operate and react rapidly. To fill this need, dispatching departments of trucking companies often recruit previous drivers with many years of experience.

In 2006, 43.8 per cent of supervisors of motor transportation and other ground transit operations in Quebec had completed post-secondary studies, and 12.5 per cent held a university degree. In Ontario, 42.1 per cent of supervisors of motor transportation and other ground transit operations in Quebec had completed post-secondary studies, and 8.9 per cent held a university degree

Chart 12.2 Educational Attainment for Road Transportation Gateway Sector (2006)



* Includes Railway transport labourers
Source: Statistics Canada, Census 2006

Entry into the truck driver occupation requires obtaining the appropriate driving license (Classes 1-3) and having a good driving record. In 2006, 33.5 per cent of truck drivers in Quebec, and 30.5 per cent of truck drivers in Ontario, had not completed high school. Driver training was a recurring theme mentioned by interviewed stakeholders. There are over 206 truck driver training schools across Canada, including 32 in Quebec, and 48 in Ontario (CTHRC, 2006a). Roughly half of these schools are neither licensed nor registered, and have few standards for instructors. According to the Canadian Trucking Human Resource Council (CTHRC), the cost of attending good quality commercial driver

training programs in Canada ranges from $6,000 to $12,000. Government funding is available under various programs such as student loans, skills development programs and social assistance; however regulatory changes could enable a greater number of candidates to make use of these programs (CTHRC, 2006a).

The quality of truck driver training available and the standards of testing differ across provinces. In particular, Ontario, where no restrictions exist on driver training and where the testing standards are relatively low, seems to lag behind Quebec. There was a consensus about the inadequate provision of truck driver training in Ontario among the trucking industry representatives interviewed. Even within Quebec, however, trucking company executives had diverging perspectives on the quality of training available. One respondent from Quebec described the training provided as 'inadequate and outdated', explaining that training material has not been updated in years and no longer reflects the realities of the industry. Another respondent from Québec argued that drivers receive proper training in schools, but were under "no circumstances ready to start working without at least some on-the-job training". He argued that additional or improved training in driving schools cannot substitute for adequate 'on-boarding' and continuous on-the-job training, which will always be required. The most qualified drivers are those who have a good sense of judgement and who have acquired experience over the years.

Industry representatives explained that the diverging views of trucking company executives on the training quality issue were a result of these executives' personal experiences and hiring practices. Some companies hire only experienced drivers and not recent graduates of training programs. Such companies may not be aware of any training quality issues. Even among companies that recruit recent graduates, however, managers may have different opinions on the issue; some argue that they know which training schools have higher quality programs and therefore hire graduates from these schools.

The lack of consistency in training standards across schools and provinces, and in certification and licensing standards across provinces, was emphasised by the industry representatives interviewed. In fact, the need for consistent standards for certification and for driving training schools accreditation across provinces has been identified by the CTHRC. Despite the efforts of the CTHRC and other industry associations, little progress has been made on this issue, as firms have not done their part in demanding and upholding higher standards, according to an industry representative. The industry representative explained that the incentive structure of trucking companies, favours short-term survival in a highly competitive industry, rather than a long-term strategy. This structure has prevented trucking companies from upholding high standards for driver training and recruitment. In particular, before the current economic slowdown, trucking companies were faced with a high demand for their services on the one hand, and a driver shortage on the other. As a result, they could not afford to be selective in their recruitment process. During the economic slowdown, the demand for qualified drivers decreased significantly. As a result, "in good times and bad times, the incentives of trucking companies will not lead them to require and enforce higher standards. For this reason, the government and industry associations have a role to play in developing and implementing regulation to ensure higher training and certification standards". A trucking company representative from Quebec

argued the opposite: companies operating in a competitive environment cannot afford to have inefficient employees, which represented a major incentive for them to provide initial and continuous on-the-job training.

Skill requirements for truck drivers have increased in recent years to include occupational safety and accident prevention training, training in the transportation of dangerous goods, writing and computer skills, customer relations and other assets, such as bilingualism. Continuous training is crucial to ensure that drivers are familiar with their companies' policies and with the requirements for crossing the Canada-US border.

Trucks have become increasingly sophisticated using more advanced technologies, increasing skill requirements for drivers and for mechanics. The replacement of telephones with keyboards and satellite technologies in trucks was initially met by resistance from drivers.

4. Recruitment and Retention Challenges

Truck driver shortages have been a result of a number of factors including recruitment and retention problems attributable to various factors: difficult working conditions, lifestyle preferences and a small proportion of youth entering the occupation. Some trucking companies have reported a lack of qualified and experienced candidates and difficulties in finding drivers who comply with insurance criteria.

The reason for the insufficient number of youth entering the trucking industry is two-fold. On one hand, it is difficult to attract truck drivers, and on the other, there are implicit barriers to youth entry. As one industry representative pointed out, entry level requirements – including three years of driving experience with a Class 5 license before qualifying for a Class 1 license – discourage the entry of youth into the occupation. Other barriers to the entry of youth are difficulties complying with insurance criteria, as well as a minimum age of 21 to be able to operate in the United States.

Stakeholders surveyed have pointed to low wages for drivers as an important cause of the driver shortage, particularly in light of difficult work and living conditions. Industry representatives explained that "the problem is in the macroeconomics of the industry", which is highly competitive and characterised by "extremely thin margins". Companies were under significant pressures to keep costs – including labour costs – low in order to offer competitive rates.

In addition to competition within the industry, one respondent explained that trucking companies could not compete with other sectors, such as public works, in terms of wages. Measured in 2005 constant dollars, average wages for truck transportation decreased by 8.8 per cent in Ontario, and increased by 1.3 per cent in Quebec between 2000 and 2007 (Table 12.5). Despite the wage increase in Quebec, average wages remained lower than in Ontario in 2007. In both provinces, average wages in truck transportation remained lower than the all industries average.

The economic downturn coupled with the intense competition put a downward pressure on wages, and also prevented companies from paying bonuses to employees. Prior to the economic downturn, trucking companies held up at the border could charge shippers 'accessorial fees' that they could then pass on to truck drivers in the form of 'border crossing premiums'. Given the current economic situation, companies find it difficult to request additional charges from shippers, and can no longer compensate drivers for border crossings. An industry representative explained that a possible 'silver lining of the economic downturn' could be a decreased pressure on rates among the companies remaining in the market, when the economy starts to recover.

A trucking company representative from Quebec argued that the major human resource issue affecting the sector was not inadequate training or the lack of qualified drivers, but rather the difficulties of retaining qualified personnel. He attributed retention difficulties to a gap between expectations of drivers having just completed their training on the one hand, and what the driver occupation entailed on the other hand. Workers have difficulties dealing with the strict regulation, difficult work conditions and requirements of the occupation (such as investing time in carefully planning trips).

Table 12.5 Average Weekly Wages in Road Transportation Industries in Constant 2005 Dollars (2000-2007)

	ONTARIO		QUEBEC	
	2007 (in constant 2005$)	Total Growth (00-07)	2007 (in constant 2005$)	Total Growth (00-07)
Truck transportation	767.7	-8.8	660.4	1.3
-General freight trucking	755.9	-13.1	674.5	-0.4
-Specialized freight trucking	788.1	-0.8	639.4	3.3
Couriers	656.7	-12.9	647.5	-6.5
Transit and ground passenger transportation	638.5	-11.4	659.8	-1.3
-Urban transit systems	949.4	-8.0	977.4	-2.2
-School and employee bus transportation	477.1	-11.2	427.5	-0.5
-Charter bus industry	592.1	-2.1	496.1	-10.2
- Taxi and limousine services	638.5	-11.4	659.8	-1.3
Support activities for road transportation	730.3	-2.2	620.2	-3.5
All industries	771.0	-1.8	696.0	0.7
Source: Statistics Canada, CANSIM Table 2810027, converted in constant 2005$ using Table 3260021 - Consumer price index (CPI)				

Driver shortages have been less acute in the private motor carrier sector than in the for-hire sector. Private carriers generally offer better wages and the work involves short-haul routes, which enable drivers to be at home more frequently. In addition, as explained by an industry representative, private motor companies generally tend to have better human resource practices, which are adopted from their parent companies. A high turnover rate, previously a major challenge to the sector, was also more acute in the for-hire sector. The industry has recently taken steps to reduce turnover and address the recruitment and retention issues (Camo-Route, 2005a). Informal recruitment processes have been identified as a challenge for the industry in Quebec, particularly in light of increasing skill requirements for the truck driver occupation.

A survey of trucking companies in Quebec identified a shortage of truck and heavy duty mechanics and recruitment difficulties for dispatchers (Camo-Route, 2005a).[38] Recruitment challenges for these occupations were reaffirmed by industry stakeholders surveyed in the course of this study. Stakeholders interviewed explained that these recruitment difficulties were attributable to a lack of adequate training and a negative social perception of trades, such as truck mechanics, relative to 'office jobs'. This perception issue results in a poor allocation of workers (excess supply of workers in certain sectors, and insufficient supply in other sectors).

A representative of a trucking company attributed the shortage of mechanics to competition with other sectors, such as manufacturing, where working conditions were less difficult. He argued that mechanics having just completed their training were unwilling to start at the bottom of the professional scale in the trucking industry, and follow the normal process of acquiring experience. A trucking company, which employs six or seven mechanics during one shift, can only employ one or two apprentices at the same time. Apprentices need to acquire experience in basic maintenance tasks before they can be given more complex tasks in the trucking industry. As a result, they work in other sectors such as car dealerships where less experience is required before new workers are given more complex work.

Trucking industry representatives have also pointed to recruitment difficulties for accountants and control officers. Wages in the trucking industry for these occupations are competitive, however a negative perception of the trucking industry exists, which puts it at a recruitment disadvantage vis-à-vis other sectors.

5. Regulatory Issues/ Labour Mobility

Automotive service technicians, truck and bus mechanics who have completed a four year apprenticeship program or possess a combination of four years of work experience and college or industry courses in automotive technology can qualify for the Red Seal interprovincial trade certification, which enables them to work anywhere in Canada.

Trucking regulations in Quebec and Ontario are generally harmonised, credential recognition is not an issue, and there are few interprovincial mobility barriers between the two provinces. The Ontario Ministry of Transportation (MTO) and the Ministère des Transports du Québec (MTQ) have harmonised weights and dimensions, hours worked, etc. Nevertheless, some regulatory differences remain. For instance, the Ontario government has not yet authorised the use of longer combination vehicles – which are two (or more) trailers pulled by a tractor unit – which are used in Quebec and some parts of Western Canada. As a result, combination vehicles travelling the Quebec-Windsor route are confined to the Quebec-Montreal segment. Combination vehicles and such logistics products would increase driver productivity and therefore could contribute to a solution to the driver shortage.

[38] The dispatcher occupation is discussed in the multimodal transportation section of this report.

One representative interviewed explained that regulation by the two levels of government (federal and provincial) created pressures on the trucking industry. As an example, he cited the introduction of regulation by the New Brunswick government, which increased the required number of lights on top of a trailer from three to five. The regulation, which was meant to improve safety, prevented access for Quebec fleets to the New Brunswick market.

A regulatory issue with important human resource consequences, highlighted by a trucking industry representative, is the requirement for trucking companies – and not truck drivers – to keep log books. As a result, some drivers working on their own accounts offer their services to several companies and work more hours than regulation permits, with safety implications.

6. Women, Immigrants and First Nations Peoples

The number of women employed in the road transportation sector varies across subsectors, but remains lower than the average for all occupations in the sector. In 2006, women represented 30.2 per cent of bus drivers, subway and other transit operators in Quebec, and 42.7 per cent in Ontario (Table 12.6). Women also represented 17.3 per cent of supervisory positions in the motor transport and other ground transit operators in Quebec, and 15.4 per cent in Ontario.

Table 12.6 Women and Immigrants in the Road Transportation Gateway Sector (2006)

	Females Share of Labour Force (%)		Immigrants* Share of Labour Force (%)	
	Quebec	Ontario	Quebec	Ontario
Supervisors, Motor Transport and Other Ground Transit Operators	17.3	15.4	7.7	23.7
Auto. Serv. Technicians, Truck and Bus Mech. and Mech. Repairers	1.6	2.1	9.2	27.6
Truck Drivers	3.5	3.2	7.6	29.6
Bus Drivers and Subway and Other Transit Operators	30.2	42.7	5.5	26.9
Taxi and Limousine Drivers and Chauffeurs	7.1	7.3	45.0	58.6
Delivery and Courier Service Drivers	7.2	9.7	9.4	30.8
Motor Transport Labourers**	6.6	5.6	5.3	15.2
Road transportation Gateway sector	6.9	8.9	10.0	29.9
All Occupations	47.1	47.7	12.2	30.2
Source: Statistics Canada, Census 2006				

Notes: *The term 'immigrant' refers to the population of people aged 15 and over who worked during the week preceding the 2006 Census and who have landed immigrant status in Canada or have had it in the past.
** Includes rail transport labourers

In 2006, the proportion of females was the lowest for automotive service technicians, truck and bus mechanics and repairers, representing only 1.6 per cent of the workforce in Quebec and 2.1 per cent of the workforce in Ontario. Only 3.5 per cent of the truck driver workforce in Quebec and 3.2 percent in Ontario were female in 2006. A

representative of the trucking industry reported that the industry has not made sustained efforts to attract women, even for the short-haul or local routes, which allow for a better work/life balance than the long-haul routes. The truck driver occupation can also be physically demanding. Some companies, such as JM Bernier Transport in Quebec, assign women drivers to closed trailer trucks rather than platform trucks for which physical requirements are higher.

Landed immigrants and people who have had landed immigrant status in the past are also underrepresented in road transportation occupations, with the notable exception of the taxi and limousine drivers and chauffeurs occupation group. In 2006, 45 per cent of taxi or limousine drivers in Quebec were immigrants, compared to an all-occupations average of 12.2 per cent (Table 12.6). The share of immigrants in the taxi and limousine drivers workforce was even higher in Ontario in 2006, with 58.6 per cent. The high proportion of immigrants among taxi drivers provides an explanation for the relatively high proportion of workers who possess a university degree (Chart 12.2).

In 2006, 7.6 per cent of truck drivers were landed immigrants or had previously had this status in Quebec. A larger number of immigrants were employed in Ontario where they represented 29.6 per cent of truck drivers in 2006. According to industry representatives, in some communities in Ontario, landed immigrants generally run their own small trucking companies, rather than work for larger established companies. Some workers of immigrant origin, mainly Eastern Europeans are employed by trucking companies in Ontario (including Quebec-based companies operating in Ontario). These workers generally work inter- or intra-provincial routes, but do not cross the Canada-US border. One Quebec trucking company reported receiving inquiries from Europe and from France in particular, from candidates interested in internship opportunities.

Immigration has been discussed within the trucking industry as part of the solution to a driver shortage. The number of foreign truck drivers entering Canada through programs such as the Temporary Foreign Worker Program and the Provincial Nominee Program has increased in recent years, but remains small, and the number of company taking advantage of these programs remains limited (CTHRC, 2006c). Limitations of these programs include high costs particularly in light of the drivers' short duration of stay, unclear credential requirements, difficulties at border crossings and strict regulations requiring a predetermined amount of kilometres and a fixed rate for the driver during their entire stay, which is not appropriate given the business-cycle needs of the industry (CTHRC, 2006c). In addition, Ontario and Quebec allow foreign drivers to come only on a temporary permit and do not permit them to apply for permanent residency, nor to bring their families. These factors discourage employers and potential drivers from participating in these programs. The trucking industry has discussed the possibility of reviewing the National Occupational Classification (NOC) code for truck drivers to account for differences in trucking activities. The current designation of truck driving as a Category C occupation makes it difficult for immigrants to enter Canada through the Skilled Worker Program (CTHRC, 2006c).

There are few First Nations people employed in the trucking industry. In Quebec, one company, Kepa Transport, is owned and operated by the Cree communities of

Chisasibi and Wemindji.[39] The company serves northern Quebec, and particularly Abitibi-Temiscamingue and the James Bay area. It also serves Inuit communities in Nunavut, parts of Ontario and other provinces. The company is well established in its markets. A representative of a trucking company interviewed in the course of this study complained that government subsidies allowed Kepa Transport to gain a monopoly over their markets. According to an industry representative, the issue of making the trucking industry more attractive to minorities, including First Nations peoples, has been the subject of many consultations. A representative suggested that ECL Transportation, a company based in Alberta, which has been successful in recruiting Native drivers, could provide a model for other companies in this regard.

7. Human Resource Strategies

A Camo-route study identified a number of human resource strategies used by trucking companies to address recruitment and retention challenges. These included providing more stable schedules, increasing or decreasing work hours as requested by drivers, increasing salaries, and offering performance bonuses (Camo-Route 2005a: 42). In the case of long-haul drivers in particular, companies have made efforts to ensure that drivers can be at home more frequently. These strategies tended to be responsive to driver expectations and demands, rather than anticipatory or "preventive". One 'preventive' strategy recommended by a trucking company representative consists of having a proper 'on-boarding' or initiation process for new drivers, to familiarise them with company regulations and provide them with learning support.

Industry representatives mentioned the Advisory Council for Truck Safety, an organization established to improve human resource management in the trucking industry, assist with expanding the labour force, attenuate labour shortages and improve the performance of the industry.[40] The Advisory Council was successful in developing standards for driver training and for the training of teachers. According to the Private Motor Truck Council of Canada, establishing training standards is the key for a long-term correction of the trucking industry labour market. Higher standards would raise the profile of the truck driver occupation, and help make the industry one where people aspire to work, rather than one where they end up working for lack of other alternatives. Another important human resource issue in order to raise the industry's profile and attract more candidates is the need to improve relations between employers and employees. The Private Motor Truck Council of Canada actively promotes good human resource practices among their members as a means of reducing turnover. According to a representative of the council, "members generally listened but did not necessarily follow the recommendations" even prior to the economic downturn.

The Canadian Trucking Alliance (CTA) advocates for increased regulation of driver training (without creating a barrier to entry), and for more difficult testing particularly in Ontario, to ensure that drivers will be qualified without creating a barrier to entry.

[39] http://www.groupekepa.com/historique_en.php
[40] http://www.actsresources.com/

An industry representative recommended providing incentives for people to enrol in Earning your Wheels, a program created by CTHRC through HRSDC funding, as a strategy for the government to assist in addressing the training quality issue. Such higher quality programs are costly. For instance Employment Insurance (EI) offices could promote these programs, or the completion of these programs in particular – as opposed to any programs – should be a requirement for receiving EI.

One industry representative argued that providing driver training to people on EI resulted in the enrolment of a number of people who may not be suitable for the occupation. He recommended instead that the programs be extended to people who can demonstrate the capacity to perform required tasks, but also a clear understanding of, and interest in the occupation. In other words, that there is a need for a thorough selection and pre-screening process to identify candidates with potential, as these candidates are more likely to perform and to remain in the trucking industry in the long run.

Similarly, the targeted recruitment of workers who are both 'skilled and interested' should also be a part of companies' human resource strategies. This concern is relevant also, it was pointed out, for companies looking to hire 'second career' people: a trucking company operating in the Lac-St-Jean area of Quebec, which provided training to unemployed workers from another sector was unable to retain most of these workers because they were accustomed to more flexible work hours and could not adjust to the requirements of the truck driving.

Industry associations have developed communications strategies to promote careers in the trucking industry. Such strategies have included the designation of a 'National Trucking Week', the Ontario Trucking Association's (OTA) Road Knights program, through which a team of professional drivers visits high schools to raise awareness of trucking safety issues. There are limits to the effectiveness of such strategies, which do not address the underlying roots of the recruitment issue.

F. Multimodal Transportation/ Supply Chain Sector

This section describes Gateway sector occupations that span several transportation modes, or could not be classified under any of the air, marine, rail or road transportation subsectors. It provides an overview of the current human resource situation for these occupations, and an outlook for the next five years, based on current shortages and projected needs. Quantitative data from several sources is used to examine employment trends and to draw a profile of the workforce in these occupations, including employment distribution across industries, age structure, educational attainment and workforce composition. Qualitative data from a literature review and insights gathered from the stakeholders interviewed are also presented to describe the human resource challenges facing these occupations, including skills/certification-related issues, regulatory obstacles to certification or to labour mobility, recruitment and retention, and labour relations.

Supply chain occupations considered in this report are transportation managers (NOC 0713), facility operation and maintenance managers (NOC 0721), customs, ship and

other brokers (NOC 1236), shippers and receivers (NOC 1471) dispatchers and radio operators (NOC 1475), transportation route and crew schedulers (NOC 1476), and material handlers (NOC 7452). Also included are public works and maintenance equipment operators (NAICS 7422) and labourers (NAICS 7621), who maintain, highways, streets, roads, sidewalks and other public areas. While most transportation managers work in the transportation and warehousing sector, a large share of workers from the other occupations presented in this section are employed in other parts of the supply chain, namely in manufacturing or trade, or spread across various industries.

It is important to note that the aggregate figures for the multimodal/ supply chain Gateway sector occupations presented in this section exclude occupations that have been listed under specific transportation modes and included in earlier sections of the report. These aggregate figures therefore do not adequately reflect the labour market situation in the supply chain sector as a whole. The figures are included in the tables for consistency with other sections, but are not discussed in the text.

1. Employment Trends

Facility operations and maintenance managers are employed in a variety of establishments, some of which are directly relevant to the Gateway, such as airports, harbours, canals and warehouses, while others are less relevant, such as shopping centres, recreational facilities, schools and universities. In Quebec and Ontario, approximately 5 per cent of facility operations and maintenance managers worked in the transportation and support activities for transportation, and 4 per cent worked in warehousing and storage in 2006.

In Quebec, in 2006, 30 per cent of transportation managers worked in the trucking industry, 9 per cent in air transportation, and 15 per cent in support activities for transportation (Table 13.1). In Ontario, 24 per cent of transportation managers worked in the trucking industry, 9 per cent in air transportation, and 16 per cent in support activities for transportation.

Customs, ship and other brokers were mainly employed in support activities for transportation (71 per cent in Ontario and 70 per cent in Quebec) in 2006. Shippers and receivers, and material handlers, were distributed across a large number of industries. Dispatchers and radio operators were employed mainly in the truck transportation industries (22 per cent in Ontario and 24 per cent in Quebec), in local, municipal and regional public administration (12 per cent in both provinces) and in transit and ground passenger transportation (11 per cent in Ontario and 9 per cent in Quebec) and support activities for transportation (8 per cent in Ontario and 6 per cent in Quebec). Transportation route and crew schedulers were mainly employed in truck transportation, transit and ground passenger transportation, and support activities for transportation in the two provinces.

In 2006, public works maintenance equipment operators were largely employed in waste management remediation services (41 per cent in Ontario and 38 per cent in Quebec) and in support activities for transportation (37 per cent in Ontario and 38 per cent in Quebec). Public works and maintenance labourers were mainly employed in local,

municipal and regional public administration (46 per cent in Ontario and 57 per cent in Quebec) and in waste management remediation services (19 per cent in Ontario and 13 per cent in Quebec).

Table 13.1 Industry-Occupation Employment Matrix for the Multimodal Transportation/Supply Sector Gateway Sector: Per cent of Occupation by Industry Group (2006)

	Facility Operation and Maintenance Managers (0721)		Transportation Managers (0713)		Customs, ship and other brokers (1236)		Shippers and Receivers (1471)		Dispatchers and Radio Operators (1475)		Transportation Route and Crew Schedulers (1476)		Public Works Maintenance Equipment Operators (7422)		Material Handlers (7452)		Public Works and Maintenance Labourers (7621)	
	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON	QC
Air Transportation	1	1	7	9							5	8						
Truck Transportation	2	2	24	30	3	4	1	1	22	24	10	7	1	1	6	8		
Transit and Ground Passenger Transportation			9	9					11	9	9	10					1	
Support Activities for Transportation	3	3	16	15	71	70	2	1	8	6	15	7	37	38	2	2	2	4
Warehousing and Storage	4	4	1	1			4	2		1	1				7	3		
Real Estate	5	9																
Administrative and Support Services	5	10	1	1	1	1	3	1	5	6	1	2	3	8	6	4	3	1
Waste Management and Remediation Services									1	1	1	1	41	38			19	13
Local, Municipal and Regional Public Administration	5	2	2						12	12	2	1	5	4			46	57
Other	73	69	39	35	25	24	90	94	41	41	56	63	13	11	77	82	28	23
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Statistics Canada, Census 2006

The number of transportation managers with employment income declined by 9.3 per cent in Quebec and 3.8 per cent in Ontario between 2000 and 2005 (Table 13.2). In both provinces, average employment income, measured in constant 2005 dollars, increased for this occupation. Starting from a similar level in 2000, the growth in employment income was larger in Ontario than in Quebec, resulting in a higher average employment income for this occupation in Ontario than in Quebec in 2005. The number of facility operations and maintenance managers with employment income fell by 9.9 per cent in Quebec and by 29.1 per cent in Ontario between 2000 and 2005, as their average employment income increased by 0.2 per cent in Quebec and by 4.4 per cent in Ontario.

Table 13.2 Population with Employment Income and Average Earnings in Constant 2005 Dollars in the Multimodal Transportation/Supply Chain Gateway Sector (2000-2005)

	2000		2005		Total Growth 2000-2005 (%)	
	Population 15 years and over with employment income*	Average employment income (constant 2005 $)	Population 15 years and over with employment income*	Average employment income ($)	Population 15 years and over with employment income*	Average employment income ($)
QUEBEC						
Transportation managers (0713)	5,335	63,091	4,840	63,856	-9.3	1.2
Facility operation and maintenance managers (0721)	5,670	47,219	5,110	47,291	-9.9	0.2
Customs, ship and other brokers (1236)	1,285	41,312	1,005	45,870	-21.8	11.0
Shippers and receivers (1471)	26,490	25,224	33,710	24,825	27.3	-1.6
Dispatchers and radio operators (1475)	6,290	33,149	7,720	35,452	22.7	6.9
Transportation route and crew schedulers (1476)	955	42,888	1,465	40,597	53.4	-5.3
Public works maintenance equipment operators (7422)	6,120	32,895	5,205	29,999	-15.0	-8.8
Material handlers (7452)	36,325	25,234	39,020	24,867	7.4	-1.5
Public works and maintenance labourers (7621)	10,360	23,734	13,635	26,128	31.6	10.1
Multimodal transportation /supply chain Gateway sector occupations	**93,495**	**31,434**	**106,870**	**30,407**	**14.3**	**-3.3**
All occupations	**3,739,245**	**33,373**	**4,022,480**	**33,958**	**7.6**	**1.8**
ONTARIO						
Transportation managers (0713)	10,220	64,444	9,835	71,754	-3.8	11.3
Facility operation and maintenance managers (0721)	23,735	55,307	16,825	57,724	-29.1	4.4
Customs, ship and other brokers (1236)	2,380	44,317	2,595	43,384	9.0	-2.1
Shippers and receivers (1471)	48,960	29,993	52,530	30,630	7.3	2.1
Dispatchers and radio operators (1475)	11,660	36,273	13,910	37,972	19.3	4.7
Transportation route and crew schedulers (1476)	1,805	45,585	2,005	44,003	11.1	-3.5
Public works maintenance equipment operators (7422)	4,865	38,010	5,095	39,816	4.7	4.8
Material handlers (7452)	79,150	29,603	81,740	30,002	3.3	1.3
Public works and maintenance labourers (7621)	6,920	30,800	8,285	29,962	19.7	-2.7
Multimodal transportation / Supply chain Gateway sector occupations	**179,475**	**37,842**	**182,985**	**37,808**	**2.0**	**-0.1**
All occupations	**6,212,485**	**39,886**	**6,623,700**	**40,983**	**6.6**	**2.8**

Source: Census 2006, Statistics Canada, Catalogue Number 97-559-XCB2006062

* 'Earnings or employment income' refers to total income received by persons 15 years of age and over during calendar year 2005 as wages and salaries, net income from a non-farm unincorporated business and/or professional practice, and/or net farm self-employment income. 'Average income of individuals' refers to the weighted mean total income of individuals 15 years of age and over who reported income for 2005.

The shippers and receivers workforce, which is large in Quebec and Ontario where manufacturing and trade are important sectors, expanded in both provinces between 2000 and 2005. Material handlers were the largest occupational group represented in this section, with over 80,000 workers in Ontario, and over 39,000 workers in Quebec in 2005. These workers are also largely employed in the manufacturing and trade areas of the supply chain. The material handlers workforce increased in both provinces between 2000 and 2005. Their average employment income varied little, increasing by 1.3 per cent in Ontario and falling by 1.5 per cent in Quebec.

The dispatchers and radio operators workforce with employment income grew by 22.7 per cent in Quebec and 19.3 per cent in between 2000 and 2005. Their employment income also increased, reflecting the high demand for this occupation in both provinces. A high demand and some shortages of dispatchers in the trucking industry in Quebec were reported by respondents interviewed in the context of this study.

Table 13.3 Multimodal Transportation/Supply Chain Sector Employment Insurance Recipients in Quebec (2006)

	Average Employment 2005-2007	Employment Insurance Claimants (2006 monthly average)	Workers on Employment Insurance as Share of Total Workers (%)
Transportation Managers	4,900	100	2.0
Facility Operation and Maintenance Managers	6,550	250	3.8
Customs, ship and other brokers	1,200	20	1.7
Shippers and Receivers	26,150	800	3.1
Dispatchers and Radio Operators	6,950	200	2.9
Transportation Route and Crew Schedulers	300	45	15.0
Public Works Maintenance Equipment Operators	4,700	350	7.4
Material Handlers	50,700	2,350	4.6
Public Works and Maintenance Labourers	7,450	1,100	14.8
Multimodal transportation / supply chain Gateway sector occupations	**108,900**	**5,215**	4.8
All occupations	3,778,150	145,150	3.8

Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region
[a] Data is for NOC code 7622, which includes motor transport labourers
[b] Data is for NOC code 2275, which includes marine traffic regulators

The number of workers in the public works maintenance and equipment operators group, and their average employment income decreased in Quebec and increased in Ontario between 2000 and 2005. The public works and maintenance labourers' workforce increased in both provinces. However, their average employment income increased in Quebec and decreased in Ontario.

In 2006, in Quebec, the occupations with the highest proportions of workers on Employment Insurance[41] in the multimodal transportation/ supply chain sector were transportation route and crew schedulers (15 per cent), public works and maintenance labourers (14.8 per cent), public works and maintenance equipment operators (7.4 per cent) and material handlers (4.6 per cent) (Table 13.3).

2. Short Term Labour Market Outlook

The labour market outlooks prepared by Service Canada, Quebec region, projected an average annual labour demand equivalent to than 4.5 per cent of the current workforce for transportation managers, facility operations and maintenance managers and customs, ship and other brokers between 2008 and 2012 (Table 13.4). This demand is attributable to a relatively high attrition rate for these occupations, as well as to growth, particularly for customs, ship and other brokers. The high rate of attrition for transportation managers and for facility operations and maintenance managers reflects an aging workforce in these occupations. In 2006, nearly 50 per cent of transportation managers and facility operations and maintenance managers in Quebec and in Ontario were above 45 years of age (Chart 13.1).

The projected labour supply, based on levels of enrolment in training programs and other determinants, is expected to fall short of demand for transportation managers and for customs, ship and other brokers in Quebec. The labour market for facility operations and maintenance managers is expected to be balanced.

Despite high projected levels of attrition for shippers and receivers and material handlers (an average annual need of 550 shippers and receivers, and 1,000 material handlers), the projected attrition rate for these occupations is not particularly high and labour shortages are not expected in the coming years in Quebec. In fact, the large number of workers expected to drop out of the workforce represents a small proportion of the relatively young workforce in these two occupations. In 2006, 62.8 per cent of shippers and receivers in Quebec, and 66.3 per cent of material handlers were less than 45 years old (Chart 13.1). Similarly, in Ontario, 64.1 per cent of shippers and receivers and 66.8 per cent of material handlers were less than 45 years old in 2006. The dispatchers and radio operators' occupation in Quebec and Ontario is also characterised by a relatively young workforce, with approximately 65 per cent of workers below 45 years of age in 2006.

Employment in the transportation route and crew schedulers' occupation in Quebec is not expected to grow between 2008 and 2012, and labour needs are expected to be entirely attributable to attrition. However, the transportation route and crew schedulers workforce is relatively young, with 65.1 per cent of workers below the age of 45 in Quebec in 2006 (Chart 13.1). As a result, the number of people expected to leave the workforce over the coming years is small. The labour market outlook for this occupation in Quebec

[41] This measure should not be confused with a direct measure of unemployment. This figure compares 2007 data EI claimants to the average number of employed between 2005 and 2007. Not all persons who are unemployed are eligible for employment insurance. Furthermore, this figure, used as an indicator of available worker supply, has limitations, as the available labour supply depends on several factors including the number of graduates from training programs and the availability of workers.

could not be determined (Table 13.4). The transportation route and crew schedulers workforce in Ontario is relatively young as well, with 60.8 per cent of workers below 45 years of age in 2006.

Table 13.4 Short Term Labour Market Forecasts for the Multimodal Transportation/ Supply Chain Gateway Sector Occupations in Quebec (2008-2012)

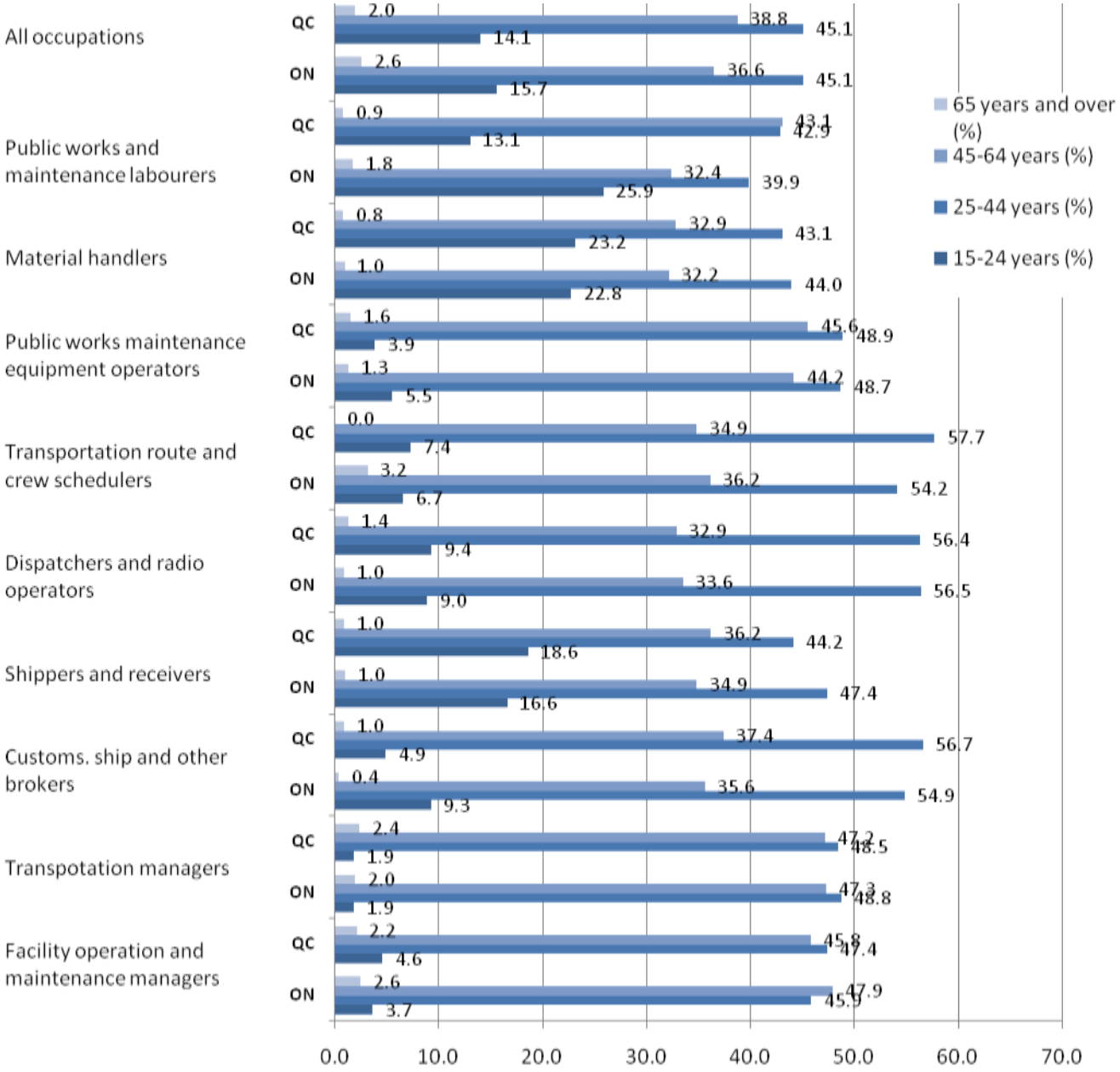
	Employment (2005-2007 average)	Average Annual Growth Rate 2008-2012 (%)	Annual Requirement Attributable to Growth (2008-2012)	Annual Requirement Attributable to Attrition (2008-2012)	Total Annual Requirement (2008-2012)	Total Annual Requirement as share of 2005-2007 average employment (%)	Outlook 2008-2012*
	A	B	C	D	E = C+D	F = E/A*100	G
Transportation Managers	4,900	1.46	70	150	220	4.5	Good
Facility Operation and Maintenance Managers	6,550	1.48	100	200	300	4.6	Fair
Customs, ship and other brokers	1,200	3.13	40	40	80	6.7	Good
Shippers and Receivers	26,150	0.61	150	550	700	2.7	Fair
Dispatchers and Radio Operators	6,950	1.70	100	150	250	3.6	Fair
Transportation Route and Crew Schedulers	300	0.00	0	5	5	1.7	Indeterminate
Public Works Maintenance Equipment Operators	4,700	0.76	35	150	185	3.9	Fair
Material Handlers	50,700	1.13	600	1,000	1,600	3.2	Fair
Public Works and Maintenance Labourers	7,450	1.39	100	150	250	3.4	Fair
Multimodal transportation /supply chain Gateway sector occupations	**108,900**	**1.1**	**1,195**	**2,395**	**3,590**	3.3	
All occupations	**3,778,150**	**1.1**	**41,550**	**108,800**	**150,350**	**4.0**	

Source: Socio-Economic Analysis and Evaluation Directorate, Service Canada, Quebec Region

Notes: *Describes the possibility of finding employment, based on labour supply and demand variables, including employment growth, attrition, the number of Employment Insurance claimants, and economic forecasts.

The public works maintenance equipment operators' workforce in Quebec is aging, resulting in a relatively high expected rate of attrition. In 2006, 47.2 per cent of public works maintenance equipment operators were over 45 years of age (Chart 13.1). The public works maintenance labourers workforce had a higher proportion of young workers with 56 per cent of workers below the age of 45 years, including 13 per cent below the age of 24. In Quebec, between 2008 and 2012, an average of 3.2 per cent of public works maintenance equipment operators and 2 per cent of public works maintenance labourers are expected to leave the workforce annually. In Ontario, the public works maintenance equipment operators' age distribution was similar to that in Quebec. However, in Ontario the proportion of public works and maintenance labourers who were below the age of 25 years was particularly large (25.9 per cent).

Chart 13.1 Age distribution for Multimodal Transportation/ Supply Chain Sector Occupations (2006)



Source: Statistics Canada, Census 2006

The labour markets for shippers and receivers and for material handlers, dispatchers and radio operators, public works maintenance equipment operators and public work maintenance labourers are expected to be fairly balanced in Quebec between 2008 and 2012. Unfortunately, the corresponding Service Canada projections were not available for Ontario at the time of writing.

An ageing workforce is a concern for certain occupations and areas within the supply chain sector, such as the driver workforce. Logistics and supply chain management firms reported having a relatively young workforce.

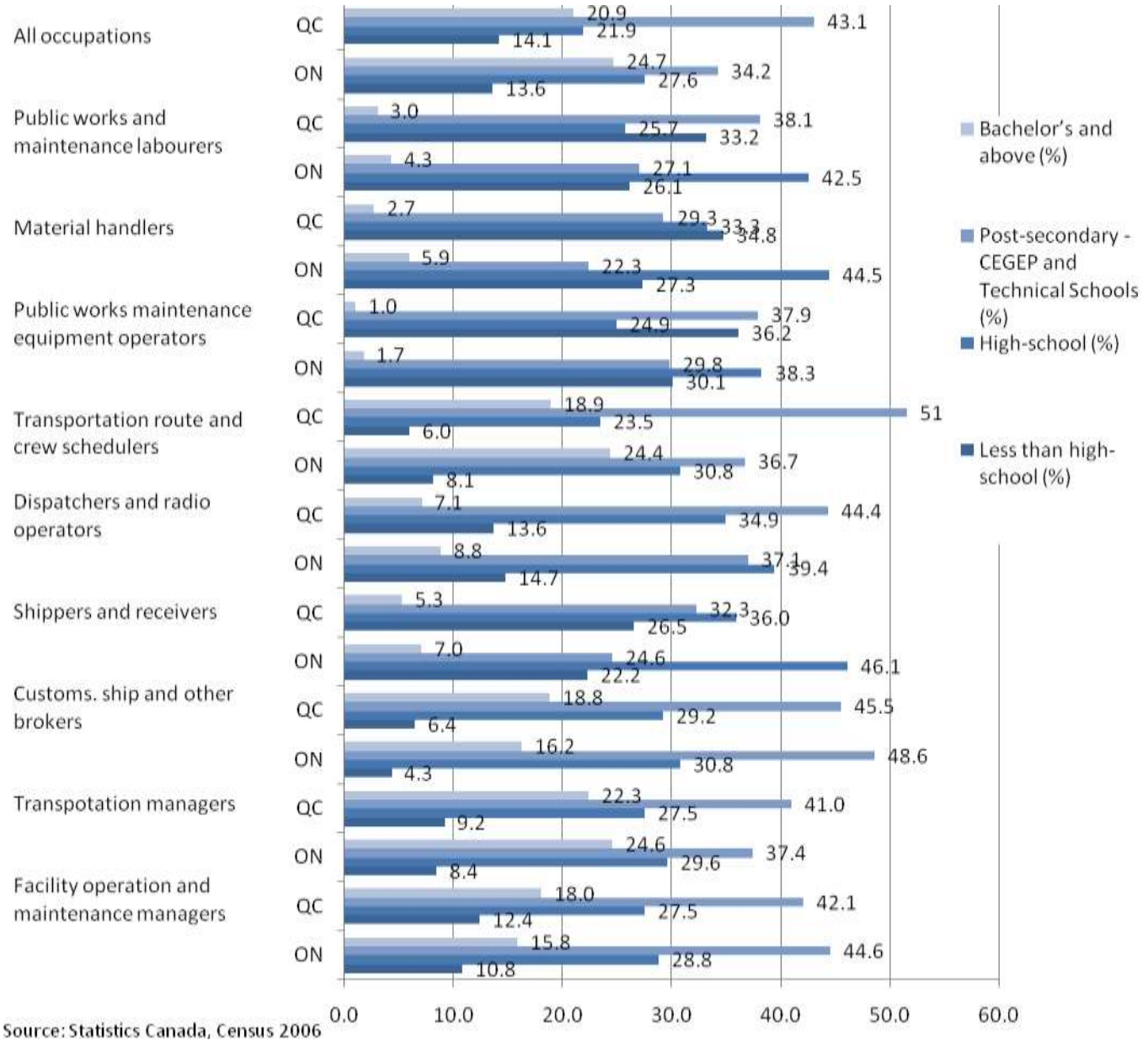
3. Skills, Training, and Certification

Transportation operations managers generally require an undergraduate degree in business administration or in engineering, in addition to several years of work experience, including experience in a supervisory capacity. Sometimes, candidates with substantial work experience in a specific sector are not required to meet the education requirement. For transportation managers of freight traffic, educational requirements vary across employers, ranging from a high-school diploma, to a college diploma or a university degree in business administration or in freight traffic. In 2006, 22.3 per cent of transportation managers in Quebec held at least a bachelor's degree, and 41 per cent possessed a non-university post-secondary diploma (Chart 13.2). In Ontario, 24.6 per cent of transportation managers held at least a bachelor's degree, and 37.4 per cent had completed non-university post-secondary studies. For the remaining transportation managers who possessed a high-school diploma or less, a significant level of experience compensates for the lower educational attainment levels. The Université du Québec a Montreal (UQAM) offers an undergraduate program in trucking management.

Information on the educational requirements for the facility operations and maintenance managers occupation group were not readily available. However, the educational attainment profile of the workforce for this occupation group generally resembles that of the transportation managers group, which suggests that educational requirements for the two occupational groups are similar. In 2006, 18 per cent of facility operations and maintenance managers in Quebec had completed at least a bachelor's degree, and 42.1 per cent possessed a collegial diploma (Chart 13.2). In Ontario, 15.8 per cent of facility operations and maintenance managers in Quebec had completed at least a bachelor's degree, and 44.6 per cent possessed a non-university post-secondary school diploma.

To work as a customs broker, a high school diploma, several years of on-the-job training, and the completion of specialised courses are required. A college diploma in logistics administration is an asset, and is sometimes required. A specialised course for customs brokers is offered by the Customs Brokers Association of Canada, or by the Canadian Society of Customs Brokers. After completing one of these courses, a candidate must successfully complete the Custom Brokers Qualification Examination and obtain a licence issued by Canada Border Services Agency. The ship broker occupation also requires a high school diploma and several years of on-the-job training. In addition, the Institute of Chartered Shipbrokers offers specialised courses to ship brokers. Although possessing a university degree is not required to work in the customs, ship and other brokers occupational group, 18.8 per cent of the group's workforce in Quebec and 16.2 per cent in Ontario held at least a bachelor's degree (Chart 13.2). Another 45.5 per cent of customs, ship and other brokers in Quebec, and 48.6 per cent of customs, ship and other brokers in Ontario possessed a post-secondary diploma below the bachelor's level.

Chart 13.2 Educational Attainment for Multimodal Transportation/ Supply Chain Gateway Sector Occupations (2006)



Source: Statistics Canada, Census 2006

Transportation route and crew schedulers also had a relatively high level of educational attainment. In 2006, 18.9 per cent of the group's workforce in Quebec possessed a bachelor's degree or higher, and 51.6 per cent held a post-secondary degree below the bachelor's level. In Ontario, 24.4 per cent of transportation route and crew schedulers held at least a bachelor's degree, and 36.7 per cent held a post-secondary degree below the bachelor's level.

In the dispatchers and radio operators group, 7.1 per cent of workers had completed university studies, and 44.4 per cent had a collegial or vocational diploma in Quebec, in 2006. In Ontario, 8.8 per cent of dispatchers and radio operators had completed university studies, and 37.1 per cent held a post-secondary degree below the bachelor's level.

The shippers and receivers, material handlers, public works maintenance equipment operators and labourers occupation groups have limited educational requirements, as demonstrated by the educational attainment profile of workers in these occupations. In 2006, in Quebec, 26.5 per cent of shippers and receivers, 34.8 per cent of material handlers, 36.2 per cent of public works maintenance equipment operators and 33.2 per cent of public works and maintenance labourers had not completed high school. The proportion of workers with less than a high school diploma in Ontario was 22.2 per cent for shippers and receivers, 27.3 per cent of material handlers, 30.1 per cent of public works maintenance equipment operators and 26.1 per cent of public works and maintenance labourers. On-the-job training is often provided to workers in these occupations. Shippers and receivers are generally required to possess a high school diploma. Material handlers are generally not required to have a specific diploma, but they are sometimes required to take specialised courses, including courses required for compliance with safety standards and regulations (*e.g.* a course in the safe use of lift-trucks).

Most supply chain companies offer on-the-job training to their workers. Supply Chain Management Inc. reported offering management and leadership courses through its parent company. As supply chains expand, become increasingly long and complex, the required skill set for the sector's occupations is changing accordingly. It is increasingly important for firms to possess the ability – in terms of human resources, skills and technology – to assess market demand, and to synchronise demand and supply to ensure just-in-time delivery and avoid excessive inventories. The capacity to assess demand is more challenging than producing and moving the goods along the supply chain.

Technological innovation, and the development and implementation of 'intelligent transportation systems,' will lead to increased skills requirements across the transportation sector.

4. Recruitment and Retention Challenges

Representatives of the supply chain sector reported difficulties finding qualified mid- and senior level managers, with a Master's degree in some supply chain areas. This is attributable to a lack of specific training for these positions. Canada has significantly fewer training programs in logistics or supply chains than the United States, partly because of a relative lack of awareness of the sector in Canada relative to the United States Experienced managers from other transportation sectors are generally qualified to work in the supply chain sector.

Retention problems in the supply chain sector have been linked to inadequate 'on-boarding processes'. Having an adequate initiation process for employees has helped companies reduce turnover.

5. Women, Immigrants, and First Nations Peoples

Occupations in the multimodal transportation, supply chain and warehousing sector tend to have a larger proportion of women workers than occupations in other Gateway subsectors. In particular, women were better represented in administrative occupations in this subsector, and in managerial positions. In Quebec, they represented 42.8 per cent of transportation route and crew schedulers, 39.2 per cent of customs, ship and other brokers, 38.4 per cent of dispatchers and radio operators, and 24.9 per cent of shippers and receivers in 2006 (Table 13.5). In Ontario, they represented 62 per cent of customs, ship and other brokers, 52 per cent of dispatchers and radio operators and 49.3 per cent of transportation route and crew schedulers in 2006. In terms of managerial positions, they represented 22.9 per cent of transportation managers and 18.7 per cent of facility operations and maintenance managers in Quebec. In Ontario, women represented 26.5 per cent of facility and operations managers and 18.3 per cent of transportation managers. Women were least present in the transport and equipment operators, trades helpers and transportation labourers occupations in Quebec and Ontario.

Table 13.5 Women and Immigrants in the Multimodal Transportation/ Supply Chain Gateway Sector (2006)

	Females Share of Labour Force (%)		Immigrants* Share of Labour Force (%)	
	Quebec	Ontario	Quebec	Ontario
Transportation managers (0713)	18.7	18.3	12.8	30.3
Facility operation and maintenance managers (0721)	23.0	26.5	15.0	26.2
Customs, ship and other brokers (1236)	39.3	62.0	23.2	35.6
Shippers and receivers (1471)	24.8	22.7	15.6	33.7
Dispatchers and radio operators (1475)	38.3	52.0	5.3	16.7
Transportation route and crew schedulers (1476)	42.8	49.3	10.9	27.9
Public works maintenance equipment operators (7422)	2.6	3.6	2.9	12.1
Material handlers (7452)	10.9	14.9	10.9	30.9
Public works and maintenance labourers (7621)	13.3	12.6	4.4	13.4
Supply Chain/ Multi-modal transportation Gateway sector	18.6	21.3	11.3	29.0
All Occupations	47.1	47.7	12.2	30.2
Source: Statistics Canada, Census 2006				
*The term 'immigrant' refers to the population of people aged 15 and over who worked during the week preceding the 2006 Census and who have landed immigrant status in Canada or have had it in the past.				

Workers who have or have previously had landed immigrant status are better represented in some administrative occupations than the all occupations average. In particular, they represented 23.2 per cent of customs, ship and other brokers, and 15.6 of shippers and receivers in Quebec in 2006, compared to 12.2 per cent at the all occupations level. In Ontario, they represented 35.6 per cent of customs, ship and other broker, and 33.7 per cent of shippers and receivers in 2006.

In managerial positions, immigrants were also more present than the all occupations level, representing 15 per cent of transportation managers and 12.8 per cent of

facility operations and maintenance operations managers in Quebec. In Ontario, landed immigrants represented over 30.3 per cent of transportation managers and 26.2 per cent of facility operations and maintenance managers in 2006.

Interviewed representatives of supply chain companies in Ontario however, reported that the ethnic diversity of their workforces was not reflected at the senior management level. They explained that there were no major barriers to entry for workers from different backgrounds, as long as they could read and write in English, but that skills recognition for promotion was more challenging. An advantage of having employees from different ethnic backgrounds is that they tend to attract others from the same backgrounds as them, which expands the labour pool and facilitates recruitment. Companies in metropolitan areas, especially the Greater Toronto Area, have a significantly diverse labour pool to draw upon.

In Quebec, immigrants represented 10.9 per cent of transportation route and crew schedulers, and 10.9 per cent material handlers, and 5.3 per cent of dispatchers and radio operators in 2006. In Ontario, the proportion of immigrants in these occupations was relatively higher (27.9 per cent of transportation route and crew schedulers, 30.9 material handlers, and 16.7 per cent of dispatchers and radio operators.

Landed immigrants also represented a small proportion of public works and maintenance labourers (4.4 per cent in Quebec and 13.4 in Ontario) and public works maintenance equipment operators (2.9 per cent in Quebec and 12.1 per cent in Ontario). The small proportion of immigrants is rather surprising given the large proportion of workers in these occupations who work in the public administration sector, which is generally expected to have employment policies targeting minorities.

Representatives of the supply chain sector indicated that very few First Nations people were employed in the sector, but few explanations were provided to explain why.

6. Human Resource Strategies

To address the human resource challenge of recruiting senior level management and people with adequate academic qualifications, Supply Chain Management Inc. reached out to their parent company and to universities to develop a university liaison program for senior level management.

Several universities in Canada, including the Universities of Manitoba and Western Ontario, have started creating the programs required. This will also contribute to improving the visibility of the supply chain sector. In Quebec as well, some academic programs at the CEGEP level have been developed to respond to the needs of an emerging supply chain logistics sector. The Supply Chain Sector Council has assembled a comprehensive list of Canadian universities and colleges offering supply chain courses and programs.[42]

[42] http://www.supplychaincanada.org/en/education-information

G. Border Security

Workers in the border security Gateway sector are generally employed by the federal government, mainly through the Canada Border Services Agency (CBSA). They also include Citizenship and Immigration Canada (CIC) officers and Transport Canada (TC) inspectors, as well as airport security guards. In terms of occupational classification, workers in this Gateway sector fall under security guards and related occupations (NOC 6651) and under immigration, employment insurance and revenue officers (NOC 1228).

1. Employment Trends

A number of policies and developments in recent years have led to a 'culture shift' at the CBSA, created the need to increase the Agency's workforce, and provide training in several areas. The CBSA has integrated employees previously working at Canada Customs and Revenue Agency, Citizenship and Immigration Canada (CIC) and the Canada Food and Inspection Agency (CBSA, 2008). Pursuant to a federal government commitment announced in the 2006 budget, CBSA has begun to arm the border security officer (BSO) workforce, and eliminate 'work alone situations'.[43] Consequently, in its Strategic Integrated Human Resources Plan 2008/09, the CBSA outlined six gaps or priority areas to be addressed: developing the armed workforce, recruiting and training BSOs, enhancing program expertise and policy capacity, increasing the use of technology and developing leadership (CBSA, 2008).

2. Recruitment and Retention Challenges

Recent recruitment efforts have focused largely on the recruitment of young workers as Border Service Officers (BSO). The large number of recruits is expected to remain steady in the near future (CBSA, 2008). Other occupations for which the Agency has identified recruitment needs are information management specialists and analysts. The CBSA has highlighted the importance of retaining workers with transferable skills such as communications and information technology workers, in the face of competition from other sectors.

Difficulties recruiting safety and security inspectors have been a major human resource challenge for Transport Canada, due to the lack of experienced and qualified applicants. The federal government has also faced difficulties finding specialized analysts with transportation experience and knowledge. A large number of retirements in the coming years and increases the demand for experienced workers is a challenge for inspectors. Retention strategies are important to address the loss of corporate memory. Transport Canada has been promoting apprenticeship programs, and knowledge transfer to address this issue.

[43] http://www.cbsa-asfc.gc.ca/media/release-communique/2007/0911rigaud-eng.html

3. Skills and Training

The border service officer occupation requires the completion of the Port of Entry Recruit Training (POERT) program, which involves three phases.[44] The first phase involves long-distance training through the internet. Candidates complete this phase over four weeks, under the guidance of a supervisor. The second phase of nine weeks duration involves core training provided in-residence at the CBSA Learning Centre in Rigaud, Quebec. The last phase involves in-service training, and is completed once the BSO has been appointed to a port of service.

In 2007, the federal government announced an investment of $50 million over three years to expand and renovate the CBSA Learning Centre in Rigaud, Quebec.[45] The project consisted in developing an indoor firing range, constructing a multi-purpose building and expanding residential capacity. The renovations were expected to increase the capacity of the learning centre to train approximately 850 new recruits annually. In fact, in 2007 some 1,000 BSOs were trained at the centre (CBSA, 2008: 8).

Educational requirements for the BSO position have increased in response to the increased demand for knowledge workers. The training provided at the CBSA Learning Centre has also been modified to reflect additional requirements.

CBSA has identified its aging workforce as an important challenge and has engaged in workforce renewal. Largely due to the recruitment of young BSO's, the CBSA's workforce profile is relatively younger than that of the overall public service (CBSA, 2008). However, approximately one-third of CBSA employees could retire within the next ten years. The Agency has therefore identified the need to train the 'mid-career' workforce to ensure that the expected senior level vacancies can be filled.

Transport Canada generally provides on-the-job training to inspectors and transportation security personnel.

4. Women, Immigrants and First Nations Peoples

In terms of employment equity, the CBSA performs better than the core public service as a whole for visible minorities and persons with disabilities (Table 14.1). Women represent more than half of the workforce for both the CBSA and the core public sector. Some 3.3 per cent of CBSA workers are Aboriginals, compared to 3.8 per cent for the core public sector.

Transport Canada, like other federal departments, generally has a good record with minorities. Nevertheless, in some geographic areas, there are fewer minorities interested in entering the workforce, which is a challenge. There is a significant potential for bringing skilled workers in under programs such as the skilled workers program. For instance,

[44] http://www.cbsa-asfc.gc.ca/job-emploi/bso-asf/training-formation-eng.html
[45] http://www.cbsa-asfc.gc.ca/media/release-communique/2007/0911rigaud-eng.html

railway workers with specialised skills in India could provide a source of rail inspectors in Canada.

Table 14.1 Employment Equity Representation in the CBSA and the Core Public Service (2007)

	Canada Border Services Agency (%)	Core Public Service (%)
Women	52.7	54.5
Visible Minorities	11.3	9.6
Persons with disabilities	6.6	5.5
Aboriginal	3.3	3.8
Source: Canada Border Services Agency (CBSA), **Strategic** Integrated Human Resource Plan 2008/09, p. 11		

5. Human Resource Strategies

The primary human resource management strategy used by Transport Canada is the development of a Human Resources Plan for each unit, but also for the department as a whole.

The CBSA has developed programs to promote 'accelerated knowledge transfer' and reduce the Agency's vulnerability to labour shortages attributable to retirements, particularly for key occupational groups such as Personnel Administrators, Policy Advisors, and Internal Auditors (CBSA, 2008). For instance, a succession management strategy has been developed for the Executive (EX) Group, and the 'EX feeder group', which needs to be further integrated in the Agency's overall Human Resource strategy. An Ad Hoc Implementation Working Group has been created to monitor progress on the six priority areas identified in the Strategic Integrated Human Resources Plan 2008/09.

6. Security related human resource issues across different modes

Air Transportation

Increased security measures, such as 'enhanced non-restricted access controls' and non-passenger screening have raised staffing costs and skills requirements for airports (Transport Canada, 2007b). Similarly, Canadian air carriers reported increased staffing costs associated with additional data requirements, US no-fly and selectee lists, special requirements for trans-border flights and other security measures. Discussions underway for additional security measures for air cargo transported in passenger aircraft are a concern to air carriers (Canadian Sailings, 2008: 18). New processes and technologies, such as the Safety Management Systems (SMS), which is to be implemented in all Canadian regulated civil aviation organizations by 2010, have important implications in terms of skill requirements (Ray Barton Associates, 2008).

Marine Transportation

New security measures, such as the introduction of Marine Transportation Security Regulations (MTSR) in 2004, have had implications for port authorities and marine transportation companies who have had to hire additional security staff for surveillance and monitoring of facilities, and provide additional training (Transport Canada, 2007b). Marine

shipping lines have reported additional costs in terms of resources and work hours required for compliance with MTSR regulations, the collection and transmission of Advance Commercial Information to the Canadian Border Security Agency (CBSA) and staff training.

Rail Transportation

Rail transportation employees require training in security and emergency management practices and technologies. The post 9-11 security environment has led to increased training requirements. VIA Rail increased their security department staff and provided additional emergency preparedness training programs (Transport Canada, 2007b). Transport Canada, in consultation with rail industry stakeholders has identified the need to assist operators in developing formalized training programs (Ray Barton Associates, 2008).

Road Transportation

Increased security measures have led to longer delays at the border and to additional procedures and associated costs in terms of human resources (*e.g.* expanding administrative capacity to manage new requirements such as the electronic filing of shipment information) (Transport Canada, 2007b). In addition, obtaining security clearance for new Canadians for cross-border trips has been cited as a challenge (Ray Barton Associates, 2008).

The severity of the impact of border security on trucking varied across companies. According to one respondent interviewed, "border security almost ground the industry to a halt", and led several carriers to stop crossing the border. He explained that although programs have been implemented to facilitate the process, border security remains cumbersome.

IV. Conclusion

The severe downturn in the Canadian economy that started during the last quarter of 2008 and is expected to continue throughout 2009 has affected all Continental Gateway sectors, and will continue to do so in the short term, resulting in a decline in labour demand and employment. Moreover, attrition levels projected for the next five years may not materialize, as people who lost a significant part of their savings (due to declines in housing prices and to stock markets losses) may decide to delay their retirement. As a result, in the short-run, existing and projected labour shortages will subside for most sectors and occupations, as unemployment levels rise. Nevertheless, there may be *skills* shortages (shortages of *qualified* workers) – as opposed to a shortage of persons – in certain occupations.

Representatives of the Gateway sectors expressed the need for action to ensure that the labour and skills shortages identified prior to the onset of the crisis are addressed as soon as possible, in order to avoid significant bottlenecks during the recovery and subsequent expansion. The perceived restructuring aspect of this crisis is a major concern for some sectors. In particular, a sustained decline in manufacturing in Ontario and Quebec would have a structural impact on human resources in the two provinces in terms of employment distribution across industries. Furthermore, the manufacturing sector directly generates activity for transportation (for trucking in particular, but also for other modes) and indirectly supports construction, retail and wholesale trade, services and other sectors of the economy by providing employment income to a significant number of people. A slowdown in U.S. and global demand for forestry products, and other products such as aluminum, would also have an impact on employment in these sectors and in the transportation sector in Quebec.

A number of common human resource and skills issues were identified across Gateway sectors in Ontario and Quebec:

- ***Potential labour shortages of qualified workers with specialized skills***: In the construction sector, there are concerns about potential shortages at the senior management and supervisory levels, and technical occupations such construction estimators, inspectors, and civil engineers. In the air transportation sector, potential shortages of pilots and aviation maintenance workers have been identified. In marine transportation, shortages of crane operators, port safety and operations managers and in specialized occupations have been reported. There are concerns about potential shortages of locomotive engineers in rail transportation, of truck drivers and mechanics in road transportation, of senior level managers in the supply chain sector, and of transportation inspectors in the border security sector.

- ***Uncertainty, incentives, and human resource planning:*** Uncertainty regarding the economic outlook and labour market situation constitutes a challenge for human resource planning for all Gateway sectors. In addition, companies

concerned with short-term survival lack the required resources and incentives for long-term strategic planning.

- ***An aging workforce***: The aging workforce issue is affecting all Gateway sectors, particularly within occupations requiring many years of experience. In addition to an aging 'internal' workforce within each sector, the aging 'external workforce' implies increasing competition for labour among different sectors, due to a shrinking labour pool. In the short to medium run, however, the projected decline in labour force may be partially offset by the number of workers who, due to financial considerations, postpone their retirement or possibly return to the labour force a few years following their retirement.

- ***Entry barriers to young workers***: High entry-level requirements (*e.g*. number of years of driving experience, and requirements to meet insurance criteria for truck drivers) and high training costs (*e.g*. high costs combined with low entry level wages discourage pilots from enrolling in training programs) are among the factors that discourage youth entry into the trucking and aviation sectors.

- ***Difficulties in attracting youth***: A negative perception of occupations in road transportation and in construction trades, as less prestigious and desirable occupations discourages young workers from pursuing a career in these trades. The negative perception issue is sometimes linked to (changing) lifestyle preferences that clash with difficult work conditions, inflexible schedules and requirements to remain away from home for extended time periods (*e.g.* long-distance truck drivers, several marine transportation occupations, air pilots and crews).

- ***General recruitment problems***: Each Gateway sector has recruitment problems for specific occupations, due to a lack of qualified candidates, labour market entry barriers, low wages, and competition for labour with other sectors, among other factors. A lack of awareness of opportunities in the sector, or in the case of the Supply Chain sector, a lack of understanding of the sector, result in workers entering its labour force by chance or by default.

- ***Retention problems***: Retention problems are often related to difficult work conditions and requirements to be away from home for extended time periods, inflexible schedules, low wages, and competition with other sectors. In addition, retention problems are significant when workers' pre-employment expectations do not correspond to the realities of the sector.

- ***Lack of adequate training and standards***: The lack of adequate training was a major issue for the trucking industry in both provinces, but more particularly in Ontario. The quality of driver training programs varies significantly across schools in Canada. High costs often discourage enrolment in higher quality programs. In construction, labour and training standards differ between Ontario and Quebec for trades that do not require certification in Ontario. Inconsistent

training standards create implicit barriers to labour mobility. The problem of inadequate training is exacerbated by the increasing skill requirements for most occupations, including requirements to adapt to new technologies, environmental regulations, and enhanced security measures.

- ***Limited labour force participation of women, First Nations peoples and immigrants***: In addition to the general recruitment challenges, there are difficulties attracting women to non-traditional occupations. With the exception of certain geographic areas, and certain construction trades, First Nations peoples are underrepresented in the Gateway sector labour force. Aboriginal workers are often employed in companies operated by First Nations peoples (*e.g.* Air Creebec, Kepa Transport, and Tshiuetin Rail Transportation). Landed immigrants are also underrepresented in most Gateway sector occupations, due to language barriers and credential recognition problems. Immigration is also expected to decrease during the economic downturn.

This report has identified numerous strategies being developed and implemented by companies and industry associations in each of the Gateway sectors to address these human resources and skills challenges. At the company level, these include: the targeted recruitment of youth; the provision of pre-employment and on-the-job training; increased flexibility of work schedules; attractive leave systems; performance bonuses; and other financial incentives. At the industry and sector levels, strategies include the collection and dissemination of labour market information (LMI), coordination with academic institutions to develop training programs that reflect industry and sector's needs (*e.g.* training for locomotive conductors, academic programs in logistics), the development of career promotion tools to inform the public about opportunities, attract youth and tackle the "negative perception' issues, the promotion of (truck driving) school accreditation as an important means of raising occupational standards.

The report identified human resource and skills gaps that could be addressed through coordination between Gateway industries and public administrations. These include: increasing training capacity; expanding and improving apprenticeship programs for specific occupations; requiring compulsory certification for more construction trades in Ontario; promoting driver school accreditation and lowering the costs of enrolment in high quality programs (financial incentives); and increasing the labour force participation of women, First nations peoples, and immigrants (*e.g.* facilitating foreign credential recognition).

Gateway sectors share many common and inter-related human resource and skills challenges. Although sector councils are gathering and disseminating labour market information (LMI), it would be useful to have standard and consistent LMI for each of the Gateway sectors. The common challenges faced by Gateway sectors provide significant grounds for the sharing of best practices.

Bibliography

Airports Council International (2008), website: http://www.aci-na.org/index/todaynews_0619a

Air Transport Association of Canada (2008) "Human Resources and Labour Challenges" *Flightplan*, Fall 2008.

Air Transport Association of Canada (2001) "Human Resource Study of Commercial Pilots in Canada" Report available at http://www.atac.ca/en/files1/2793-1.pdf

APR Associates Inc. (2007) "Labour Market Information Project for the Canadian Supply Chain Sector Council (CSCSC)" Final Report, July 2007, available at http://www.supplychaincanada.org/user_files/CSCSC_Final_LMI_Report-July_31_2007.pdf

Association of Canadian Port Authorities (2008) *Canadian Ports Magazine 2008*, available at http://www.acpa-ports.net/pr/pdfs/cdnports2008.pdf

Auditor General of Canada (2007) "Keeping the Border Open and Secure – Canada Border Services Agency," Chapter 5, Report of the Auditor General of Canada to the House of Commons, October 2007, available at http://www.oag-bvg.gc.ca/internet/docs/aud_ch_oag_200805_07_e.pdf

Bertelsmann Foundation with the expertise of the International Reform Monitor Network "Strategies to Counter Skill Shortages: Survey on International Experiences".

Binkley, A. (2008) "Seaway Opening: Seaway facing many variables in 2008" *Canadian Sailings, Transportation and Trade Logistics*, March 2008, available at http://www.canadiansailings.ca/canadiansailings/SpecialFeatures/SpecialIssues/tabid/116/Default.aspx

Brox, J. (2008) "Infrastructure Investment: The Foundation of Canadian Competitiveness", IRPP Policy Matters 9 (2), August 2008.

Burghardt, J., DeFehr, A. and Turner T.R. (2007) "Asia Pacific Gateway and Corridor Initiative (APGCI) Report and Recommendations," presented to The Honourable David Emerson, Minister of International Trade and Minister for the Pacific Gateway and the Vancouver-Whistler Olympics, available at http://www.tc.gc.ca/majorissues/APGCI/StrategicAdvisorReport.htm

Camo-Route - Comite sectoriel de main d'oeuvre de l'industrie du transport routier au Quebec (2005a) "Diagnostic sectoriel transport routier de marchandises 2004-2005 - Analyse d'enquetes portant sur la main d'oeuvre de l'industrie", Janvier 2005.

Camo-Route - Comite sectoriel de main d'oeuvre de l'industrie du transport routier au Quebec (2005b) "Diagnostic sectoriel transport routier de personnes 2004-2005 - Analyse d'enquetes portant sur les conducteurs dans le transport routier de personnes", Avril 2005.

Canada's Marine Industry Alliance (2005) "Canada's Marine Industry: A Blueprint for a Stronger Future," available at http://www.tmq.ca/anglais/publication/canevas_eng.pdf

Canadian Airports Council (2008), website: http://www.cacairports.ca/english/news/openskiesforcargo.php

Canada Border Services Agency (2008) "Strategic Integrated Human Resources Plan 2008/09" August 2008.

Canada Border Services Agency (2007) "Departmental Performance Report 2006-2007" November 2007, available at http://www.tbs-sct.gc.ca/dpr-rmr/2006-2007/inst/bsf/bsf-eng.pdf

Canadian Electricity Association, Human Resource Committee (2007) "Addressing the Human Resource Challenge in the Electricity Industry," Briefing Note, February 2007.

Canadian Logistics Skills Committee (2005) "Strategic Human Resources Study of the Supply Chain Sector," Final Report, Fall 2005, available at http://www.supplychaincanada.org/assets/CLSC_full_report.pdf

Canadian Sailings, Transportation and Trade Logistics (2008) "Carriers stay fresh in trying times," Special Publication, available at http://www.canadiansailings.ca/canadiansailings/SpecialFeatures/SpecialIssues/tabid/116/Default.aspx

Canadian Sailings, Transportation and Trade Logistics (2007) "Gateways Needed: Marine Delivers," 49th Annual Spring Issue, available at http://www.canadiansailings.ca/canadiansailings/SpecialFeatures/SpecialIssues/tabid/116/Default.aspx

Canadian Tourism Human Resource Council (2008a) "In Short Supply: Tourism – More jobs than workers," summary brochure, available at http://www.cthrc.ca/eng/page.aspx?_id=recent_research.htm

Canadian Tourism Human Resource Council (2008b) "The Future of Canada's Tourism Sector: Long on Prospects...Short on People," compilation report, available at http://www.cthrc.ca/eng/page.aspx?_id=recent_research.htm

Canadian Tourism Human Resource Council (2008c) "Tourism Sector Employment in Canada," research report, February 2008, available at http://www.cthrc.ca/eng/page.aspx?_id=recent_research.htm

Canadian Tourism Human Resource Council (2006) "Transportation Employment Summary" available at http://www.cthrc.ca/eng/page.aspx?_id=recent_research.htm

Canadian Trucking Human Resources Council (2008) "Senate Committee Makes Recommendations toward Improving the Operations of the Canadian Trucking Industry" Industry In Motion, Canada's Trucking HR Newsletter, Summer 2008, available at http://www.cthrc.com/site/images/Newsletters_E/Industry_In_Motion.2008.Summer.pdf

Canadian Trucking Human Resources Council (2007a) "Canada's Driving Force: Phase 1," Summary Report available at http://www.cthrc.com/site/images/Reports_E/SUMMARY_E.pdf

Canadian Trucking Human Resources Council (2007b) "Canada's Driving Force: Phase 2," Summary Report available at http://www.cthrc.com/site/images/Reports_E/J159_7_Summary_Eng_000.pdf

Canadian Trucking Human Resources Council (2007c) "Driver Satisfaction Survey," Report available at http://www.cthrc.com/site/images/Reports_E/Driver_Satisfaction_Survey.2007.pdf

Canadian Trucking Human Resources Council (2006a) "Training Schools Accreditation," Closing the Gap, Key Issue Discussion Paper, May 2006, available at http://www.cthrc.com/site/index.php?option=com_content&task=view&id=52&Itemid=108

Canadian Trucking Human Resources Council (2006b) "Government Funding – Truck Driver Training," Closing the Gap, Key Issue Discussion Paper, May 2006, available at http://www.cthrc.com/site/index.php?option=com_content&task=view&id=52&Itemid=108

Canadian Trucking Human Resources Council (2006c) "Immigration – Opportunities and Barriers," Closing the Gap, Key Issue Discussion Paper, May 2006, available at http://www.cthrc.com/site/index.php?option=com_content&task=view&id=52&Itemid=108

Canadian Trucking Human Resources Council (2006d) "Commercial Vehicle Licensing in Canada," Closing the Gap, Key Issue Discussion Paper, May 2006, available at http://www.cthrc.com/site/index.php?option=com_content&task=view&id=52&Itemid=108

Canadian Trucking Human Resources Council (2006e) "Closing the Gap – Executive Summary," May 2006, available at http://www.cthrc.com/site/index.php?option=com_content&task=view&id=52&Itemid=108

Canadian Trucking Human Resources Council (2002) "Essential Skills Needs Assessment of the Trucking Industry," Essential Skills Research Report available at http://www.cthrc.com/site/images/Reports_E/EnglishReport.pdf

Commission de la Construction du Quebec (2008), website : http://www.ccq.org/E_CertificatsCompetence/E06_MesuresParticulieres/E06_2_Autochtones.aspx?sc_lang=en&profil=GrandPublic

Commission de la Construction du Quebec (2007a) – Statistics Table C2 available at http://www.ccq.org/B_IndustrieConstruction/~/media/PDF/Recherche/StatistiquesHistoriques/2006/c02.pdf.ashx?sc_lang=en&profil=Entrepreneur

Commission de la Construction du Quebec (2007b) – Statistics Table B3 available at http://www.ccq.org/B_IndustrieConstruction/~/media/PDF/Recherche/StatistiquesHistoriques/2006/b03.pdf.ashx?sc_lang=en&profil=Entrepreneur

Commission de la Construction du Quebec, Direction Recherche et Organisation (2007b) « Perspectives 2008: Une main d'œuvre à la hauteur, » Décembre 2007, disponible sur le site http://www.ccq.org/www.ccq.org/Publications.aspx?sc_lang=fr-CA&profil=GrandPublic&menuautre=false&publication=0#indus

Commission de la Construction du Québec, Communications Directorate (2006c) « Métiers et Occupations dans l'industrie de la construction [English]»

Commission de la Construction du Quebec (2006b) « L'Industrie de la construction en 2006, » disponible sur le site http://www.ccq.org/www.ccq.org/Publications.aspx?sc_lang=en&profil=GrandPublic&menuautre=false&publication=0#indus

Conference Board of Canada (2006) "Canada's Tourism Industry: Industrial Outlook" prepared for the Canadian Tourism Commission (CTC), Winter 2007/Executive Summary

Conference Board of Canada (2007) "Domestic, U.S. and Overseas Travel to Canada" prepared for the Canadian Tourism Commission (CTC), Fourth Quarter 2007/Executive Summary

Conference Board of Canada (2005) "Acting on Human Resource Information to Build and Maintain Capacity in the Canadian Construction Sector" The Labour Market Information (LMI) Program, Case Study, September 2005.

Conference Board of Canada (2007) "Canada's Changing Role in Global Supply Chains," Report, March 2007.

Conference Board of Canada (2007) "Reaching a Tipping Point? Effects of Post-9/11 Border Security on Canada's Trade and Investment," Report, June 2007.

Conference Board of Canada (2007) "Tighter Border Security and Its Effect on Canadian Exports," Report, June 2007.

Conference Board of Canada (2005) "Canada's Transportation Infrastructure Challenge, Strengthening the Foundations," Report, January 2005.

Conference Board of Canada (2007) "Is Just-In-Case Replacing Just-In-Time? How Cross-Border Trading Behaviour Has Changed Since 9/11," Briefing, June 2007.

Conference Board of Canada (2007) "Addressing Gaps in the Transportation Network, Seizing Canada's Continental Gateway Advantage" Briefing, October 2007.

Construction Sector Council (2008a) "Construction Looking Forward, Labour Requirements from 2008 to 2016 for Ontario" CSC Labour Market Information program report, available at http://www.csc-ca.org/pdf/CSC-LookingForward08-ON-EN.pdf

Construction Sector Council (2008b) "Construction Looking Forward, Labour Requirements from 2008 to 2016 for Quebec" CSC Labour Market Information program report, available at http://www.csc-ca.org/pdf/CSC-LookingForward08-QC-EN.pdf

Construction Sector Council (2008c) "Construction Looking Forward, National Summary, An Assessment of Construction Labour Markets from 2008 to 2016" CSC Labour Market Information program report, available at www.csc-ca.org

Construction Sector Council (2007a) "Construction Looking Forward, Labour Requirements from 2007 to 2015 for Ontario" CSC Labour Market Information program report, available at www.csc-ca.org

Construction Sector Council (2007b) "Construction Looking Forward, Labour Requirements from 2007 to 2010 for Quebec" CSC Labour Market Information program report, available at www.csc-ca.org

Construction Sector Council (2007c) "Canadian Construction Industry Forecast: 2007-2012" CSC Labour Market Information forecast, available at www.constructionforecasts.ca

Construction Sector Council (2007d) "Construction Looking Forward, National Summary, An Assessment of Construction Labour Markets from 2007 to 2015" CSC Labour Market Information program report, available at www.csc-ca.org

Construction Sector Council (2004a) "Future Labour Supplies for Canada's Construction Industry" LMI Research Report, available at http://www.csc-ca.org/pdf/LMI_Future_E.pdf

Construction Sector Council (2004b) "The Impact of Technology on the Construction Labour Market" LMI Research Report, available at http://www.csc-ca.org/pdf/LMI_Impact_E.pdf

Construction Sector Council (2004c) "Training Canada's Construction Workforce" LMI Research Report, available at http://www.csc-ca.org/pdf/LMI_Training_E.pdf

Construction Sector Council (2004d) "Emerging Trends in Management, Supervision and Mentoring in the Construction Industry" LMI Research Report, available at http://www.csc-ca.org/pdf/LMI_Trends_E.pdf

Construction Sector Council (2004e) "Working Mobile: A Study of Labour Mobility in Canada's Industrial Construction Sector" Executive Summary, Spring 2005, available at http://www.csc-ca.org/pdf/WorkingMobile_Summary_E.pdf

CPCS Transcom Limited (2008) "Marine Transportation, Ports and Ocean Technology Situational Analysis" Final Report prepared for Human Resources and Social Development Canada, May 2008.

CSMO industrie maritime (2007) "Perspectives d'evolution de l'emploi Industrie maritime du Quebec 2007-2011", Janvier 2007.

De Mestral, Armand (2008) "Open Skies negotiations between Canada and the EU" Commentary for the Canada-Europe Transatlantic Dialogue: Seeking Transnational Solutions to the 21st century problems, October 2008, available at http://www.carleton.ca/europecluster/publications/2008-10-21-OpenSkies(deMestral).pdf

Department of Finance Canada (2009) "The Budget Plan 2009 – Canada's Economic Action Plan" Tabled in the House of Commons by the Honourable James M. Flaherty, P.C., M.P., Minister of Finance, January 27, 2009, available at http://www.budget.gc.ca/2009/pdf/budget-planbugetaire-eng.pdf

Department of Finance Canada (2008) "The Budget Plan 2008 – Responsible Leadership" Tabled in the House of Commons by the Honourable James M. Flaherty, P.C., M.P., Minister of Finance, February 26, 2008, available at http://www.budget.gc.ca/2008/pdf/plan-eng.pdf

Dubé V. and Pilon D. (2006) "On the road again" Perspectives, Statistics Canada, January 2006.

Dunlavy, J., Akuoko-Asibey, A, Masse, R. and Pilon D. (2005) "An Analysis of the Transportation Industry in 2005," Statistics Canada, Transportation Division, Analysis in Brief

Goldfarb, D. and Chu D. (2008) "Stuck in Neutral: Canada's Engagement in Regional and Global and Supply Chains," Conference Board of Canada Report, Trade, Investment Policy and International Cooperation, May 2008.

Government of Canada (2008), Continental Gateway Website: http://www.continentalGateway.ca/backgrounder.html

Grady, P. and Macmillan, K. (2007) "Interprovincial Barriers to Labour Mobility in Canada: Policy, Knowledge Gaps and Research Issues). MPRA Paper 2988, May 2008, available at http://mpra.ub.uni-muenchen.de/2988/1/MPRA_paper_2988.pdf

HDP Group Inc. (2004) "Study of Professional and Technical Transportation Training in Canada" Report submitted to Transport Canada, Strategic Policy Directorate, Policy Research Branch, February 2004 available at http://www.tc.gc.ca/pol/en/Report/research/tp14503e/menu.htm

House of Commons of Canada (2008) "Chapter 5, Keeping the Border Open and Secure – Canada Border Services Agency of the October 2007 Report of the Auditor General of Canada" Report of the Standing Committee on Public Accounts, May 2008, available at http://cmte.parl.gc.ca/Content/HOC/committee/392/pacp/reports/rp3513476/392_PACP_Rpt15/392_PACP_Rpt15-e.pdf

Human Resources and Social Development Canada, Policy Research Directorate; Industry Canada, Micro-Economic Policy Analysis Branch (2008) "Adjustments in Markets for Skilled Workers in Canada: A synthesis of Key Findings and Policy Implications," April 2008, available online at http://www.ic.gc.ca/epic/site/eas-aes.nsf/en/h_ra01877e.html

Human Resources and Social Development Canada, Labour Market and Skills Forecasting and Analysis Unit (2007) "Looking Ahead: A 10-Year Outlook for the Canadian Labour Market (2006-2015) – Background Briefing on Future Labour Demand in Canada" HRSDC, January 2007, available at http://www.hrsdc.gc.ca/en/publications_resources/research/categories/labour_market_e/sp_615_10_06/LA06-Demand-29Jan07.pdf

Human Resources and Social Development Canada, Labour Market and Skills Forecasting and Analysis Unit (2007) "Looking Ahead: A 10-Year Outlook for the Canadian Labour Market (2006-2015) – Background Briefing on Future Supply Demand in Canada" HRSDC, January 2007, available at http://www.hrsdc.gc.ca/en/publications_resources/research/categories/labour_market_e/sp_615_10_06/LA06-Supply-29Jan07.pdf

Human Resources and Social Development Canada, Labour Market and Skills Forecasting and Analysis Unit (2007) "Looking Ahead: A 10-Year Outlook for the Canadian Labour Market (2006-2015) – Background Briefing on Current and Future Labour Shortages in Canada" HRSDC, January 2007, available at http://www.hrsdc.gc.ca/en/publications_resources/research/categories/labour_market_e/sp_615_10_06/LA06-Shortages-29Jan07.pdf

IATA (2008) "Industry Financial Forecast" Briefing Note, September 2008, available at http://www.iata.org/whatwedo/economics/index.htm

Kohane, J. (2008) "Environmentally Friendly Trucks: Green Fleet Gears Up" *Canadian Sailings, Transportation and Trade Logistics*, May 2008, available at

http://www.canadiansailings.ca/canadiansailings/SpecialFeatures/SpecialIssues/tabid/116/Default.aspx

Lapointe, M., Dunn, K., Tremblay- Côté, N., Bergeron, L.-P., and Ignaczak L. (2006) "Looking Ahead: A 10-Year Outlook for the Canadian Labour Market (2006-2015)," HRSDC, Labour Market and Skills Forecasting and Analysis Unit, October 2006, available at http://www.hrsdc.gc.ca/en/publications_resources/research/categories/labour_market_e/sp_615_10_06/sp_615_10_06e.pdf

Menard, M., Chan C. K.Y., Walker M. (2007a) "National Apprenticeship Survey – Quebec Overview Report 2007" Statistics Canada Research Paper, available at http://www.statcan.ca/english/freepub/81-598-XIE/81-598-XIE2008003.pdf

Menard, M., Chan C. K.Y., Walker M. (2007b) "National Apprenticeship Survey – Ontario Overview Report 2007" Statistics Canada Research Paper, available at http://www.statcan.ca/english/freepub/81-598-XIE/81-598-XIE2008004.pdf

Menard, M., Chan C. K.Y., Walker M. (2007c) "National Apprenticeship Survey – Canada Overview Report 2007" Statistics Canada Research Paper, available at http://www.statcan.ca/english/freepub/81-598-XIE/81-598-XIE2008001.pdf

Ministere des Finances du Quebec (2008) "The 2008-2009 Budget" Budget Plan tabled on March 13, 2008, available at http://www.budget.finances.gouv.qc.ca/budget/2008-2009/en/documents/pdf/BudgetPlan.pdf

Ministry of Finance of Ontario (2008) "The 2008 Ontario Budget – Growing a stronger Ontario" Budget papers available at http://www.fin.gov.on.ca/english/budget/ontariobudgets/2008/pdf/papers_all.pdf

Ministry of Training, Colleges and Universities (2008). Press Release September 16, 2008, available at http://www.edu.gov.on.ca/eng/document/nr/08.09/nr0916.html

Montreal Economic Institute (2006) "How to Make the Canadian Airline Industry More Competitive" Economic Note, November 2006, available at http://www.iedm.org/main/show_publications_en.php?publications_id=156

Murphy, Steven (2009) "Updated Forecasts for Canada and Ontario – 2008-2014", Policy and Economic Analysis Program (PEAP) Memo 2009-2, February 2009, University of Toronto

National Research Council Canada, Institute for Research in Construction (2004). "Strategic Plan (2004-09)" available at http://irc.nrc-cnrc.gc.ca/pubs/fulltext/nrcc46892/

NAV Canada (2008) website: http://www.navcanada.ca/NavCanada.asp?Language=en&Content=ContentDefinitionFiles\Newsroom\Backgrounders\nc_glance.xml

Notar, B. and Jothen, K. (2006) "Asia-Pacific Gateway Dialogue on Skills and Human Resource Pressures" Summary Report prepared for the British Columbia Ministry of Economic Development, Human Resources and Social Development Canada and Service Canada, November 2006, available at http://www.supplychaincanada.org/assets/Asia-Pacific_Gateway_Summary_Report.pdf

Office of the Prime Minister (2006), website: http://pm.gc.ca/eng/media.asp?id=1391

Ontario Construction Secretariat (2006) "Market Trends 2006 – Understanding Ontario's Construction Industry," Report available at http://www.iciconstruction.com/resources/industry_publications/market_trends.cfm

Ontario Construction Secretariat (2008) "Underground Economy in Construction – It costs Us All," Report, April 2008, available at http://www.iciconstruction.com/resources/industry_publications/underground_economy_issues.cfm

Padova, Allison (2007) "Airport Governance Reform in Canada and Abroad" Library of Parliament, September 2007, available at: http://www.parl.gc.ca/information/library/PRBpubs/prb0712-e.pdf

Railway Association of Canada (2008a), website: http://www.railcan.ca/sec_rac/en_rac_member_profile.asp?id=67

Railway Association of Canada (2008b), website: http://www.railcan.ca/sec_rac/en_rac_members_passenger.asp

Railway Association of Canada (2008c), website: http://www.railcan.ca/sec_rac/en_rac_members_shortline_regional.asp

Ray Barton Associates Inc. (2008) "Trends and Patterns in Skills and Labour shortages – Final Report" submitted to Transport Canada, March 2008, available at http://www.supplychaincanada.org/user_files/Transport_Canada-Trends_&_Patterns_in_Skills_&_Labour_Shortages-Mar_2008.pdf

Roselyn Kunin and Associates Inc. (2007) "Situational Analysis of Projected Asia-Pacific Gateway Investments in the Western Provinces with a Focus on Human Resources" Final Report prepared for Human Resources and Social Development Canada and British Columbia Ministry of Economic Development, January 2007, available at http://www.supplychaincanada.org/assets/Asia-Pacific_Gateway_Situational_Analysis.pdf

Royal Bank of Canada (2008) "Provincial Outlook – July 2008" Economic Forecast Report, July 2008, available at http://www.rbc.com/economics/market/pdf/provfcst.pdf
Standing Senate Committee on National Security and Defense (2007) "Airports," Canadian Security Guide Book 2007 Edition, March 2007, available at http://www.parl.gc.ca/39/1/parlbus/commbus/senate/com-e/defe-e/rep-e/repmar07-e.pdf

St. Lawrence Seaway Management Corporation (2008) *Annual Report2007/08*, available at http://www.greatlakes-seaway.com/en/management/slsmc/reports/index.html

Standing Senate Committee on National Security and Defense (2007) "Border Crossings," Canadian Security Guide Book 2007 Edition, March 2007, available at http://www.parl.gc.ca/39/1/parlbus/commbus/senate/com-e/defe-e/rep-e/rep10mar07-e.pdf

Standing Senate Committee on National Security and Defense (2007) "Seaports," Canadian Security Guide Book 2007 Edition, March 2007, available at http://www.parl.gc.ca/39/1/parlbus/commbus/senate/com-e/defe-e/rep-e/Seaports-e.pdf

Standing Senate Committee on Transport and Communications (2008) "Time for a New National Vision – Opportunities and Constraints for Canada in the Global Movement of Goods," Report, June 2008, available at http://www.parl.gc.ca/39/2/parlbus/commbus/senate/com-e/tran-e/rep-e/rep07jun08-e.pdf

Statistics Canada (2007) "North American Industry Classification System (NAICS) – Canada. Catalogue no. 12-501-XIE.

Sypher:Mueller International Inc. (2003) "Follow-up to the Human Resource Study of Commercial Pilots in Canada, Review of Recommendations," Report prepared through The Canadian Aviation Maintenance Council (CAMC) in Collaboration with the Air Transport Association of Canada (ATAC) for the Canadian Commercial Pilot Industry, November 2003, available at http://www.camc.ca/en/Resources_24/items/2003_Pilot_Study_4.html

Transport Canada (2007a) "Transportation in Canada – An Overview" available at http://www.tc.gc.ca/pol/en/Report/anre2007/index.html

Transport Canada (2007b) "Economic Analysis of Security Measures Affecting Transportation Stakeholders in Canada" September 2007, available at http://www.tc.gc.ca/tcss/Security/TCSecurity-ExecSum-eng.pdf

Transport Canada (2008a), website: http://www.tc.gc.ca/GatewayConnects/index2.html

Transport Canada (2008b), News Release: http://www.tc.gc.ca/mediaroom/releases/nat/2008/08-h174e.htm

Transport Canada, Economic Analysis Directorate (2008c) "Estimates of the Full Cost of Transportation in Canada," synthesis report prepared in collaboration with the Full Cost Investigation Task Force for the Policy and Planning Support Committee of the Council of Deputy Ministers Responsible of Transportation and Highway Safety, August 2008, available at http://www.tc.gc.ca/pol/en/aca/fci/FinalReport.htm

Transport Québec (2008c) « Le commerce extérieur du Québec, Survol du transport ferroviaire en 2005, » Bulletin Économique du Transport, Numéro 41, Mars 2008.

Transport Canada (2007a), News Release: http://www.tc.gc.ca/mediaroom/backgrounders/b07-r001.htm

Transport Canada, Policy Research Branch and Urban, Intermodalism and Motor Carrier Policy Branch (2004) "Literature Review on Intermodal Freight Transportation," January 2004, available at http://www.tc.gc.ca/pol/en/report/research/tp14502e/tp14502e.pdf

Transport Canada and U.S. Department of Transportation (2007) "Great Lakes Seaway Study – Final Report", available at http://www.glsls-study.com/Supporting%20documents/GLSLS%20finalreport%20Fall%202007.pdf

Waterloo-Wellington Training & Adjustment Board (2006), "Workforce Focus," Volume 1, Issue 3, July 2006.

Appendix 1 – Gateway NAICS Industry Subsectors

A. CONSTRUCTION

Gateway Sector	NAICS	Subsector Title	Description
Construction	2372	Land Subdivision	This industry comprises establishments primarily engaged in servicing raw land and subdividing real property into lots, for subsequent sale to builders. Land subdivision precedes building activity. The building sites created by land subdivision may be residential lots, commercial tracts or industrial parks. Servicing of raw land entails some physical improvements, such as land clearing or excavation work for the installation of roads and utility lines.
Construction	2373	Highway, Street and Bridge Construction	This industry comprises establishments primarily engaged in the construction of highways (including elevated), streets, roads, airport runways, public sidewalks, or bridges. The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialized trade activities related to highway, street, and bridge construction (i.e., installing guardrails on highways) are included.
Construction	2379	Other Heavy and Civil Engineering Construction	This industry comprises establishments, not classified to any other industry, primarily engaged in constructing heavy and civil engineering works. The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialized trade activities related to these engineering and civil construction projects (such as marine pile driving) are included. Construction projects involving water resources (*e.g.*, dredging and land drainage), development of marine facilities, and open space recreational construction projects (e.g., parks and trails) are included in this industry.

B. TRANSPORTATION

B1. Air Transportation

Gateway Sector	NAICS	Subsector Title	Description
Passenger and Freight Transportation	4811	Scheduled Air Transportation	This industry comprises establishments primarily engaged in transporting passengers and/or goods by aircraft, over regular routes and on regular schedules. Establishments in this industry have less flexibility with respect to choice of airports, hours of operation, load factors and similar operational characteristics than do establishments in 4812, Non-Scheduled Air Transportation.
Passenger and Freight Transportation	4812	Non-Scheduled Air Transportation	This industry comprises establishments primarily engaged in the non-scheduled air transportation of passengers and/or goods. Establishments in this industry have more flexibility with respect to choice of airports, hours of operation, load factors and similar operational characteristics than do establishments in 4811, Scheduled Air Transportation. Establishments primarily engaged in providing specialty air transportation or flying services using small, general-purpose aircraft are included.
Passenger Transportation	4879	Scenic and Sightseeing Transportation, Other	This industry comprises establishments, not classified to any other industry, primarily engaged in providing scenic and sightseeing transportation. Some examples of these services are scenic helicopter rides and hot-air balloon rides.
Passenger and Freight Transportation	4881	Support Activities for Air Transportation	This industry group comprises establishments primarily engaged in providing specialized services to the air transport industry. It includes the **Airport Operations** industry (48811) which comprises establishments primarily engaged in operating international, national and other civil airports. The activities involved in operating airports include renting hangar space, and providing air traffic control services, baggage handling, cargo handling and aircraft parking services. Public flying fields are included. Also included is the **Air Traffic Control industry (488111), which** comprises establishments primarily engaged in operating air traffic control services to promote the safe, orderly, and expeditious flow of air traffic.

B2. Marine Transportation

Gateway Sector	NAICS	Title	Description
Passenger and Freight Transportation	4831	Deep Sea, Coastal and Great Lakes Water Transportation	This industry comprises establishments primarily engaged in deep sea, coastal and Great Lakes water transportation of freight and passengers. The St. Lawrence Seaway is considered to be part of the Great Lakes system. Establishments that operate ocean-going cruise ships are included.
Passenger and Freight Transportation	4832	Inland Water Transportation	This industry comprises establishments primarily engaged in the inland water transportation of freight and passengers. Transportation within harbours is included.
Passenger Transportation	4872	Scenic and Sightseeing Transportation, Water	This industry comprises establishments primarily engaged in providing scenic and sightseeing transportation on water, such as sightseeing or dinner cruises or air-boat rides. These establishments often use vintage or specialized transportation equipment. The services provided are local in nature, usually involving same-day return. Establishments that provide charter fishing services are included.
Passenger and Freight	4883	Support Activities for	This industry group comprises establishments primarily engaged in providing specialized services to the water transportation industry. It includes **the Port and Harbour Operations industry (48831) which**

Transportation		Water Transportation	comprises establishments primarily engaged in operating port and harbour facilities and services, including establishments engaged in the operation of lighthouses. It also includes the **Marine Cargo Handling** industry **(48832)** which comprises establishments primarily engaged in providing stevedoring and other marine cargo handling services, and the **Navigational Services to Shipping** industry **(48833),** which comprises establishments primarily engaged in providing navigational services to shipping. Important navigational services are pilotage, moorage and vessel traffic services. Establishments engaged in marine salvage are included.

B3. Rail Transportation

Gateway Sector	NAICS	Title	Description
Passenger and Freight Transportation	4821	Rail Transportation	This industry group comprises establishments primarily engaged in operating railways. It includes the **Short-Haul Freight Rail Transportation industry (482112)** which comprises establishments primarily engaged in operating railways for the transport of goods on a rail line that does not comprise a rail network. A short-haul railway line usually takes goods from one or more points to a point on the larger transportation network, which is usually a mainline railway, but may be a trans-shipment point onto another transportation mode. It also includes the **Mainline Freight Rail Transportation industry (482113) which** comprises establishments primarily engaged in operating railways for the transport of goods over a mainline rail network. A mainline rail network is a system that usually comprises one or more trunk lines, into which a network of branch lines feed. The branch lines may be part of the mainline establishment or may be separate establishments of short-haul freight railways. Finally, it includes the **Passenger Rail Transportation industry (482114)** which comprises establishments primarily engaged in the railway transport of passengers.
Passenger and Freight Transportation	4882	Support Activities for Rail Transportation	This industry comprises establishments primarily engaged in providing specialized services to the rail transport industry. Establishments engaged in the operation of railway terminals and stations, and the maintenance of railway rights-of-way and structures are included.
Passenger Transportation	4871	Scenic and Sightseeing Transportation, Land	This industry comprises establishments primarily engaged in providing scenic and sightseeing transportation on land, such as steam train excursions and horse-drawn sightseeing rides.

B4. Road Transportation

Gateway Sector	NAICS	Title	Description
Freight Transportation	4841	General Freight Trucking	This industry group comprises establishments primarily engaged in the local or long distance trucking of general freight. General freight trucking does not require the use of specialized equipment. The trucks used can handle a wide variety of commodities. Freight is generally palletized, and generally carried in a box, container or van trailer.
Freight Transportation	4842	Specialized Freight Trucking	This industry group comprises establishments primarily engaged in specialized freight trucking. These establishments transport articles that, because of size, weight, shape or other inherent characteristics, require specialized equipment for transportation. Some important types of specialized equipment are bulk tankers, dump trucks and trailers, refrigerated vans, and motor vehicle haulers. Establishments that transport used household and office goods are included.
Passenger Transportation	4851	Urban Transit Systems	This industry comprises establishments primarily engaged in operating local and suburban mass passenger transit systems. Such transportation may involve the use of one or more modes of transport including light rail, subways and streetcars, as well as buses. These establishments operate over fixed routes and schedules, and allow passengers to pay on a per-trip basis (whether or not they also use payment methods such as monthly passes).
Passenger Transportation	4852	Interurban and Rural Bus Transportation	This industry comprises establishments primarily engaged in providing passenger transportation, principally outside a single municipality and its suburban areas, primarily by bus. These establishments operate over fixed routes and schedules, and charge a per-trip fee.
Passenger Transportation	4853	Taxi and Limousine Service	This industry group comprises establishments primarily engaged in providing passenger transportation by taxi and limousine.
Passenger Transportation	4854	School and Employee Bus Transportation	This industry comprises establishments primarily engaged in operating buses and other motor vehicles to transport pupils to and from school or employees to and from work. These establishments operate over fixed routes and schedules, but do not charge a per-trip fee.
Passenger Transportation	4855	Charter Bus Industry	This industry comprises establishments primarily engaged in providing charter bus services. These establishments do not operate over fixed routes and schedules, and rent the entire vehicle, rather than individual seats.
Passenger Transportation	4859	Other Transit and Ground Passenger	This industry comprises establishments, not classified to any other industry, primarily engaged in providing shuttle services to airports and similar facilities, special needs transportation services and other transit and ground passenger transport. Shuttle services included in this industry are those that use vans and/or buses

		Transportation	as a means of transport. They usually travel on fixed routes and service particular hotels or carriers. Special needs transportation establishments use conventional or specially converted vehicles to provide passenger transportation to the infirm, elderly or handicapped.
Passenger Transportation	4871	Scenic and Sightseeing Transportation, Land – in Rail also	This industry comprises establishments primarily engaged in providing scenic and sightseeing transportation on land, such as steam train excursions and horse-drawn sightseeing rides.
Passenger and Freight Transportation	4884	Support Activities for Road Transportation 4884	This industry group comprises establishments primarily engaged in providing specialized services to trucking establishments, bus operators and other establishments using the road network. It includes the **Motor Vehicle Towing industry (48841) which** comprises establishments primarily engaged in towing motor vehicles. Establishments engaged in light and heavy towing services, both local and long distance, to the general public, commercial, transportation and other sectors, are included. These establishments may offer incidental services, such as tire repair, battery boosting and other emergency road services.
Mail and small parcels delivery	4922	Local Messengers and Local Delivery	This industry comprises establishments primarily engaged in providing messenger and delivery services of small parcels within a single urban area. Establishments engaged in the delivery of letters and documents, such as legal documents, often by bicycle or on foot; and the delivery of small parcels, such as take-out restaurant meals, alcoholic beverages and groceries, on a fee basis, usually by small truck or van, are included.

B5. Transportation and Warehousing: Multimodal/ Supply Chain

Gateway Sector	NAICS	Title	Description
Freight Transportation (all modes)	4885	Freight Transportation Arrangement	This industry comprises establishments primarily engaged in acting as intermediaries between shippers and carriers. These establishments are usually referred to as freight forwarders, marine shipping agents or customs brokers. They may offer a combination of services, which may span transportation modes.
Freight Transportation (all modes)	4889	Other Support Activities for Transportation	This industry comprises establishments, not classified to any other industry, primarily engaged in providing specialized services to transportation establishments. Establishments engaged in packing, crating and otherwise preparing goods for transportation are included.
Mail - Transportation (all modes)	4911	Postal Service	This industry comprises establishments primarily engaged in operating the postal service. Establishments of the Post Office, other than those primarily engaged in providing courier services, are classified in this industry, as well as establishments that carry on one or more functions of the postal service on a contract basis, except the delivery of mail in bulk.
Mail - Transportation (all modes)	4921	Couriers	This industry comprises establishments primarily engaged in providing air, surface or combined courier delivery services. Courier establishments of the Post Office are included.
Freight Transportation (all modes) and Warehousing	4931	Warehousing and Storage	This industry group comprises establishments primarily engaged in operating general merchandise, refrigerated and other warehousing and storage facilities. These establishments provide facilities to store goods for customers. They may also provide a range of services, often referred to as logistics services, related to the distribution of a customer's goods. Logistics services can include labelling, breaking bulk, inventory control and management, light assembly, order entry and fulfillment, packaging, pick and pack, price marking and ticketing and transportation arrangement. However, establishments in this industry group always provide storage services in addition to any logistics services. Furthermore, the storage of goods must be more than incidental to the performance of a service such as price marking. Both public and contract warehousing are included in this industry group. Public warehousing generally provides short-term storage, typically for less than thirty days. Contract warehousing generally involves a longer-term contract, often including the provision of logistical services and dedicated facilities.

C. BORDER SECURITY

Gateway Sector	NAICS	Title	Description
Border Security	9112	Federal protective Services	This industry group comprises establishments of the federal government primarily engaged in providing services to ensure the security of persons and property. Protection includes measures to protect against negligence, exploitation and abuse.
Border Security	5616	Investigation and Security Services	This industry group comprises establishments primarily engaged in providing investigation and detective services, guard and patrol services, armoured car services and security system services.

Appendix 2 – Gateway NOC Occupations

A. CONSTRUCTION

Gateway Sector	NOC-S/ NOC	Title	Description
A1 Management and administrative occupations in construction and transportation			
Construction	A371/ 0711	Construction managers	Construction managers plan, organize, direct, control and evaluate the activities of a construction company or a construction department within a company, under the direction of a general manager or other senior manager. They are employed by residential, commercial and industrial construction companies and by construction departments of companies outside the construction industry.
A2 Technical occupations related to construction and transportation			
Construction	C031/ 2131	Civil Engineers	Civil engineers plan, design, develop and manage projects for the construction or repair of buildings, earth structures, powerhouses, roads, airports, railways, rapid transit facilities, bridges, tunnels, canals, dams, ports and coastal installations and systems related to highway and transportation services, water distribution and sanitation. Civil engineers may also specialize in foundation analysis, building and structural inspection, surveying, geomatics and municipal planning. Civil engineers are employed by engineering consulting companies, in all levels of government, by construction firms and in many other industries, or they may be self-employed.
Construction	C134/ 2234	Construction estimators	Construction estimators analyze costs of and prepare estimates on civil engineering, architectural, structural, electrical and mechanical construction projects. They are employed by residential, commercial and industrial construction companies and major electrical, mechanical and trade contractors, or they may be self-employed.
Construction	C164/ 2264	Construction inspectors	Construction inspectors inspect the construction and maintenance of new and existing buildings, bridges, highways and industrial construction to ensure that specifications and building codes are observed and monitor work site safety. They are employed by federal, provincial and municipal governments, construction companies, architectural and civil engineering consulting firms or they may be self-employed.
A3 Contractors and supervisors in trades and transportation			
Construction	H011/ 7211	Supervisors, machinists and related occupations	Supervisors in this unit group supervise and co-ordinate the activities of workers classified in the following unit groups: Machinists and Machining and Tooling Inspectors (H311), Tool and Die Makers (H312) and Machining Tool Operators (J191). They are employed by metal products manufacturing companies and machine shops.
Construction	H012/ 7212	Contractors and supervisors, electrical trades and telecommunications occupations	This unit group includes telecommunications and electrical trade contractors who own and operate their own businesses. This group also includes supervisors who supervise and co-ordinate the activities of workers classified in the following unit groups: Electricians (H211), Industrial Electricians (H212), Power System Electricians (H213), Electrical Power Line and Cable Workers (H214), Telecommunications Line and Cable Workers (H215), Telecommunications Installation and Repair Workers (H216) and Cable Television Service and Maintenance Technicians (H217). They are employed in a wide range of establishments.
Construction	H013/ 7213	Contractors and supervisors, pipefitting trades	This unit group includes plumbing and other pipefitting trade contractors who own and operate their own businesses. This group also includes supervisors who supervise and co-ordinate the activities of workers classified in the following unit groups: Plumbers (H111), Steamfitters, Pipefitters and Sprinkler System Installers (H112) and Gas Fitters (H113). They are employed by construction companies, mechanical, plumbing and pipefitting trade contractors and maintenance departments of industrial, commercial and manufacturing establishments.
Construction	H014/ 7214	Contractors and supervisors, metal forming, shaping and erecting trades	This unit group includes sheet metal, ironwork, welding and boilermaking trade contractors who own and operate their own businesses. This group also includes supervisors who supervise and co-ordinate the activities of workers classified in the following unit groups: Sheet Metal Workers (H321), Boilermakers (H322), Structural Metal and Platework Fabricators and Fitters (H323), Ironworkers (H324), Welders and Related Machine Operators (H326) and Blacksmiths and Die Setters (H325). They are employed by structural, platework and related metal products fabrication, manufacturing and erecting companies.
Construction and Transportation	H016/ 7216	Contractors and supervisors, mechanic trades	This unit group includes heating, refrigeration, air conditioning, millwrighting and elevator installation trade contractors who own and operate their own businesses. This group also includes supervisors who supervise and co-ordinate the activities of workers classified in unit groups within the following minor groups: Machinery and Transportation Equipment Mechanics (Except Motor Vehicle) (H41), Automotive Service Technicians (H42) and Other Mechanics (H43). They are employed in a wide range of establishments.
Construction and Transportation	H017/ 7217	Contractors and supervisors, heavy construction equipment	This unit group includes excavating, grading, paving, drilling and blasting contractors who own and operate their own business. This unit group also includes supervisors who supervise and co-ordinate the activities of workers classified in the following unit groups: Crane Operators (H621), Drillers and Blasters - Surface Mining, Quarrying and Construction (H622), Heavy Equipment Operators (Except Crane) (H611), Longshore Workers (H811), Material Handlers (H812), Public Works Maintenance Equipment Operators (H612),

		crews	Railway Track Maintenance Workers (H732) and Water Well Drillers (H623). They are employed in a wide range of establishments.
Construction	H019/ 7219	Contractors and supervisors, other construction trades, installers, repairers and servicers	This unit group includes roofing, masonry, painting and other construction trade contractors, not elsewhere classified, who own and operate their own business. Supervisors in this unit group supervise and co-ordinate the activities of various tradespersons, installers, repairers and servicers classified in the following minor groups: Masonry and Plastering Trades (H13), Other Construction Trades (H14) and Other Installers, Repairers and Servicers (H53). They are employed by a wide range of establishments; places of employment are indicated in the unit group descriptions. This unit group also includes prefabricated product installation and service contractors and proprietors of some repair and service establishments.
A4 Construction trades and related occupations			
Construction	H113/ 7253	Gas fitters	Gas fitters install, inspect, repair and maintain gas lines and gas equipment such as meters, regulators, heating units and appliances in residential, commercial and industrial establishments. They are employed by gas utility companies and gas servicing companies.
Construction	H131/ 7281	Bricklayers	Bricklayers lay bricks, concrete blocks, stone and other similar materials to construct or repair walls, arches, chimneys, fireplaces and other structures in accordance with blueprints and specifications. They are employed by construction companies and bricklaying contractors or they may be self-employed.
Construction	H132/ 7282	Concrete finishers	Concrete finishers smooth and finish freshly poured concrete, apply curing or surface treatments and install, maintain and restore various masonry structures such as foundations, floors, ceilings, sidewalks, roads, patios and high rise buildings. They are employed by construction companies, cement and concrete contractors and manufacturers of precast concrete products, or they may be self-employed.
Construction	H143/ 7293	Insulators	Insulators apply insulation materials to plumbing, air-handling, heating, cooling and refrigeration systems, piping equipment and pressure vessels, and walls, floors and ceilings of buildings and other structures, to prevent or reduce the passage of heat, cold, sound or fire. They are employed by construction companies and insulation contractors, or they may be self-employed.
Construction	H211/ 7241	Electricians (except industrial and power system)	Electricians in this unit group lay out, assemble, install, test, troubleshoot and repair electrical wiring, fixtures, control devices and related equipment in buildings and other structures. They are employed by electrical contractors and maintenance departments of buildings and other establishments, or they may be self-employed.
Construction	H212/ 7242	Industrial electricians	Industrial electricians install, maintain, test, troubleshoot and repair industrial electrical equipment and associated electrical and electronic controls. They are employed by electrical contractors and maintenance departments of factories, plants, mines, shipyards and other industrial establishments.
Construction	H213/ 7243	Power system electricians	Power system electricians install, maintain, test and repair electrical power generation, transmission and distribution system equipment and apparatus. They are employed by electric power generation, transmission and distribution companies.
Construction	H214/ 7244	Electrical power line and cable workers	Electrical power line and cable workers construct, maintain and repair overhead and underground electrical power transmission and distribution systems. They are employed by electric power generation, transmission and distribution companies, electrical contractors and public utility commissions.
Construction	H221/ 7351	Stationary engineers and auxiliary equipment operators	Stationary engineers and auxiliary equipment operators operate and maintain various types of stationary engines and auxiliary equipment to provide heat, light, power and other utility services for commercial, industrial and institutional buildings and other work sites. They are employed in industrial and manufacturing plants, hospitals, universities, government, utilities, hotels and other commercial establishments.
Construction	H311/ 7231	Machinists and machining and tooling inspectors	Machinists set up and operate a variety of machine tools to cut or grind metal, plastic or other materials to make or modify parts or products with precise dimensions. Machining and tooling inspectors inspect machined parts and tooling in order to maintain quality control standards. They are employed by machinery, equipment, motor vehicle, automotive parts, aircraft and other metal products manufacturing companies and by machine shops.
Construction	H321/ 7261	Sheet metal workers	Sheet metal workers fabricate, assemble, install and repair sheet metal products. They are employed by sheet metal fabrication shops, sheet metal products manufacturing companies, sheet metal work contractors and various industrial sectors.
Construction and Transportation	H322/ 7262	Boilermakers	Boilermakers fabricate, assemble, erect, test, maintain and repair boilers, vessels, tanks, towers, heat exchangers and other heavy-metal structures. They are employed in boiler fabrication, manufacturing, shipbuilding, construction, electric power generation and similar industrial establishments.
Construction and Transportation	H323/ 7263	Structural metal and platework fabricators and fitters	Structural metal and platework fabricators and fitters fabricate, assemble, fit and install steel or other metal components for buildings, bridges, tanks, towers, boilers, pressure vessels and other similar structures and products. They are employed in structural steel, boiler and platework fabrication plants and by heavy machinery manufacturing and shipbuilding companies.
Construction and Transportation	H324/ 7264	Ironworkers	Ironworkers fabricate, erect, hoist, install, repair and service structural ironwork, precast concrete, concrete reinforcing materials, curtain walls, ornamental iron and other metals used in the construction of buildings, bridges, highways, dams and other structures and equipment. They are employed by construction ironwork contractors.
Construction and Transportation	H326/ 7265	Welders and related machine	Welders operate welding equipment to weld ferrous and non-ferrous metals. This unit group also includes machine operators who operate previously set up production welding, brazing and soldering equipment.

		operators	They are employed by companies that manufacture structural steel and platework, boilers, heavy machinery, aircraft and ships and other metal products, and by welding contractors and welding shops, or they may be self-employed.
Construction	H411/ 7311	Construction millwrights and industrial mechanics (except textile)	Construction millwrights and industrial mechanics install, maintain, troubleshoot and repair stationary industrial machinery and mechanical equipment. Construction millwrights are employed by millwrighting contractors. Industrial mechanics are employed in manufacturing plants, utilities and other industrial establishments.
Construction and Transportation	H412/ 7312	Heavy-duty equipment mechanics	Heavy-duty equipment mechanics repair, troubleshoot, adjust, overhaul and maintain mobile heavy-duty equipment used in construction, transportation, forestry, mining, oil and gas, material handling, landscaping, land clearing, farming and similar activities. They are employed by companies which own and operate heavy equipment, and by heavy equipment dealers, rental and service establishments, and railway transport companies and urban transit systems.
Construction and Transportation	H416/ 7316	Machine fitters	Machine fitters fit, assemble and otherwise build heavy industrial machinery and transportation equipment, including aircraft engines. They are employed in industrial machinery and transportation equipment manufacturing industries.
Construction and Transportation	H418/ 7318	Elevator constructors and mechanics	Elevator constructors and mechanics assemble, install, maintain and repair freight and passenger elevators, escalators, moving walkways and other related equipment. They are employed by elevator construction and maintenance companies.
Construction and Transportation	H433/ 7333	Electrical mechanics	Electrical mechanics maintain, test, rebuild and repair electric motors, transformers, switchgear and other electrical apparatus. They are employed by independent electrical repair shops, service shops of electrical equipment manufacturers and maintenance departments of manufacturing companies.
A5 Transport and Equipment Operators			
Construction and Transportation	H611/ 7421	Heavy equipment operators (except crane)	Heavy equipment operators operate heavy equipment used in the construction and maintenance of roads, bridges, airports, gas and oil pipelines, tunnels, buildings and other structures; in surface mining and quarrying activities; and in material handling work. They are employed by construction companies, heavy equipment contractors, public works departments and pipeline, logging, cargo-handling and other companies.
Construction and Transportation	H621/ 7371	Crane operators	Crane operators operate cranes or draglines to lift, move, position or place machinery, equipment and other large objects at construction or industrial sites, ports, railway yards, surface mines and other similar locations. They are employed by construction, industrial, mining, cargo handling and railway companies.
Construction	H622/ 7372	Drillers and blasters - Surface mining, quarrying and construction	Drillers in this unit group operate mobile drilling machines to bore blast holes in open-pit mines and quarries and to bore holes for blasting and for building foundations at construction sites. Blasters in this unit group fill blast holes with explosives and detonate explosives to dislodge coal, ore and rock or to demolish structures. They are employed by mining, quarrying and construction companies and by drilling and blasting contractors.
A6 Trades helpers, construction and transportation labourers and related occupations			
Construction	H821/ 7611	Construction trades helpers and labourers	Construction trades helpers and labourers assist skilled tradespersons and perform labouring activities at construction sites, in quarries and in surface mines. They are employed by construction companies, trade and labour contractors, and surface mine and quarry operators.
Construction and Transportation	H822/ 7612	Other trades helpers and labourers	This unit group includes trade helpers and labourers, not elsewhere classified, who assist skilled tradespersons and perform labouring activities in the installation, maintenance and repair of industrial machinery, refrigeration, heating and air conditioning equipment, in the maintenance and repair of transportation and heavy equipment, in the installation and repair of telecommunication and power cables and in other repair and service work settings. They are employed by a wide variety of manufacturing, utility and service companies.

B. TRANSPORTATION

B1. Air Transportation

B1.1 Technical occupations related to construction and transportation

Gateway Sector	NOC-S/ NOC	Title	Description
Freight and Passenger Air Transportation	C144/ 2244	Aircraft instrument, electrical and avionics mechanics, technicians and inspectors	This unit group includes mechanics and technicians who install, adjust, repair and overhaul aircraft instrument, electrical or avionics systems on aircraft. This unit group also includes avionics inspectors who inspect instrument, electrical and avionics systems following assembly, modification, repair or overhaul. Workers in this unit group are employed by aircraft manufacturing, maintenance, repair and overhaul establishments and by airlines, the armed forces and other aircraft operators.

Freight and Passenger Air Transportation	C171/ 2271	Air pilots, flight engineers and flying instructors	Pilots fly fixed-wing aircraft and helicopters to provide air transportation and other services. Flight engineers (second officers) monitor the functioning of aircraft during flight and may assist in flying aircraft. Flying instructors teach flying techniques and procedures to student and licensed pilots. Air pilots, flight engineers and flight instructors are employed by airline and air freight companies, flying schools and by other public and private sector aircraft operators.
Freight and Passenger Air Transportation	C172/ 2272	Air traffic control and related occupations	Air traffic controllers direct air traffic within assigned airspace, and control moving aircraft and service vehicles at airports. Flight dispatchers authorize airline flights over assigned routes. Flight service specialists provide pilots with flight information essential to aviation safety. Air traffic controllers and flight service specialists are employed by NAV Canada and the armed forces. Flight dispatchers are employed by airline and air services companies and by the armed forces.
B1.2 Construction trades and related occupations			
Freight and Passenger Air Transportation	H415/ 7315	Aircraft mechanics and aircraft inspectors	Aircraft mechanics maintain, repair, overhaul, modify and test aircraft structural and mechanical and hydraulic systems. Aircraft inspectors inspect aircraft and aircraft systems following manufacture, modification, maintenance, repair or overhaul. Aircraft mechanics and aircraft inspectors are employed by aircraft manufacturing, maintenance, repair and overhaul establishments, and by airlines, the armed forces and other aircraft operators.
B1.3 Transport and Equipment Operators			
Freight and Passenger Air Transportation	H737/ 7437	Air transport ramp attendants	Air transport ramp attendants operate ramp-servicing vehicles and equipment, handle cargo and baggage and perform other ground support duties at airports. They are employed by airline and air services companies and the federal government.

B2. Marine Transportation

B2.1 Technical occupations related to construction and transportation			
Gateway Sector	**NOC-S/ NOC**	**Title**	**Description**
Passenger and Freight Marine Transportation and border security	C173/ 2273	Deck officers, water transport	Deck officers, water transport, operate ships or self-propelled vessels to transport passengers and cargo on oceans and coastal and inland waters, and supervise and co-ordinate the activities of deck crews. This unit group also includes Canadian Coast Guard deck officers. They are employed by marine transportation companies and federal government departments.
Passenger and Freight Marine Transportation	C174/ 2274	Engineer officers, water transport	Engineer officers, water transport, operate and maintain main engines, machinery and auxiliary equipment aboard ships and other self-propelled vessels and supervise and co-ordinate the activities of engine room crews. They are employed by marine transportation companies and federal government departments.
Passenger and Freight Marine Transportation and border security	C175/ 2275 also includes rail	marine traffic regulators	Marine traffic regulators monitor and regulate coastal and inland marine traffic within assigned waterways. They are employed by port, harbour, canal and lock authorities and by the Canadian Coast Guard.
B2.2 Transport and Equipment Operators			
Gateway Sector	**NOC-S/ NOC**	**Title**	**Description**
Passenger and Freight Marine Transportation	H733/ 7433	Deck crew, water transport	Workers in this unit group stand watch, operate and maintain deck equipment and perform other deck and bridge duties aboard ships or self-propelled vessels under the direction of deck officers. They are employed by marine transportation companies and federal government departments.
Passenger and Freight Marine Transportation	H734/ 7434	Engine room crew, water transport	Workers in this unit group assist ship engineer officers to operate, maintain and repair engines, machinery and auxiliary equipment aboard ships or self-propelled vessels. They are employed by marine transportation companies and federal government departments.
Passenger and Freight Marine Transportation	H735/ 7435	Lock and cable ferry operators and related occupations	This unit group includes workers who operate lock gates, bridges and similar equipment along canal systems, workers who operate cable ferries and ferry terminal workers. They are employed by the federal government, cable ferry companies and in ferry terminals.
Passenger and Freight Marine Transportation	H736/ 7436	Boat operators	Boat operators operate small boats or crafts to transport passengers or freight, or perform other duties. They are employed by marine companies that provide sightseeing tours or water taxi services and by canal, port and harbour authorities.
Marine – Freight Transportation and Supply Chain	H811/ 7451	Longshore workers	Longshore workers transfer cargo throughout dock area and onto and from ships and other vessels. They are employed by marine cargo handling companies, shipping agencies and shipping lines.

B3. Rail Transportation

B3.3 Technical occupations related to construction and transportation			
Gateway Sector	**NOC-S/ NOC**	**Title**	**Description**
Passenger and Freight Rail Transportation and border security	C175/ 2275 also include marine	Railway traffic controllers	Railway traffic controllers co-ordinate passenger and freight train traffic on railways. They are employed by rail transport companies.
B3.4 Construction trades and related occupations			
Construction and Passenger and Freight Transportation	H412/ 7312	Heavy-duty equipment mechanics	Heavy-duty equipment mechanics repair, troubleshoot, adjust, overhaul and maintain mobile heavy-duty equipment used in construction, transportation, forestry, mining, oil and gas, material handling, landscaping, land clearing, farming and similar activities. They are employed by various companies, including railway transport companies and urban transit systems.
Passenger and Freight Rail Transportation	H414/ 7314	Railway carmen/women	Railway carmen/women inspect, troubleshoot, maintain and repair structural and mechanical components of railway freight, passenger and urban transit rail cars. They are employed by railway transport companies and urban transit systems.
B3.5 Contractors and supervisors in trades and transportation			
Passenger and Freight Rail Transportation	H021/ 7221	Supervisors, railway transport operations	Supervisors in this unit group supervise and co-ordinate the activities of railway and yard locomotive engineers, railway yard workers and railway labourers. They are employed by railway transport companies.
B3.6 Transport and Equipment Operators			
Passenger and Freight Rail Transportation	H721/ 7361	Railway and yard locomotive engineers	Railway locomotive engineers operate railway locomotives to transport passengers and freight. They are employed by railway transport companies. Yard locomotive engineers operate locomotives within yards of railway, industrial or other establishments. They are employed by railway transport companies and industrial or commercial users of rail transport.
Passenger and Freight Rail Transportation	H722/ 7362	Railway conductors and brakemen/ women	Railway conductors co-ordinate and supervise the activities of passenger and freight train crew members. Brakemen check train brakes and other systems and equipment prior to train run, and assist railway conductors in activities en route. They are employed by railway transport companies.
Passenger and Freight Rail Transportation	H731/ 7431	Railway yard workers	Railway yard workers regulate yard traffic, couple and uncouple trains and perform related yard activities. They are employed by railway transport companies.
Passenger and Freight Rail Transportation	H732/ 7432	Railway track maintenance workers	Railway track maintenance workers operate machines and equipment to lay, maintain and repair railway tracks. They are employed by railway transport companies.
B3.7 Trades helpers, construction and transportation labourers and related occupations			
Passenger and Freight Rail and Road Transportation	H832/ 7622	Railway and motor transport labourers	Railway and motor transport labourers perform a variety of tasks to assist track maintenance workers and railway yard workers, or motor transport operators. They are employed by railway transport companies and motor transport companies.

B4. Road Transportation

B41 Contractors and supervisors in trades and transportation			
Gateway Sector	**NOC-S/ NOC**	**Title**	**Description**
Passenger and Freight Road and Rail Transportation	H022/ 7222	Supervisors, motor transport and other ground transit operators	Supervisors in this unit group supervise and co-ordinate activities of truck drivers, bus drivers, delivery drivers, subway and other transit operators, chauffeurs and taxi and limousine drivers. This unit group also includes bus dispatchers who co-ordinate the activities of transit system bus drivers and subway traffic controllers who operate and monitor signal and track switch control panels. They are employed by motor transportation and ground transit companies and by urban transit systems.
B4.2 Transport and Equipment Operators			
Freight Road	H711/	Truck drivers	Truck drivers operate heavy trucks to transport goods and materials over urban, interurban, provincial and

Transportation	7411		international routes. They are employed by transportation companies, manufacturing and distribution companies, moving companies and employment service agencies, or they may be self-employed. This unit group also includes shunters who move trailers to and from loading docks within trucking yards or lots.
Passenger Transportation – Road and Rail	H712/ 7412	Bus drivers and subway and other transit operators	This unit group includes workers who drive buses and operate streetcars, subway trains and light rail transit vehicles to transport passengers on established routes. Bus drivers are employed by urban transit systems, elementary and secondary schools and private transportation companies. Streetcar, subway and light rail transit operators are employed by urban transit systems.
Passenger Transportation – Road	H713/ 7413	Taxi and limousine drivers and chauffeurs	Taxi and limousine drivers drive automobiles and limousines to transport passengers. Chauffeurs drive automobiles and limousines to transport personnel and visitors of businesses, government or other organizations or members of private households. Taxi and limousine drivers are employed by taxi and other transportation service companies, or they may be self-employed. Chauffeurs are employed by businesses, government and other organizations, or private individuals or families.
Freight Road Transportation	H714/ 7414	Delivery and courier service drivers	Delivery and courier drivers drive automobiles, vans and light trucks to pick up and deliver various products. They are employed by dairies, drug stores, newspaper distributors, take-out food establishments, dry cleaners, mobile caterers, courier and messenger service companies and many other establishments, or they may be self-employed.
B4.3 Construction trades and related occupations			
Passenger and Freight Road Transportation	H421/ 7321	Automotive service technicians, truck and bus mechanics and mechanical repairers	Automotive service technicians and truck and bus mechanics inspect, diagnose, repair and service mechanical, electrical and electronic systems and components of cars, buses, and light and commercial transport trucks. They are employed by motor vehicle dealers, garages, truck and trailer dealerships, fleet maintenance companies, and service stations, automotive specialty shops, transportation companies and retail establishments which have automotive service shops. This unit group also includes mechanical repairers who perform major repairs and replacement of mechanical units on newly assembled motor vehicles. They are employed by motor vehicle manufacturing companies.
B4.4 Trades helpers, construction and transportation labourers and related occupations			
Rail and Road Transportation	H832/ 7622	Railway and motor transport labourers	Railway and motor transport labourers perform a variety of tasks to assist track maintenance workers and railway yard workers, or motor transport operators. They are employed by railway transport companies and motor transport companies.

B5. Transportation and Warehousing: Multimodal/ Supply Chain

B5.1 Management and administrative occupations in construction and transportation

Gateway Sector	NOC-S/ NOC	Title	Description
Transportation (all modes – Passenger and Freight) and warehousing	A141/ 0721	Facility operation and maintenance managers	Facility operation managers plan, organize, direct, control and evaluate the operations of commercial, transportation and recreational facilities and the included real estate. Facility operation managers are employed by a wide range of establishments, such as airports, harbours, canals, shopping centres, convention centres, warehouses and recreational facilities. Maintenance managers plan, organize, direct, control and evaluate the maintenance department within commercial, industrial, institutional, recreational and other facilities. Maintenance managers are employed by a wide range of establishments, such as office buildings, shopping centres, airports, harbours, warehouses, grain terminals, universities, schools and sports facilities, and by the maintenance and mechanical engineering departments of manufacturing and other industrial establishments.
Transportation (all modes - Passenger and Freight) and Warehousing	A373/ 0713	Transportation managers	Transportation managers of operations plan, organize, direct, control and evaluate the operations of transportation companies such as railways, airlines, bus lines, municipal transit systems, shipping lines and trucking companies, under the direction of a general manager or other senior manager. Transportation managers of freight traffic plan, organize, direct, control and evaluate companies or departments responsible for the transportation and movement of goods, under the direction of a general manager or other senior manager. They are employed by transportation, freight forwarding and shipping companies and by transportation departments of companies in retail and manufacturing sectors and utilities.
Freight Transportation (all modes) and border security	B116/ 1236	Customs, ship and other brokers	Customs brokers clear goods through customs and to their destination on behalf of importer and exporter clients. Ship brokers buy and sell cargo space on ships and buy and sell ships, yachts and other watercraft on behalf of clients. This unit group also includes other brokers, not elsewhere classified, who negotiate commercial transactions or other services between parties on behalf of clients. They are employed by customs, ship or other brokerage establishments or may be self-employed.
Freight Transportation (all modes)	B571/ 1471	Shippers and receivers	Shippers and receivers ship, receive and record the movement of parts, supplies, materials, equipment and stock to and from an establishment. They are employed in the public sector and by retail and wholesale establishments, manufacturing companies, and other commercial and industrial establishments.
Transportation (all modes	B575/ 1475	Dispatchers and radio operators	Dispatchers operate radios and other telecommunication equipment to dispatch emergency vehicles and to co-ordinate the activities of drivers and other personnel. They are employed by police, fire and health

Passenger and Freight)			departments, other emergency service agencies, taxi, delivery and courier services, trucking and utilities companies, and other commercial and industrial establishments. Radio operators receive, transmit and record signals and messages using radios and other telecommunication equipment. They are employed by transportation companies, mining, forestry and other industrial establishments.
Transportation (all modes)	B576/ 1476	Transportation route and crew schedulers	Transportation route and crew schedulers prepare operational and crew schedules for transportation equipment and operating personnel. They are employed by municipal transit commissions, truck, delivery and courier companies, railways, airlines and by other transportation establishments in both the private and public sectors.
B5.2 Transport and Equipment Operators			
Public works	H612/ 7422	Public works maintenance equipment operators	This unit group includes workers who operate vehicles and equipment to maintain streets, highways and sewer systems and operate garbage trucks to remove garbage and refuse. They are employed by municipal, provincial and federal public works departments and by private contractors under contract with government public works departments.
B5.3 Trades helpers, construction and transportation labourers and related occupations			
Freight Transportation and Warehousing	H812/ 7452	Material handlers	This unit group includes workers who handle, move, load and unload materials by hand or using a variety of material handling equipment. They are employed by transportation, storage and moving companies, and by a variety of manufacturing and processing companies and retail and wholesale warehouses.
Public works	H831/ 7621	Public works and maintenance labourers	Public works and maintenance labourers perform a variety of labouring activities to maintain sidewalks, streets, roads and similar areas. They are employed by municipal, provincial and federal government public works departments or by private contractors under contract to governments.

C. BORDER SECURITY

Gateway Sector	NOC-S/ NOC	Title	Description
Border security	B318/ 1228	Immigration, Employment Insurance and Revenue Officers	This unit group includes government officers who administer and enforce laws and regulations related to immigration, employment insurance, customs and tax revenue. They are employed by government agencies.
Transportation and border security	G631/ 6651	Security guards and related occupations	This unit group includes security guards and other related workers who guard property against theft and vandalism, control access to establishments, maintain order and enforce regulations at public events and within establishments. They are employed by private security agencies, retail stores, transportation facilities, residential complexes, educational, financial and health institutions, industrial establishments, cultural establishments, and organizations throughout the private and public sectors.

Appendix 3 - Comparison of Service Canada and Emploi Quebec Estimates of Professional Prospects in Gateway Occupations

In Quebec, occupational prospects are provided by both Service Canada and Emploi-Québec. Despite a number of acknowledged limitations, including notably the lack of robust supply models at the regional or provincial level, occupational forecasting remains a useful tool for assess future labour market imbalances.

Service Canada and Emploi-Québec use different projection methodologies, and as a result, employment figures and prospects from the two sources may differ. Nevertheless, the occupational outlooks provided by Service Canada and Emploi-Québec were generally consistent for most Gateway sector occupations. A comparison of estimates from the two sources for each Gateway sector is provided below:

Construction

In construction, estimates of professional prospects from Service Canada and Emploi Quebec were broadly in accord. Most professions showed either good or acceptable prospects over the period 2008-2012.

Air Transportation – Passenger and Freight

In the air transportation sector, the Service Canada and Emploi Quebec were broadly in accord. Most professions showed either good or acceptable prospects over the period 2008-2012.

Marine Transportation - Passenger and Freight

In marine transportation, the Service Canada had a slightly more optimistic outlook than the Emploi Quebec for occupational prospects. Service Canada categorized two occupations as having good prospects and two as having acceptable prospects. In contrast, the Emploi Quebec classified no occupations as having good prospects and three as having acceptable prospects and one as having limited prospects. Both departments classified four occupations in this sector as undetermined.

Rail Transportation - Passenger and Freight

In rail transportation there was a significant difference in the level of employment estimated by Service Canada and Emploi Quebec. Estimates of occupational prospects were broadly consistent, although the Emploi Quebec was not able to determine prospects for four occupations.

Road Transportation - Passenger and Freight

In road transportation, the Service Canada had a slightly more optimistic outlook than the Emploi Quebec for occupational prospects. Service Canada classed four occupations as good, while Emploi Quebec identified only two occupations with good prospects.

Supply chain/multimodal

In the multimodal transportation/ supply chain sector, Service Canada and Emploi Quebec were broadly in accord. Most professions showed either good or acceptable prospects over the period 2008-2012.

Border security

In public works and border services, the Service Canada had a slightly more optimistic outlook than the Emploi Quebec for occupational prospects. Service Canada predicted good occupational prospects, while Emploi Quebec predicted acceptable occupational prospects.

Comparison of Professional Prospects, from the Employee's Perspective, in Gateway Occupations, Service Canada and Emploi Quebec, Number of Occupations in Each Category, 2008-2012

Sector (total number of occupations in parentheses)	Good	Acceptable	Limited	Undetermined	Employment in 2007*
Construction (35)					
Service Canada	10	21	3	1	193,550
Emploi Quebec	9	23	2	1	192,650
Air Transportation - Passenger and Freight (5)					
Service Canada	3	2	0	0	8,350
Emploi Quebec	2	3	0	0	11,400
Marine Transportation - Passenger and Freight (8)					
Service Canada	2	2	0	4	4,350
Emploi Quebec	0	3	1	4	3,650
Rail Transportation - Passenger and Freight (10)					
Service Canada	6	1	2	1	24,200
Emploi Quebec	4	2	0	4	14,100
Road Transportation - Passenger and Freight (9)					
Service Canada	4	4	1	0	158,300
Emploi Quebec	2	7	0	0	171,500
Supply chain/multimodal (9)					
Service Canada	2	6	0	1	108,900
Emploi Quebec	3	5	1	0	103,000
Public works and Border services (including security) (1)					
Service Canada	1	0	0	0	26,550
Emploi Quebec	0	1	0	0	27,000
Total, All Sectors (77)					
Service Canada	**28**	**36**	**6**	**7**	**524,200**
Per cent total occupations	*36.4*	*46.8*	*7.8*	*9.1*	
Emploi Quebec	**20**	**44**	**4**	**9**	**523,300**
Per cent total occupations	*26.0*	*57.1*	*5.2*	*11.7*	

Notes:*2005-2007 for the Service Canada estimates.
Column headings used are from Service Canada. Emploi Quebec descriptors were converted as follows: Good (Favorable or Tres Favorables), Acceptable (Acceptable), Limited (Restreintes), Undetermined (Non Publie)

Source: CSLS calculations based on Emploi Quebec and Service Canada data.

Appendix 4 – Interview Guide

Interview Guide
Continental Gateway Human Resource Situational Analysis

Interviewee:
Organization:
Sector/Sub-Sector:
Telephone Number:
E-mail Address:
Date(s) of Interview:
Interviewer:

Gateway Sectors and Sub-Sectors (Primary sectors directly affected by Gateway activities or investment)**:**

- Construction
- Transportation and warehousing. Transportation covers all modes (air, rail, road, and marine) and includes the transportation of people as well as commodities.
- Border security and other security related sectors

1. Please provide a broad overview of the ***current*** human resources situation in your organization/sector/sub-sector.

   a. What are the most significant human resources/skills challenges (i.e. recruitment, retirement, apprenticeship, retention, barriers to entry)?

   b. Do some of these challenges relate to credential recognition, inter- and intra-provincial mobility, and particular challenges faced by groups such as skilled immigrants and Aboriginals? Please explain.

   c. What is being done in your organization/sector, to address these challenges? (i.e. programs, policies, or other measures)

   d. In which occupations, if any, do you currently have shortages of qualified labour?

2. Please provide an outlook for the human resource situation in your organization/sector/sub-sector ***for the next five years.***

a. What do you see as key drivers of change in your staffing needs over the next five years?

b. Do you foresee some of these challenges relating to credential recognition, inter- and intra-provincial mobility, and particular challenges faced by groups such as skilled immigrants and Aboriginals intensifying?

c. In which occupations, if any, do you anticipate *labour shortages* in the next five years? Are you, or other organizations you know of, working to prevent or address these shortages?

d. Please describe what policies, programmes or other measures you have implemented, or what you plan on implementing, to address these shortages.

e. In which occupations, if any, do you anticipate a *shift in skill requirements*? Are you, or other organizations you know of, looking for ways to address this issue? Please describe what policies, programmes or other measures you have implemented, or what you plan on implementing.

Appendix 5 – List of Respondents

Construction

- M. Louis de la Grave, Directeur de la recherche, Commission de la Construction du Quebec
- Mr. Patrick Dillon, Business Manager, Provincial Building and Construction Trades Council of Ontario
- Mr. Ernie Stokes, Managing Director, The Centre for Spatial Economics
- Mr. Ian Cunningham, President Council of Ontario Construction Associations

Air Transportation

- Mr. Carlos DaCosta Airline Coordinator (Canada) International Association of Machinists and Aerospace Workers (IAMAW)
- Mr. Les Aalders Vice-President Operations Air Transport Association of Canada

Marine Transportation

- Ms. Sylvie Vachon Vice-President, Administration and Human Resources Montreal Port Authority
- Ms. Janet Balfour Human Resources Director Hamilton Port Authority

Rail Transportation

- Mr. Kent Flint, Railway Association of Canada

Road Transportation

- Mr. Claude Robert, Robert Transport
- Mr. Daniel Brulotte, Responsable des politiques d'entreprises, JM Bernier Transport
- Mr. Bruce Richards, President, The Private Motor Truck Council of Canada
- Mr. Ron Lennox and Mr. Doug Switzer, Canadian Trucking Alliance

Supply Chain/ Multimodal Transportation

- Mr. Dan Gabbard, President, Supply Chain Management Inc.
- Mr. Bob Armstrong, President, Supply Chain & Logistics Association Canada

Border Security

- Mr. Dan Grochowalski, Regional Director, Coordination and Policy Transport Canada

Appendix 6 – Inventory of Strategies to Address Skills and Human Resource Issues

Construction

- The Construction Sector Council (CSC) plays a major role in gathering and disseminating labour market information, for the different provinces and for Ontario regions.
- The CSC promotes and facilitates the use of technology in the construction sector, through various programs such as computer-based safety training, the 'E-learning Gold Seal Program' and the 'Skills Data Card Initiative'.
- A number of CSC initiatives are aimed at the development of skills and standards for construction trades.
- The CSC promotes careers in construction, namely through the development of career awareness programs for several trades.
- The Commission de la Construction du Quebec (CCQ) manages the construction apprenticeship system in Quebec to ensure an adequate supply of skilled workers. Representatives of labour and employer associations, and of government, sit on the CCQ board.
- The Committee on Vocational Training in the Construction Industry (CFPIC), and the 26 construction trades sub-committees advise the CCQ on vocational training issues.
- The CCQ is working to expand the training capacity of professional schools
- The CCQ has undertaken a reform of the apprenticeship system in Quebec. The reform, which followed consultations and inputs from various stakeholders, included the following:

    - Decreasing the required companion-apprentice ratio, from five companions per apprentice (5/1), to 2 companions per apprentice (2/1).
    - Implementing an 'apprenticeship record book' that enables apprentices to record their progress in their specific trade
    - Providing apprentices with faster access to certification exams (once they have completed 80 per cent of tasks required).
    - Providing additional support to apprentices having difficulties passing the exams.

- A number of CCQ initiatives have been aimed at increasing aboriginal participation in the construction labour force, such as the creation of a Roundtable on aboriginal issues
- The CCQ has developed incentives to promote training and skills upgrading, such as adding hours to the worker's 'insurance hours reserve' which determines their insurance plan, or adding 'apprenticeship hour credits' to the worker's 'apprenticeship record book'.
- Employers and construction workers in Quebec have access to large training funds: the *Fonds de formation des travailleurs de l'industrie de la construction*

(FFIC) and the *Plan de formation résidentiel.* All construction companies in Quebec are required to contribute $0.20 per hour worked to one of these two funds, created under the collective agreements of the construction industry.

- The Ontario Society of Professional Engineers (OSPG) established the Women in Engineering Advisory Committee (WEAC), which strives to identify and change factors which prevent women from becoming engineers.
- The Provincial Building and Construction Trades Council of Ontario (PBCTCO) initiated a project to examine the determinants of aboriginal participation in trades.
- A number of other organisations, such as Skills Canada, have been working to promote trades at high schools. Several events have been organised to attract women to 'non-traditional occupations'.
- The establishment of the Ontario College of Trades: would increase the involvement of industry in decisions regarding and regulation and apprenticeship, elevate the profile and professionalize the image of the industry. By doing so, address the challenge of attracting workers.
- The College of Trades is also expected to provide a means for the Ontario construction industry to address gaps in standards, related to inconsistent certification requirements across trades.
- Pilot projects have been undertaken by the Confédération des Syndicats Nationaux (CSN) to inform immigrants about work opportunities in the construction sector, and about industry rules and regulations.
- The PBCTCO advocates for expanding compulsory certification of trades in Ontario, to ensure higher occupational standards (and therefore address challenges to labour mobility) and improve the health and safety records of the industry.

Air Transportation

- The Canadian Aviation Maintenance Council (CAMC) is undertaking several initiatives and projects to address human resource issues in the aviation maintenance and aerospace manufacturing industry. The scope of CAMC's work is being expanded to include the pilots occupation. CAMC projects underway, which are largely funded through the federal government's Sector Council Program, include:

    - The development of an internet-based labour market information system (LMIS);
    - The development, review and update of labour standards for certain occupations, and the review and amendment of policies regarding certification and evaluators.
    - Initiatives to promote Safety Management Systems (SMS) in the sector.
    - In addition, CAMC is working to attract youth to the aviation and aerospace industry through its Skilled Workforce for the Future (YIP) program, and providing financial incentives (wage subsidy funding) for employers in the aviation maintenance and aerospace manufacturing industry to hire post-secondary graduates.

  - CAMC has requested proposals for the development of a 'career and sector information' video to be used for career promotion in various settings.
  - CAMC's Prior Learning Assessment and Recognition (PLAR) program involves the development of a systematic approach to evaluate candidates, including candidates with foreign credential for specific occupations.
  - CAMC, in partnership with the Canadian Auto Workers (CAW) is experimenting with projects to 're-skill' workers from other sectors to work in the air transportation sector. One such initiative involved the retraining of unemployed painters from the automotive sector to work in aircraft maintenance. These initiatives have not been primarily demand driven, but are significant attempts at finding creative solutions and strategies to address economic challenges.

- The Air Transportation Association of Canada (ATAC) has approached Human Resources and Skills Development Canada (HRSDC) to evaluate the possibility of developing a formal apprenticeship system in the air transportation sector.
- The introduction of the Multi-crew Pilots License (MPL) through the International Civil Aviation Organization (ICAO) enables companies to provide on-the-job training by matching less-experienced with more experienced pilots.

Marine Transportation

- The marine transportation sector has been successful in developing and providing high quality training programs. Training needs have been partly addressed through coordination between industry and training institutions.
- Industry stakeholders have initiated programs aimed at raising awareness of marine sector occupations and attracting new entrants, particularly among the youth, and at addressing the 'perception issue' linked to the difficult lifestyle of marine workers, which is considered as an impediment to the recruitment of new entrants. Career promotion strategies have included the Georgian College's handbook on marine careers and the CSMO Industrie maritime du Québec's DVD entitled "A Seaful of Opportunity".
- Best practices for recruitment and retention strategies in the industry include the design of attractive leave systems, and policies and programs to ensure an adequate work-life balance.
- A retention strategy used by the Hamilton Port Authority is 'job enrichment', which involves providing additional training and expanding the responsibilities of employees, when promotions are not possible.
- The Port of Montreal has commissioned an external consultant firm to develop a strategy to address the ageing workforce issue. The Hamilton Port Authority has developed a strategic human resources plan for the next five years, entitled "Seaway to Success", in which policies, benefits and incentive structures are examined to ensure that the needs of the workforce are adequately addressed.

- The Hamilton Port Authority has also changed its recruitment philosophy in recent years, shifting from 'expanded recruitment' to 'targeted recruitment' as a means of obtaining qualified candidates. Examples of targeted recruitment strategies that were successful included advertising positions with the Association of Canadian Port Authorities (ACPA) and 'word-of-mouth'. The Port Authority has also shifted to targeting workers who have a "good fit with the organisation" even if these workers do not exactly have the required skill set, in which case they are given on-the-job training.

Rail Transportation

- Challenges related to an aging workforce are being addressed through the targeted recruitment of young workers and the supply of training.
- Railway companies are working with the Railway Association of Canada (RAC) to attract youth to the sector. RAC has launched a website (www.careerontrack.ca) to provide information and promote railway careers to young Canadians (age 16-22), and to more mature prospective workers.
- The RAC also collects labour market data and works with its member organisations to develop training programs, occupational standards and strategies to address human resource challenges.
- The RAC has worked with the National Aboriginal Achievement Foundation (NAAF) to identify schools in regions with a high proportion of aboriginal students, to inform them about employment opportunities in the railway sector.
- The RAC has developed pre-employment training programs for railway conductors, which are offered at two schools in Ontario and two schools in Quebec. CSMO-Rail also offers training courses. These courses constitute an alternative for railway companies that usually have to resort to specialized firms to develop their training programs.

Road Transportation

- Strategies used by trucking companies to address recruitment and retention challenges include: providing more stable schedules, increasing or decreasing work hours as requested by drivers, increasing salaries, and offering performance bonuses.
- Some companies invest in providing a 'proper on-boarding' process for new drivers, to familiarise them with company regulations and provide them with learning support.
- Camo-route has developed a professional certification program 'Routier@100%'. The program allows drivers to have their professional credentials recognized across the industry.
- Camo-route also maintains provides trucking companies with online tools to address their human resource challenges, through the 'Portail de gestion des ressources humaines (Portail GRH)'

- The Canadian Trucking Human Resource Council (CTHRC) develops tools and programs to address various human resource challenges facing the trucking industry, including:
    - 'Earning your Wheels', a high quality training program created through HRSDC funding
    - The Professional Driving Recognition Program (PDRP) a new online and practical skills assessment tool for drivers being developed with the support of Camo-Route, in conjunction with the successful Routier@100% program
    - A guide entitled 'Your Guide to Human Resources: Practical Tips and Tools for the Trucking Industry';
    - 'Human Resource Essentials' seminars, offered across Canada in conjunction with provincial and regional hosts
- The Private Motor Truck Council of Canada actively promotes good human resource practices among their members as a means of reducing turnover, raising the industry's profile and attracting more candidates.
- The targeted recruitment of workers who are both 'skilled and interested' should also be a part of companies' human resource strategy.
- Industry associations have developed communications strategies to promote careers in the trucking industry. Such strategies have included the designation of a 'National Trucking Week', the Ontario Trucking Association's (OTA) Road Knights program, through which a team of professional drivers visits high schools to raise awareness of trucking safety issues.

Supply Chain/Multimodal Transportation

- To address the human resource challenge of recruiting senior level management and recruit people with adequate academic qualifications, Supply Chain Management Inc. reached out to their parent company and to universities to develop a university liaison program for senior level management.
- Several universities in Canada, including the University of Manitoba and the University of Western Ontario, have started creating the programs required. This will also contribute to improve the visibility of the supply chain sector.
- In Quebec as well, some academic programs at the CEGEP level have been developed to respond to the needs of an emerging supply chain logistics sector.
- The Canadian Supply Chain Sector Council (CSCSC) provides companies with a variety tools and resources, including career information and promotion videos and publications, and links to supply-chain specific job banks and associations.
- The CSCSC has assembled a comprehensive list of Canadian universities and colleges offering supply chain courses and programs.
- The Supply Chain & Logistics Association Canada (SCL) aims to improve logistics and supply chain management skills through of the development of education programs, research and networking opportunities.
- Women in Logistics, a task force created in 2006 to raise awareness of the contributions of women in the Canadian supply chain logistics sector, evolved into National Executive team in 2008. Women in Logistics developed a strategic

plan to increase the participation of women and prepare women for leadership positions in the supply chain and logistics sector.

Border Security

- The primary human resource management strategy used by Transport Canada is the development of a Human Resources Plan for each unit, but also for the department as a whole.
- The CBSA has developed programs to promote 'accelerated knowledge transfer' and reduce the Agency's vulnerability to labour shortages attributable to retirements, particularly for key occupational groups such as Personnel Administrators, Policy Advisors, and Internal Auditors. For instance, a succession management strategy has been developed for the Executive (EX) group and the 'EX feeder group'.
- An Ad Hoc Implementation Working Group has been created to monitor progress on the six priority areas identified in the Strategic Integrated Human Resources Plan 2008/09.

Appendix 7 – Industry Associations, Unions, Training Centers Involved in Addressing Gateway Skills and Human Resource Issues

Construction
The Construction Sector Council (CSC)
Commission de la Construction du Quebec (CCQ)
Ontario Society of Professional Engineers (OSPG)
The Provincial Building and Construction Trades Council of Ontario (PBCTCO)
Ontario College of Trades

Air Transportation
Canadian Aviation Maintenance Council (CAMC)
Air Transportation Association of Canada (ATAC)

Marine Transportation
Association of Canadian Port Authorities (ACPA)
Canada's Marine Industry Alliance
CSMO Industrie Maritime
Georgian College
Institut Maritime de Rimouski

Road Transportation
Camo-Route
Private Motor Truck Council of Canada
Ontario Trucking Association's (OTA)
Canadian Trucking Alliance (CTA)
Canadian Trucking Human Resource Council (CTHRC)

Rail Transportation
CSMO Rail
Railway Association of Canada (RAC)

Multimodal Transportation/ Supply Chain
Canadian Supply Chain Sector Council (CSCSC)
Supply Chain & Logistics Association Canada (SCL)

Border Security
Transport Canada
Canada Border Services Agency (CBSA)

General
Confédération des Syndicats Nationaux (CSN)
Human Resources and Skills Development Canada (HRSDC)
National Aboriginal Achievement Foundation (NAAF)