



Green Collar Jobs: New Workforce Development Opportunities in Alberta

2010

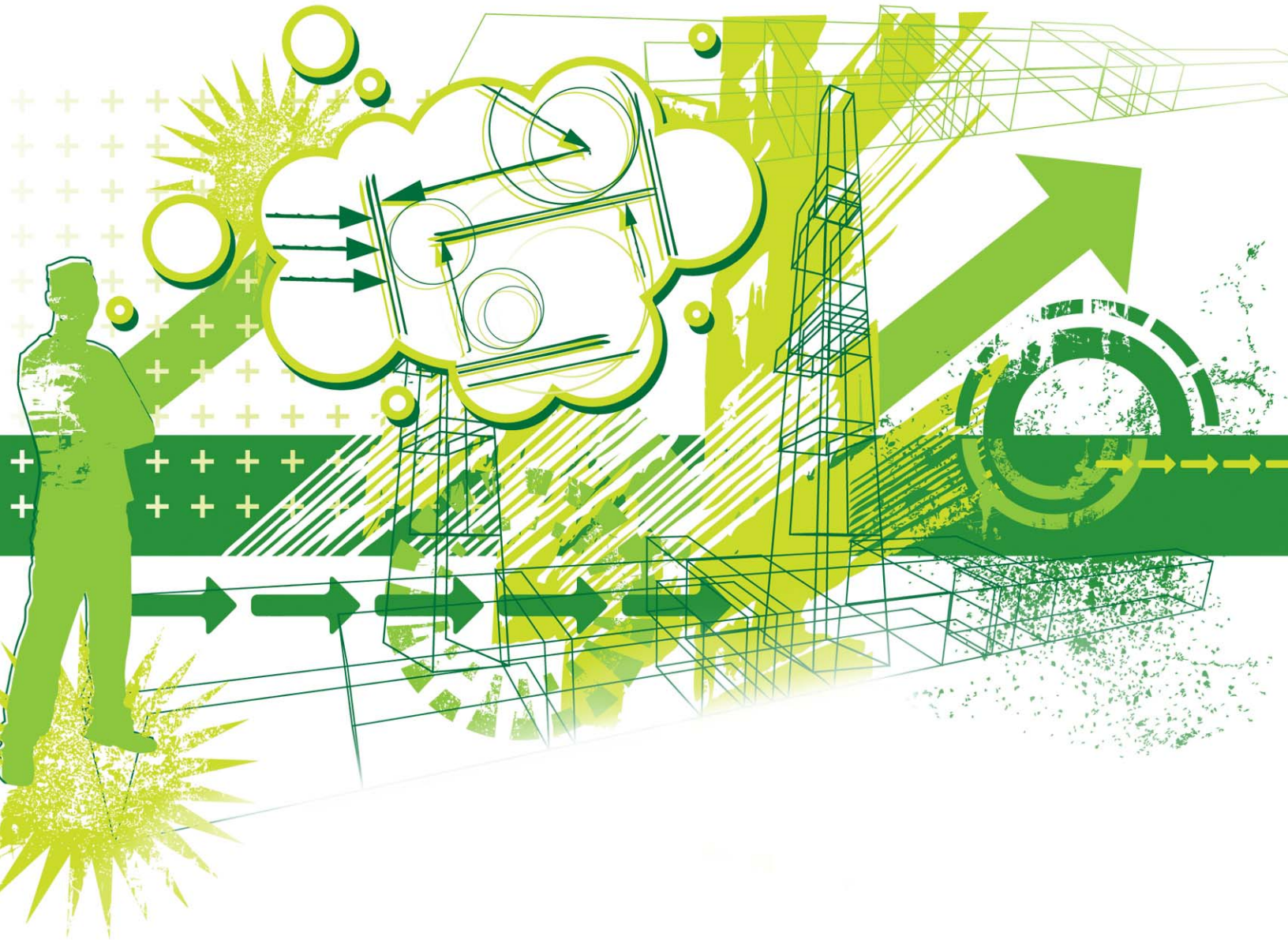


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Project Background

Momentum, in partnership with Thrive: Calgary's Community Economic Development Network, has received financial support from Alberta Employment and Immigration to conduct a study to assess the feasibility of developing a green collar jobs workforce development initiative in Calgary. The study has explored the local potential of green collar jobs in Calgary as well as policy options and training programs to increase access to green collar jobs among disadvantaged people in Calgary.

Green for All and the Apollo Alliance define green collar jobs as entry level, career track employment in industries or businesses that contribute to environmental quality¹. In this study of Green Collar Jobs, five criteria were identified for a job to be considered a green collar job:

- (1) The work tasks performed in the job must be comparable to that of blue collar jobs
- (2) The work activities of the employee must improve the quality of the environment
- (3) The job must be an entry-level position
- (4) The job must pay a living wage (over \$12.25 per hour for 35 hours per week, 52 weeks per year)²
- (5) The job must offer opportunity for career advancement.

Green collar jobs typically require some post-secondary education, but less than a four-year degree, which makes them more accessible for many individuals currently living on low incomes. Green collar jobs represent a combination of both new emerging occupations, such as energy auditors or wind turbine technicians, as well as established occupations such as plumbers and insulators who now require new 'green skills' required for sustainable green building practices or installation of resource-efficient systems.

The Apollo Alliance and Green for All have identified four steps to successfully develop a green collar jobs initiative. These include identifying goals and assessing opportunities; enacting policies and programs to drive investment; training the green collar workforce, and leveraging success to build political support for new initiatives³. This report focuses on the first of these – *identify goals and assess opportunities*.

In the study we have sought to identify the current number of green collar jobs within certain sectors and determine future growth of these jobs. We have also identified promising practices for workforce

¹ Apollo Alliance and Green for All (2008), *Green-collar jobs in America's cities: Building pathways out of poverty and careers in the clean energy economy*

² Living wage of \$12.25 per hour is based on estimates by Vibrant Communities Calgary. Public Interest Alberta defines a living wage in Alberta at \$12.00 per hour or more. During the height of the economic boom in Alberta in 2007, 21.9% of Alberta residents earned less than \$12.00 per hour.

³ Apollo Alliance and Green for All. 2008. "Green Collar Jobs in America Cities: Building Pathways out of Poverty and Careers in the Clean Energy Economy". Accessed at: <http://www.apolloalliance.org/downloads/greencollarjobs.pdf>.

development to effectively increase access to these jobs among lower-skilled job seekers. The study incorporated this approach in two phases of research:

- (1) **Labour Market Analysis** (Phase I) – In this phase, the research team evaluated the growth opportunities for entry-level green collar jobs in Calgary and throughout Alberta. The initial analysis was informed primarily by a set of interviews with employers and industry experts in a select set of industries as well as assessing the growth potential of green collar jobs through the collection of secondary data to illustrate long-term and recent patterns in green collar jobs demand. Table 1 in Appendix A: Methodology contains a list of Calgary employers and key experts participating in interviews.

- (2) **Environmental Scan of Promising Practices for Workforce Development** (Phase II) – This phase of the research explored green workforce development programs in Canada and the United States. The research team contacted twenty-three (23) green jobs training programs in the US and Canada and case studies were developed for six of these programs. The case studies describe the structure and genesis of the program, each program’s objectives, challenges faced by the entity, and keys to its success or failure.

The advisory committee for the study included representatives from several key stakeholders in Calgary. We extend our thanks to each for their time and commitment which have made this report possible.

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Executive Summary

Key Findings and Recommendations

(1) The growing green economy offers a new economic opportunity for Calgary, with potential to create thousands of new green collar jobs.

Using Pinderhughes (2006)⁴ definition of green industries and an analysis of the Canadian Business Patterns Database, the research team estimates that there were about 1,006 green industry establishments in Calgary in 2009 that employ approximately 8,200 workers in Calgary.⁵ There were an additional 15,913 establishments in Calgary employing approximately 69,800 workers that can be considered “possibly green industries,” representing businesses that have the potential to create green collar jobs. Only a portion of jobs in the “possibly green industries” include activities that improve the quality of the environment.

Creation of green collar jobs in Calgary is being driven by multiple emerging and high-growth industry sectors including green construction, renewable energy, environmental remediation, recycling, and other industries responding to demand for environmentally friendly products and services. The number of LEED-certified⁶ green construction projects across Canada has grown from 52 projects in 2004 to 1,747 projects in 2009, effectively doubling every year.⁷ Alberta’s environmental remediation industry has expanded from about 400 workers in the year 2000 to over 1,800 workers in 2008, a compound annual growth rate of 21% per year.⁸ Direct employment in the Canadian solar power sector grew at 31% per year from 2001 to 2007⁹ and employment in the Canadian wind sector is expected to grow at 35% per year from 2006 through 2011.¹⁰

Calgary employers such as Avalon Master Builder (www.avalonmasterbuilder.com), DIRT Environmental (www.dirtt.net), Boyd Solar (www.erhardselectric.com), Ecco Pave (www.eccopave.com) and others are responding to green opportunities within their respective industries and creating local entry-level jobs.

(2) Green collar jobs created by these growth industries include entry-level jobs that provide on-the-job training, new skills development, and opportunities for career advancement while paying a living wage.

⁴ Raquel Pinderhughes, *Green Collar Jobs: An Analysis of the Capacity of Green Businesses to Provide High Quality Jobs for Men and Women with Barriers to Employment, A Case Study of Berkeley, California*.

⁵ Estimate made by the author is based upon the number of establishments in each industry within each establishment employment size, as reported in the Canadian Business Patterns database.

⁶ LEED: Leadership in Energy and Environmental Design

⁷ Source: Canadian Green Building Council 2009 Annual Report

⁸ Source: Statistics Canada Survey of Employment Payroll and Hours;

⁹ Source: Canadian Solar Energy Association

¹⁰ Source: Canadian Wind Energy Association

Each of the green industry sectors offers strong new entry-level job creation potential. Approximately 400 to 500 of the 34,000 construction trades workers in Calgary reach retirement age each year, creating new vacancies to be filled with apprentice trades workers.¹¹ There are about 2,000 workers in the remediation industry and a majority of these workers are employed in low-skilled entry level positions.

According to the Political Economy Research Institute at the University of Massachusetts, clean-energy investments create 2.6 times more jobs for people with college degrees or above, 3 times more jobs for people with some college, and 3.6 times more jobs for people with high school degrees or less compared to spending on fossil fuels.¹² The Canadian Wind Energy Association (CanWEA) estimates that 70% of jobs created in the Canadian Wind Industry are for trades workers, labourers and other occupations that offer entry level workers access to new jobs.

When combined with the right support systems, these jobs can play a life-changing role for some of the 143,000 Calgarians who live in poverty.¹³ Workforce development practices used throughout North America have been effective in preparing workers for green collar jobs that offer pathways out of poverty. For example, Warm Up Winnipeg has created jobs in the green construction sector through residential energy and water retrofits for low-income households. In addition to reducing operating costs for Manitoba Housing, the program provides life skills training, job skills training, and cultural training for over fifty program participants and twenty trainees. The program prepares workers for careers in construction trades and gives them the tools to help them more effectively manage money and navigate a successful future.

(3) There is a leadership opportunity available for developing a response to the growing green economy that captures economic potential and reduces poverty.

Calgary has an opportunity to decide what a response to these opportunities might look like and take a pioneering step forward, placing Calgary and Alberta in a leadership position within the Canadian green economy. The City of Calgary, the Province, the non-profit sector, and the educational sector can play a coordinated role in developing a response that builds on the local economic context while improving the quality of life in Alberta. Collaborative action is needed between these sectors to effectively respond to employer needs in a way that reduces poverty.

(4) Measures of success of a green collar jobs workforce development initiative should be developed for both industry and for workers.

Within industry, measures of success could include:

- New job creation;

¹¹ Source: Statistics Canada Survey of Employment Payroll and Hours; analysis by the author based on Calgary Age Cohort Workforce Model Developed for Calgary Economic Development

¹² Pollin, R., Heintz, J. and Garrett-Peletier, H. (2009). *The Economic Benefits of Investing in Clean Energy*. Political Economy Research Institute and the Center for American Progress.

¹³ See Vibrant Communities Calgary Poverty Fact Sheet. Last accessed March 2010 at <http://www.vibrantcalgary.com/think-vibrant/category/vibrant-fact-sheets/>

- Reduced costs (i.e. costs of recruitment and retention of workers, lower operating costs, etc.);
- Improved profitability;
- Improvements to environmental quality; and/or
- Benefits for workers (access to training, career advancement, etc.).

Among workers, measures of success should focus on individual reductions in poverty. A potential model for measurement of poverty reduction may be the Sustainable Livelihoods Framework developed by the Department for International Development (DFID). Measures of success might be organized by the personal assets identified in the framework which enable individuals to move out of poverty. These include:

- Financial assets (i.e. increases in stable income, acquisition of financial knowledge, disciplined financial practices, and increases in savings rates);
- Human assets (increases in employability skills, acquisition of credentials, etc.);
- Physical assets (better housing security, meeting basic needs);
- Personal assets (increased confidence, motivation, and pride in work); and/or
- Social assets (increased social connections).

(5) A green collar workforce initiative should promote public policy that takes a balanced approach to both stimulation of new green collar job opportunities and response to market demand.

The policy and regulatory environment can have a critical and enabling effect on new green collar job growth. Policies should be designed to catalyze sustainable practices that produce multiple benefits for the community. Policies such as Ontario’s renewable energy feed-in tariff have stimulated investment in solar and wind energy and created jobs in design, manufacturing, installation and maintenance of these systems. In addition to increased investment, Ontario has benefited from reduced energy costs for businesses and homeowners that install solar power systems, reduced greenhouse gas emissions, and an opportunity for Ontario solar power component manufacturers to benefit from exports to the United States.

The Toronto Mayor’s Tower Renewal Program (www.towerrenewal.ca) is another example of a policy that produces multiple benefits. The program revitalizes residential housing towers through energy retrofits that lower costs for residents. The policy brings about benefits to the community through reduced energy costs for housing, job creation for retrofits, reduction in carbon emissions, and improved quality of life for residents.

Regulatory changes to environmental remediation can also spur employment growth while removing environmental liabilities. Land Disposal Regulations enacted in Quebec and Ontario have replaced “Dig and Dump” methods that relocate contaminated soil to a landfill without removing the contaminants. These regulatory changes have spurred innovation and development of in-situ remediation techniques that have coincided with increases in employment. In addition, policies requiring public firms to report environmental liabilities on their balance sheet can spur demand for new remediation techniques that help firms remove these long-term future liabilities from their books.

(6) A future green collar job initiative should be designed to realize the full potential of the opportunities including economic, social, and environmental benefits.

Programs such as Detroiters Working for Environmental Justice (www.dwej.org) have developed a pilot program that (1) has economic benefits by training workers in the specific skills needed by local environmental employers, (2) provides social benefits through training in essential skills and technical skills, and (3) provides environmental benefits by transforming the city's 50,000 brownfields into viable and sustainable communities. Within a year, the pilot program has assisted nearly 100 people living in poverty to transition into productive careers that offer a more stable and secure wellbeing.

(7) The next step in the development of a green collar workforce development response is dependent on the organizations involved and those taking a leadership role.

Potential roles for consideration are outlined below, based on observations from the case studies.

Potential Leaders	Potential Roles
Province of Alberta	Most policy-based recommendations for green energy would require action at the provincial level. Potential policy changes include creation of a renewable energy feed-in tariff. Other policies that can spur growth include changes to financial reporting requirements on environmental liabilities. If firms are required to disclose these liabilities, some would take action to remove the liability from their books and this would stimulate growth in green collar jobs for in-situ remediation. Another potential role might be similar to the Michigan Green Jobs Initiative where the state created sector alliances to facilitate partnerships between employers and training providers, increasing access to training and jobs.
City of Calgary	The city, potentially through the Office of Sustainability, might consider city playing a coordination role with community-based non-profit partners, employers, and educators. Also, similar to the Long Island Green Homes initiative, the City could potentially play a unique role in facilitating financing of residential retrofits and oversight/quality control for local contractors performing energy upgrades.
SAIT or Other Educational Institutions	A role similar to the Detroit Workers for Environmental Justice (DWEJ) might be appropriate. In this case study, the educational provider, Dillard University, established curriculum and training processes that were implemented with community-based partners who offered complementary services to support a sustainable reduction in poverty.
Momentum or Other Community-Based Programs	Momentum or other community-based programs could deliver a program/service similar to Detroiters Working for Environmental Justice (DWEJ) in which individuals in the community receive pre-employment training as environmental technicians or similar occupations. Direct partnerships with employers would increase the ability of workers to meet the needs of employers and successfully integrate into the labour force. Development of a program similar to Warm Up Winnipeg that combines on-the-job training and mentoring is another potential option.

Potential Leaders	Potential Roles
Industry & Entrepreneurs	Employers may consider forming direct recruiting partnerships with educational or community-based groups that train workers in the specific skills required for entry level jobs. This may directly benefit employers by lowering costs of recruiting and increasing the pool of skilled workers from which to select. Entrepreneurial opportunities similar to Warm Up Winnipeg or the Evergreen Cooperative Laundry may also be adapted as for-profit businesses that have a triple-bottom line.

In the case studies that we reviewed, collaborative efforts among stakeholders produced the best results in both supporting growth of green collar jobs and effectively reducing poverty.

The Green Economy

Growth of the green economy has the potential to positively impact both the environment and the labour market in Alberta. The green economy addresses the interdependence of human economics and the natural environment by promoting energy efficiency and renewable energy generation while providing new job opportunities. Due to increasing focus on growth of the green economy, it is no longer necessary for business owners, consumers and governments to choose between a robust economy and a healthy environment. The green economy improves environmental quality through reduction of waste, reduction in demand for natural resources, reduction in energy demand, and recycling of materials. The trends in waste reduction, recycling, and other sustainable practices are evident across the economy and in practically all industries.

Estimates of Green Collar Jobs in Calgary

The first study of green collar jobs was performed in Oakland, California in 2006. A set of *green industries* were identified that include businesses that directly contribute to improvements in the quality of the environment while offering green collar jobs that pay a living wage. An analysis of this set of industries in Calgary reveals that these businesses have been relatively resilient during the recession. During the 2008-2009 period, the number of business establishments operating in green industries declined by 0.8%, while the total number of establishments in Calgary declined by 4.5%. Green industry establishments likely employ about 8,153 workers in Calgary¹⁴ and the number of workers employed by these industries grew slightly by about 0.6% during the 2008-2009 recessionary period.

In addition to the green industries, there are also a number of industries that have a potential to offer green collar jobs, but not *all* jobs in these industries could be considered *green*, in the sense that they contribute to improving quality of the environment. These “possibly green industries” with the potential to create green collar jobs include sectors like construction, energy, agriculture, and other industries, all of which have a segment of green businesses that offer “green” services like construction

¹⁴ Estimate made by the author is based upon the number of establishments in each industry within each establishment employment size, as reported in the Canadian Business Patterns database.

of energy efficient new homes, deployment of renewable energy systems, or use of sustainable agricultural practices. There were 15,913 such business establishments in Calgary in 2009 that fall into what we consider to be “possibly green industries” and these businesses employ approximately 69,800 workers in Calgary (see Figure 1.2). The number of establishments in the “possibly green industries” declined by 4.2% during the 2008-2009 recessionary period, which is slightly better than the 4.6% decline experienced in the “not green industries” category. Employment in “Possibly Green Industries” has increased at an annual average rate of 2.0% from 2004 to 2009 but declined by 4.2% during the 2008 to 2009 period--much of which may be attributed to declines in construction-related employment during the recession.

Figure 1.2 Industry and Occupation Categories for Green Collar Jobs

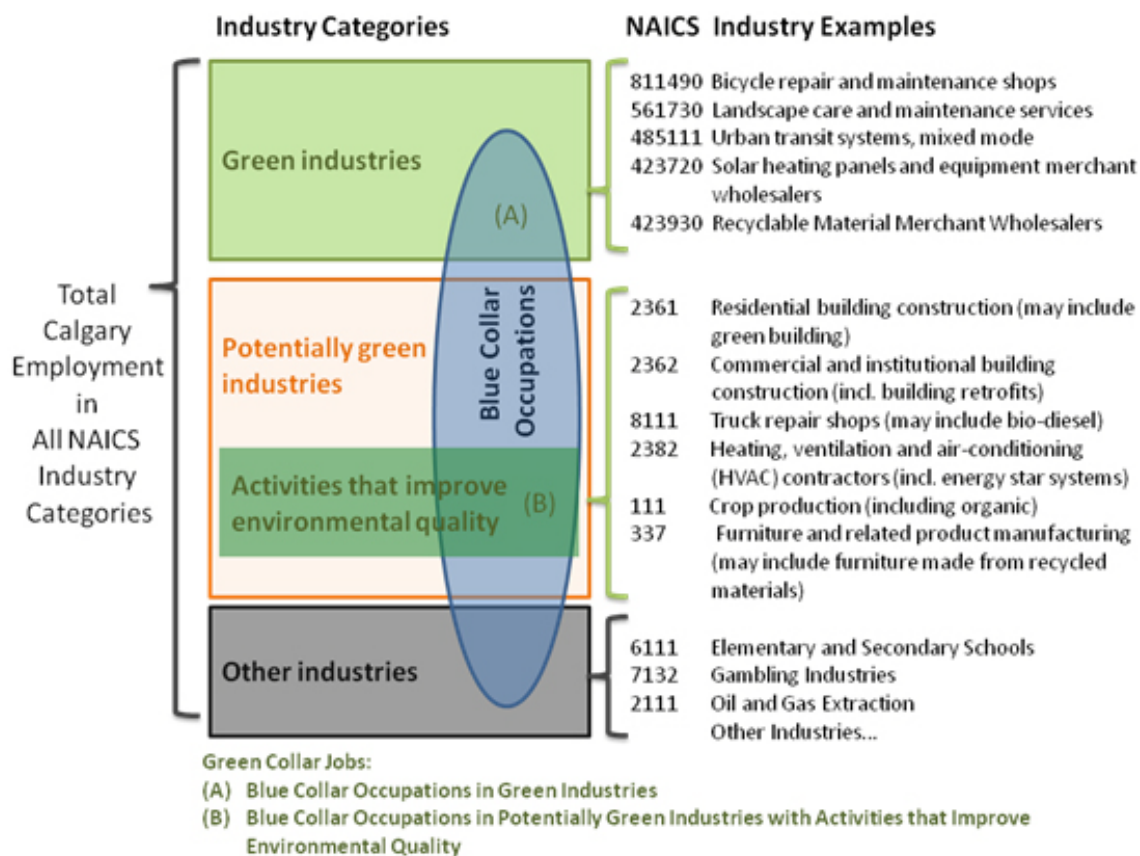


Table 1 Estimated Employment in Calgary in Green Industries, Possibly Green Industries, and Not Green Industries: 2004, 2008 and 2009

	2004	2008	2009	CAGR* 2004-08	Growth 2008-09
Green Industries	6,850	8,103	8,152	4.3%	0.6%
Possibly Green Industries	75,168	81,411	78,033	2.0%	-4.2%
Not Green Industries	660,811	683,775	675,141	0.9%	-1.3%

Source: Canadian Business Patterns Database, RDA Global Analysis

*Compound Annual Growth Rate (CAGR)

Calgary Green Collar Jobs by Sector

Construction Sector

Experts we spoke with expected practically all construction trades to have a green component to their work in the future. This means that there will be a change in the skills needed for entry-level positions. Workers employed as insulation installers and exteriors/siding installers must understand new installation techniques that can ensure that a home is air-tight and a moisture barrier is in place. Proper installation of exteriors/siding and insulation play the most important role in the overall energy efficiency of the structure. While demand is growing for entry-level workers with these skills and knowledge, demand is also growing for workers in more advanced energy-efficiency occupations such as blower-door testers and energy auditors. Overall in the construction industry, experts we spoke with expect that employment in the sector will grow in step with general economic growth in Alberta; however the industry faces significant labour shortages due to retirements of older workers. New workers with new skills will be needed to replace retirements from some 400-550 current trades workers in Calgary who will reach age 65 each year.¹⁵ In total, the construction sector offers perhaps one of the largest opportunities for green collar jobs with over 46,000 construction trades workers employed in Calgary in 2009.

Environmental Remediation Industry

The remediation industry offers a unique opportunity in Alberta related to oil and gas drilling in the province. There are about 1,800 workers employed in Alberta's remediation industry. The industry in Alberta experienced strong double-digit growth in the early 2000s, but growth in recent years has been relatively flat. Practices within the sector include a mix of environmentally friendly remediation as well as remediation practices that do not improve environmental quality, but rather move environmental liabilities to a less sensitive location. Future changes in regulations on remediation or disclosure of financial liabilities may drive growth for in-situ remediation practices that reduce the contamination of soil and water. Experts we spoke with within the industry estimate that about 60% of Alberta's remediation jobs are in the field, many of which are entry-level jobs offering a living wage.

Renewable Energy

The green energy sector also depends on construction trades workers for installation of green energy systems. Several of the jobs directly involved in the renewable energy sector are niche occupations that require some specialized training. For example, Lethbridge College offers specialized training through the International Wind Energy Academy that trains workers for jobs in turbine maintenance. This sector is experiencing tremendous growth right now and offers excellent opportunities for green collar job expansion even though fewer than 1,000 Albertans currently work in it.

Recycling Industry

The recycling industry plays a vital role in sustainable business practices, offering a variety of jobs. Fragmentation of the industry creates an opportunity for entrepreneurial firms to grow within particular

¹⁵ Analysis by the author, performed previously to facilitate workforce planning at Calgary Economic Development.

market niches. These firms create green collar jobs and have relatively low barriers to entry. Smaller entrepreneurial firms in the sector frequently offer opportunities for advancement, and firms we spoke with pay wages of \$15 per hour or more. Some jobs within the sector, however, do not pay a living wage, such as jobs for collector and sorters as some large recycling operators.

In addition to the sectors mentioned above, a number of green manufacturers have emerged in Alberta, including DIRTT Environmental Solutions (with 300 production employees in Calgary), Bio-Cycle (a drywall recycling firm manufacturing agricultural products), and others. Future growth in eco-friendly manufacturing will be driven by a combination of market demand for green products, lower operating costs through eco-efficiency improvements, and changes in regulation. At a macro-level, manufacturing jobs throughout North America have been in structural decline for over 30 years; however new green manufacturing businesses offer opportunities for workers displaced by continual downsizing of the manufacturing labour force. Future green collar job growth will likely be created to install and maintain eco-roofs and sustainable landscaping, although these opportunities are relatively new and near-term growth is somewhat uncertain. Table 3 presents an overview of green collar jobs in the six sectors studied: green construction, environmental remediation, renewable energy, recycling, green manufacturing and sustainable landscaping and gardening.

Table 2 Green Collar Jobs Examples in Key Calgary Industry Sectors

Business Sector	Type of Services	Entry Level Green Collar Jobs	Advanced Green collar Jobs	Estimated Potential Green Collar Jobs
Green Construction	Installation of siding and insulation and other construction activities in the residential and commercial construction sector.	Insulators, installers of siding, carpenters, roofers, and other trades.	Energy auditors, blower door testers, junior site managers, site managers, and other occupations.	There 34,000 construction trades workers in Calgary, all of which will have a green component to their work going forward. Between 400 and 550 of these workers will reach retirement age each year.
Renewable Energy	Construction and assembly of wind turbines; Manufacturing and installation of solar power systems; Installation of geothermal HVAC systems.	Construction trades, heavy equipment operators, roofers, HVAC technicians, and drilling technicians.	Wind turbine maintenance technicians; Master plumbers and other construction trades.	Experts estimated the combined solar, wind and thermal industry in Alberta at about 1,000 workers today. Double-digit growth in these jobs is expected in the future.
Environmental Remediation	Clean-up and removal of contaminated soil and water, much of which is related to the Alberta energy sector.	Laborours, equipment operators	Drivers, site supervisors, junior technicians	Nearly 2,000 workers are employed in the remediation industry in Alberta. Under current conditions, experts expect 3% to 5% job growth per year.
Recycling	Construction debris collection and recycling. Collection and recycling of other materials in over 23 materials categories.	Truck swampers, materials sorters, equipment operators	Drivers	Total employment is difficult to estimate due to fragmentation of the industry. RDA Global estimates over 2,000 workers are employed in the sector across Alberta (based on expert input).
Green Manufacturing	Manufacturing of eco-friendly products. Example: DIRTT Environmental- manufacturer of modular walls that reduce construction waste.	Machine operators	Production line managers and supervisors	There are 46,800 workers employed in the manufacturing sector in Calgary. Green manufacturing represents a key growth area within manufacturing, although it is difficult to estimate how many of these workers are employed in green manufacturing. There are about 300 workers in the production floor at DIRTT in Calgary.

Business Sector	Type of Services	Entry Level Green Collar Jobs	Advanced Green collar Jobs	Estimated Potential Green Collar Jobs
Sustainable Landscaping and Gardening	Green Roofs, Eco-Friendly Landscaping, Organic gardening	Landscape helpers, roofers	Crew supervisors	The green roof and sustainable landscaping industry is in its infancy in Alberta, but offers strong growth potential. We estimate there are perhaps 100-300 workers employed in the sector today, based on interviews.

Promising Practices for Workforce Development

In recent years, there has been an emergence of green collar workforce development initiatives that connect unemployed or underemployed workers with growing green collar jobs opportunities. The Apollo Alliance (www.apolloalliance.org) has identified seventy-seven (77) green collar jobs initiatives that have been formed in the US to prepare workers for green collar jobs. One such example is the Bronx Environmental Stewardship Training (BEST)¹⁶ program which uses a variety of training projects including green-roof installation, asbestos removal, and urban forestry training to prepare workers for green collar jobs. The program has achieved a long-term success rate with 85% percent of participants employed at the four-year-mark after graduation.¹⁷ The City of Chicago has administered a green collar jobs training program for the last twelve years that provides training in five separate tracks: landscaping, weatherization, environmental remediation, electronics recycling and household hazardous waste handling.¹⁸ The GreenCorps Chicago program regularly graduates 40 participants from its program, many of whom are ex-offenders, and over the duration of the program approximately 80% of participants have gained steady employment in their field of training. A similar program in Oakland, California, the Oakland Green Jobs Corps, trained and graduated its first class of 40 students in 2009 into positions in California’s green energy sector.

Several green collar jobs training initiatives have recently launched in Canada with similar objectives to the American programs. Examples include the Brandon Energy Efficiency Program (BEEP) operated by the Brandon Neighbourhood Renewal Corporation which provides skill training to individuals who learn to retrofit existing buildings for greater energy efficiency. In Manitoba, the Warm Up Winnipeg program operated by Building Urban Industries for Local Development (BUILD) also trains workers to perform energy and water retrofits through a hands-on 3-year work and training program that combines environmental stewardship with poverty reduction for individuals living on low-incomes. Similar initiatives include Sustainable Works (www.sustainableworks.org) in Edmonton, Choices for Youth (www.choicesforyouth.ca) in St. Johns, Newfoundland, and the Mayor’s Tower Renewal Initiative (www.towerrenewal.ca) in Toronto.

¹⁶ Sustainable South Bronx is the parent organization operating the BEST Program. See www.ssbx.org

¹⁷ <http://www.greenforall.org/resources/sustainable-south-bronx-green-jobs-not-jails>

¹⁸ <http://www.greenforall.org/resources/greencorps-chicago>

A green jobs workforce development program can hold great promise for some of the 143,000 Calgarians who live in poverty.¹⁹ Among individuals living below LICO, 32 percent are recent immigrants; 21 percent are visible minorities; 27 percent are single-parent homes, and 30 percent are Aboriginal.²⁰ Green collar jobs offer key opportunities to these historically disadvantaged demographic groups, including on-the-job training, upward career mobility, and living wages.

To identify goals and evaluate alternatives for future workforce development of green collar jobs, a scan of green workforce development programs in Canada and the United States was performed. The scan reviewed twenty-three (23) green jobs training programs in the US and Canada who were contacted to identify promising practices for green collar workforce development. Out of these contacts, case studies were developed for six of these programs.

Many of the emerging green collar workforce development programs are unique, with successful models building on the context of the local economy. No two green collar workforce development programs are exactly alike. Programs we contacted ranged from large-scale state-level workforce development programs to local grass-roots start-ups that were formed to provide a local solution to a local problem. Some programs only provide training, others directly employ workers while providing on-the-job training, others train entrepreneurs to start new green businesses, and some have experimented with new models for workforce development. Many of the entities that we reviewed were formed with the expressed goal to help low income people get jobs that pay a living wage and offer opportunity for career advancement. Some have achieved this goal while others have struggled or failed. The case studies offer an introduction to a diverse range of green collar training programs and a precursory analysis of the characteristics that affect these organizations' success. Each program presents challenges and keys to success that should be considered in developing a green collar jobs workforce development strategy.

The programs covered in the case studies include:

Long Island Green Homes, a program operated by the Town of Babylon in Long Island, New York that has helped over 400 residents to make energy efficiency retrofits to their homes.

Warm-Up Winnipeg, a program that helps low income people and people living in public-owned housing retrofit their homes to reduce water and energy costs. The program also doubles as a workforce development program by providing training for 50-plus disadvantaged workers.

Detroiters Working for Environmental Justice (DWEJ), a grass-roots environmental advocacy group that partnered with Dillard University to train workers in a broad range of disciplines as environmental technicians. Training is offered through a 12-week training course. The program was developed to train workers to address environmental remediation for contaminated sites in and around Detroit.

¹⁹ See Vibrant Communities Calgary Poverty Fact Sheet. Last accessed March 2010 at <http://www.vibrantcalgary.com/think-vibrant/category/vibrant-fact-sheets/>

²⁰ Note that percentages do not sum to 100% because of overlapping demographics. For instance, immigrants who are single parents are counted in two categories.

Springfield Green Worker Cooperative & BuilderSupply²¹ – The organization provides business training and education preparing individuals to launch or operate an employee-owned business that improves the quality of life and quality of the environment in Springfield. The organization also raises funds to start new cooperatives.

Evergreen Cooperative Laundry (ECL)—ECL is a worker-owned cooperative that operates LEED-certified commercial laundry facilities that pay wages that are 25% higher than competitors. Higher wage rates are possible partially because of lower energy costs for the LEED-certified facilities. The cooperative doubles as a workforce development program where workers learn financial management skills and life skills that improve their lives and performance at the cooperative.

Michigan Green Jobs Initiative, a state-level program that brings together employers, educational partners, and other stakeholders to develop training curriculum to prepare workers that meet employer needs.

Looking at each program through the lens of the Sustainable Livelihoods Framework, Warm Up Winnipeg and DWEJ are programs that have achieved the greatest reductions in poverty at an individual level. These programs also have a solid business model that lowers costs for employers or lowers burdens on taxpayers. Both programs have positive impacts on the environment either by reducing energy waste or by transforming contaminated sites into sustainable communities. Both programs benefit from a coordinated effort by several partners, each playing roles that together offer multiple benefits to the community.

Evergreen Cooperative Laundry shares many similarities with Warm Up Winnipeg and places an emphasis on development of essential skills, literacy, and financial management skills. In addition, workers benefit from ownership in the firm where they work, which encourages job stability for the worker while lowering turnover costs for the business. A weakness of the program may be a lack of opportunity for advancement.

The Michigan Green Jobs Initiative tackles job creation and skills training on a macro level through sector alliances that facilitate partnerships between employers and educational providers and by offering tuition reimbursement for workers undergoing training in a growing green industry. The organization sits within the state's department of Energy, Labor, and Economic Growth which has formed a coordinated policy effort to create green jobs in Michigan through the Michigan Economic Development Corporation (MEDC). MEDC has attracted investment by businesses that have created over 50,000 jobs related to automotive battery manufacturing (mainly for hybrid electric vehicles), 21,000 jobs in solar power manufacturing and 5,000 jobs in wind power manufacturing. By enacting policy that both creates jobs and equips the workforce to transition into new jobs with new skills, Michigan Green Jobs Initiative has stimulated growth in the green economy which already represented more than 109,000 jobs in Michigan in 2009.²² A potential weakness of the program is the lack of

²¹ This case study presents several negative characteristics of a green collar workforce development program. The name of the organization and its location has been changed in the case study to keep the organization identity confidential.

²² See Michigan Green Jobs Report 2009. Last accessed May 2010 at http://www.michigan.gov/documents/nwlb/GJC_GreenReport_Print_277833_7.pdf

specific goals or measures for reduction in poverty and low emphasis placed on measurements of outcomes for workforce training.

Long Island Green Jobs programs highlights the visionary and entrepreneurial role that a municipality can have in creating opportunities in the green economy while saving money for residents through energy efficiency. The creativity and determination of the town leadership made residential energy retrofits possible and accessible to all residents, however the program does not double as a workforce training program and the jobs that are created lack the benefits that are possible through a triple-bottom line approach.

While the Springfield Green Worker Cooperative & Builder Supply offered a good service for recycling of construction waste, the program had disappointing results both in economic and social terms. The program serves as an example of the importance of planning, experience, leadership in a green jobs workforce development program.

Among the case studies and the other programs contacted, we make a few key observations regarding keys to success:

- (1) **All three components of the triple bottom line- people, planet, and profits- must be considered in the planning and design of the program if it is going to effectively achieve benefits at all levels.** While the Long Island Green Homes program has an innovative and successful business model, the jobs created do not necessarily pay a living wage and the program has not made measurable reductions in poverty.
- (2) **Employer relationships and involvement is critical to the success of most green collar jobs training programs.** Practically all successful programs that we contacted viewed relationships with employers as a critical component of success. Some training programs were highly selective in choosing the employers that they worked with, preferring to work with a small set of 10 to 20 employers who offered living wages and career advancement.
- (3) **Residential weatherization and retrofitting programs are most successful when city governments have a leadership role.** Municipal government is uniquely positioned to play an influential coordination role for financing of retrofits and quality assurance for contractors. Two of the successful residential retrofit models reviewed were possible only through strong public sector leadership. Leaders in these governments were focused on reducing government energy expenditures and on reducing energy costs for homeowners. The strong emphasis on cost reduction was critical to the success of the program, but in order for the program to work, it required direct government leadership.
- (4) **Many of the green collar workforce development programs were successful because of partnerships between governments and powerful non-profit partners.** These partner organizations recognized the financial, social, and environmental benefits that the training program offered and used their influence to help give the green collar initiative a start.

Successful programs for green collar workforce development in the case studies are generally built upon coordinated interdependencies between diverse stakeholders.

- (5) **Grass-roots programs that aim to create green collar jobs through start-up ventures are most successful when they are run by seasoned and experienced entrepreneurs with 20+ years of business experience.** Any new business start-up is difficult and those that aim for a triple bottom line find that the experience of the leadership is particularly critical. Successful start-ups we reviewed had spent considerable time developing and testing their business plan and making extensive preparations to effectively execute the plan.
- (6) **Many green collar jobs in green landscaping, remediation, or green construction can be seasonal or temporary. Green collar jobs training programs that teach a complimentary set of diverse 'green skills' enable workers to find jobs in a broad set of fields at all times during the year.** When combined with employer relationships, this training approach can be highly effective.

While these key findings can help improve the chances of success of any green collar workforce development program, we encourage readers to draw their own conclusions as well. The case studies offer ideas that can be copied, modified, combined, and improved upon. We also attempt to identify key pitfalls to avoid. However the case studies cannot identify every potential pitfall or every key to success. Not all green collar workforce programs are successful and programs should be developed in a thoughtful and cautious manner. The social development goals, the partners involved, the experience of the leadership, the planning, the training program, and the business model all play critical roles in the program's success.

Conclusions

Growth of the green economy and green collar jobs in North America is in some ways analogous to the Information Technology Revolution of the 1990s. As the IT industry grew, it brought two key changes to the labour force. First, it created new jobs to design, install, and manage IT systems. Second, it brought about changes to a large number of existing jobs that increasingly required computer skills. The revolution grew rapidly through the late 1990s, and after the dot-com bust of 2000-2001 the sector continued to grow--both as a stand-alone sector, and within all traditional industries. The green economy has the potential to follow a similar path and Calgary has an opportunity available to lead in the development of a green economy that makes economic benefits available to all people. Actions taken now to develop of a green collar workforce can effectively reduce poverty, foster industry growth, improve the quality of Alberta's environment, and create a sustainable and just future for all Calgarians.