

# BUILDING WITH PURPOSE:

PUBLIC INFRASTRUCTURE PROCUREMENT  
AND COMPETITIVE ADVANTAGE

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**Prepared by:**

Cameron MacKay

*Vice-President*

416-504-5151 x.304

[cmackay@devongroup.ca](mailto:cmackay@devongroup.ca)

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# EXECUTIVE SUMMARY

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In the next decade, Ontario and its municipalities will be making historic investments in public infrastructure including roads, highways, bridges and subways.

How these infrastructure investments are made will impact the short and long-term economy in many ways. This paper outlines how these investments should be made so that Ontario and its municipalities 'build with purpose'. This purpose-driven building is a pathway to employment for historically underrepresented people; can enhance health, safety, and training of workers; maximize social and economic benefit; and position Ontario to succeed in an increasingly competitive world economy.

Backed up with research and case studies, this paper makes procurement policy recommendations the province of Ontario should follow to ensure that Ontario and its municipalities build with purpose, including:

- Requiring contractors to provide skills training and meaningful employment opportunities to youth, local communities, unemployed/underemployed, and traditionally underrepresented populations of Ontario residents with specific participation and hiring targets during construction.
- Explicitly promote apprenticeship by requiring that bidders on provincially-supported construction projects either hold a trade certification or be registered as apprentices, and be registered with the Ontario College of Trades.
- Infrastructure Ontario to mandate prime contractors and sub-contractors to implement Best Practices that exceed the minimum requirements of the *Occupational Health and Safety Act* and its related regulations.
- Support community programs, such as Helmets to Hard Hats, Hammer Heads, etc., and sub-contract to trade contractors who also support such programs, or insist they be used.
- Infrastructure Ontario should include in its annual report a review of how general and trade contractors that performed work for Infrastructure Ontario supported community and industry programs that promote inclusiveness.
- Include a detailed Safety Plan in bid submissions that address the following: identification of known risks; a description of how health and safety factors will figure into the selection of sub-contractors and the incentive rewards of managers; identification of the required

training, certifications and licenses and a description of how these will be documented for both workers and managers; and a description of the ongoing inspection system for the project and the various roles and responsibilities that will pertain to health and safety.

- Procurement policies should include provisions that promote hiring local firms, local contractors, local subcontractors, and local workers.
- Procurement should not be approached as a zero-sum economic game in which one party's gain is another's loss; gaining lasting value from procurement means moving beyond price to capturing social and economic benefits as well as improving project quality.
- Procurement officials should frame their policies through a lens similar to Porter's four conditions in order to create a unique and long-lasting economic advantage for the region.

By implementing these recommendations, Ontario will not only build a world-class infrastructure in a cost-effective and safe way, but will also build a strong and sustainable regional economy in the short and long-term that has highly-trained, highly-skilled, highly-employable workers.

# BUILDING WITH PURPOSE:

## PUBLIC INFRASTRUCTURE PROCUREMENT AND COMPETITIVE ADVANTAGE

### INTRODUCTION

Parts of the Canadian economy are in overdrive. Even with a high dollar, Canadian manufacturing remains comparably strong, and high commodity prices – in particular Alberta oil – are strengthening Canada's trade balance. Canadians enjoy relatively low unemployment and a measure of stability in a turbulent global economy. The 2011 Global Economic Pulse survey indicated that 60% of Canadians view their economic situation in a positive light, the highest among G8 countries (Ipsos Ried, 2011). This prosperity is dotting the skylines of Canada's biggest cities: there are currently 132 high-rise buildings under construction in Toronto. Mexico City ranks a distant second to us with 88, and New York City is in third with 86.

However, with this economic and development growth, mounting pressure is placed on aging infrastructure, roads, public transit systems, environmental and water works essential for economic growth and the well-being of Canadians. In Ontario alone, there is an ongoing, daily discussion about needed transportation infrastructure upgrades and the catastrophic consequences if these investments are not made, or not made wisely – not to mention the conversation about a multi-billion dollar casino project to be situated in the Greater Toronto Area.

After decades, or centuries in some cases, of continuous use, much of Canada's public infrastructure is approaching the end of its useful life and will need to be repaired or replaced (Dupuis & Ruffilli, 2011). Necessarily, careful attention should be paid to the bottom line cost of these massive infrastructure investments, but also, procurement officials deciding how, where, and with whom these dollars are spent should consider the economic and social multiplier-effect this public money can have if deployed under the right conditions.

### **\$120 BILLION OPPORTUNITY TO BUILD WITH PURPOSE**

Most Canadians agree that health and education spending have taken priority over investments in public infrastructure and that all levels of government are responsible for underinvestment (Mackenzie, 2013).

To narrow this infrastructure gap, Canada's federal government has committed to spending \$40 billion between 2007 through 2014 to

support improvements to Canada's public infrastructure. Analysts expect that as the projects are cost-shared with other levels of government, they will likely leverage total investments up to three times greater than the amounts contributed by the Government of Canada (Dupuis & Ruffilli, 2011). "The *Economic Action Plan 2013* delivers a new *Building Canada* plan, which will provide approximately \$53.5 billion in new and existing funding for provincial, territorial and municipal infrastructure between 2014 and 2024. In addition, over the next 10 years, the Government will make significant investments in First Nations infrastructure, and in federal infrastructure assets. Overall, federal infrastructure funding will total \$70 billion over 10 years, the largest federal investment in job-creating infrastructure in Canadian history" (Government of Canada, 2013). Moreover, Ontario has invested \$75 billion dollars in infrastructure since 2003, and plans to spend an additional \$13 billion in 2013-2014 (Ontario. Ministry of Infrastructure, 2013).

When discussing the benefits of public infrastructure spending, most commentary focuses on two dimensions:

#### **PRODUCTIVITY – RESEARCH**

1. Research suggests that every dollar invested in public infrastructure lowers business costs by an average of 11 cents and improves productivity (Ontario. Ministry of Finance, 2010).

#### **JOB**

2. Infrastructure investment creates short-term jobs, many of which are in construction and trades which are good for short-term economic growth.<sup>1</sup>

There is, however, more to be said for construction procurement as an instrument for increasing economic inclusion for traditionally underrepresented populations, building a more skilled, highly-trained workforce, and creating enduring competitive advantage for Ontario. Favouring bidders for public infrastructure projects to employ people who are underrepresented in the building and trades sector, to meet high training, health, and safety requirements, and to source local content (building materials, equipment, technology etc.) can have a tremendous long-term impact on Ontario's prosperity and competitiveness in the short and long-term.

This paper examines the social and economic benefits that accrue when inclusive procurement provisions are used in public sector building and construction procurement. It argues that while there are many positive economic indices to celebrate in the current Canadian economy, public sector construction procurement policy can and should be used as an instrument of sustainable competitive advantage. With a forecasted spend of \$12 billion in the next two years, policymakers have an historic opportunity to *build with purpose*.

<sup>1</sup> Construction jobs make up about 7% of Canada's total workforce or 1, 267, 000 persons employed (Statistics Canada, 2013).

## SCOPE OF RESEARCH

Building on research gathered from across North America and elsewhere, this paper argues that Ontario should pursue inclusive public sector procurement strategies to improve the province's competitive advantage, defined by criteria laid out below. The paper focuses on the policy tools available for public procurement for two reasons:

1. Public infrastructure spending across Canada is considerable; it peaked at \$65 billion in 2011 and 2012 with municipal government spending at \$27.3 billion, followed by provincial spending at \$22.7 billion, and the federal government spending \$5.4 billion annually (Canadian Manufacturers & Exporters, 2009). Public infrastructure projects are, therefore, an ideal mechanism to utilize procurement best-practices that go beyond traditional contract performance – identified within this paper as “secondary procurement” policies.
2. Governments lead by example and can use their procurement policies to encourage wider acceptance of standards in the private sector (Arrowsmith, 2010) and spur innovation and long-term economic advantage.

*“With so much money in the pipeline – and with the health of the global economy riding on the success of infrastructure investment – the efficiency of infrastructure delivery is particularly important at present. If done right the investment boom could become a boon, because infrastructure investment is appealing in many ways: it creates and sustains employment; there is a large element of domestic inputs relative to imports; it improves productivity and competitiveness by lowering producer costs; it benefits consumers through higher-quality services; and it improves the environment when infrastructures that are environmentally sound substitute for infrastructures that are not.”* (Flyvbjerg, 2009)

## WHAT IT MEANS TO BUILD WITH PURPOSE

In *NONZERO: the Logic of Human Destiny*, Robert Wright uses game theory to argue that economies and societies improve as they move away from playing zero-sum games to non-zero-sum games: In zero-sum games, the fortunes of the players are inversely related. In tennis, in chess, in boxing, one contestant's gain is the other's loss. In non-zero sum games, one player's gain need not be bad news for the other(s). Indeed, in highly non-zero sum games, the players' interests overlap entirely. In 1970, when the three Apollo 13 astronauts were trying to figure out how to get their stranded spaceship back to earth, they were playing an utterly non-zero sum game, because the outcome would either be equally good for all of them, or equally bad. (It was equally good.) (Wright, 2000, P. 5)

Procurement policies have, in the past, been seen as a zero-sum game. The purchasers, in this case government agencies, win if they are able to extract price concessions from the vendor and vice versa. The primary objective of procurement as traditionally constructed is to obtain goods, works or services on the best terms; in fact, in some public-sector procurement policies price is the sole determinant for bid awards (Arrowsmith, 2010).

Public procurement should no longer be a zero-sum game, rather other considerations must be acknowledged to create a lasting social and economic benefit stemming from public procurement on infrastructure.

The construction labour market and the construction industry have distinct features that have historically caused an underinvestment in skills: because it is viewed as a commodity and bidders are rewarded primarily for submitting the lowest cost bid, or one slightly lower than the next highest bidder, the tendency has been for the construction labour market to undersupply skilled labour and over supply unskilled (or semi-skilled) labour. This creates a race to the bottom for cost while not adequately factoring in other economic and social advantages of a smarter, more thorough analysis of bidders – thus creating a non-zero sum procurement process.

In order to avoid a race to the bottom and a bidding system that solely seeks the lowest cost, the tendering process is an opportunity to introduce requirements that could not only level the playing field and reduce this type of cut-throat behaviour, but also develop enhanced socio-economic benefits. While procurement policies have long been viewed as a potential platform for environmentally preferable purchasing, and indeed much

has been written about “green” or “environmentally friendly” practices in government procurement processes, a federal government wide review of procurement conducted in 2005 concluded “further work remains to be done to examine the role of existing socio-economic benefit policies with impacts on procurement...” (Lastewka, 2005). Procurement policies that go beyond the so-called “primary” objective of obtaining goods, works or services on the best terms and focus on other potential benefits are secondary procurement policies (Arrowsmith, 2010).

Building with purpose demands an examination of the economic and social benefits that are attained through the introduction of secondary procurement policies for public infrastructure projects (Coggburn, 2005). To build with purpose, we must examine:

## **BUILD TO PROMOTE INCLUSION**

*How would the introduction of secondary procurement policies improve the participation of historically underrepresented people (people with disabilities, Aboriginal people, minorities) in the skilled workforce and act as a catalyst for enduring economic development?*

## **BUILD TO ENHANCE HEALTH AND SAFETY**

*What is the demonstrable effect of procurement policies that mandate enhanced occupational safety and training standards on productivity, quality of work and timeliness?*

## **BUILD TO MAXIMIZE SOCIAL AND ECONOMIC BENEFIT**

*What social and economic net benefit is realized for every unit of construction and trades training mandated through public procurements?*

## **BUILD TO IMPROVE HIGH-QUALITY COMPETITION AND IMPROVE ONTARIO'S ECONOMIC COMPETITIVENESS**

*How does obliging bidders on public infrastructure projects to meet minimum local content requirements improve local demand conditions, help incubate related and supporting suppliers and contribute to robust competition? Can government invest infrastructure dollars in a way that promotes innovation and creates competitive advantage vis-à-vis other regions and other countries?*

For each of these questions, this paper provides research and case studies to support the policy recommendations contained herein.

# **BUILDING TO PROMOTE INCLUSION**

## **QUESTION**

*How would the introduction of secondary procurement policies improve the participation of historically underrepresented people (e.g. people with disabilities, Aboriginal people, ethnic minorities) in the skilled workforce and act as a catalyst for enduring economic development?*

## **RESEARCH**

Extractive industries such as mining and oil and gas dominate the Financial Post's Profit Margin Index (FP 500, 2010). Moreover, major upgrades to hydroelectric generation and transmission are underway or under consideration across Canada.<sup>2</sup> In many cases, these projects will occur on or adjacent to First Nation's treaty lands and in close proximity to some of the poorest communities in the country.

One such example is the Ontario's Ring of Fire, a crescent shaped swath of land in Northern Ontario rich with mineral deposits. The Ring of Fire represents an “unparalleled economic opportunity: over \$3 billion worth of new capital investments in the mining sector were announced in 2011, including a new chromite smelter in Sudbury. Proposed Ring of Fire mine developments are expected to create more than 1,500 permanent jobs and develop key processing and transportation infrastructure. The new transportation infrastructure required to serve the communities will provide year round access to otherwise isolated communities.” (Emerging Stronger, 2013)

Workforce inclusion can be improved through the use of procurement set-asides that limit participation to particular groups. These preferences involve, for example, contracting with small businesses owned by socially or economically disadvantaged individuals, particularly ethnic minority groups.

These are not new policy tools and indeed during the Carter Presidency in the United States, the Public Works Employment Act of 1977 was passed and provided that at least 10 per cent of each federal grant for public work projects under that Act should be allocated to minority business enterprises (McCrudden, 2007).

<sup>2</sup> Some examples include the Conawapa Generating Station; Keeyask Infrastructure and Generating Station Projects; Pointe du Bois Spillway Replacement and the Riel Reliability Improvement Initiative.

More recently in Canada, a Contracting Policy Notice by the Federal Government issued in 1996 concerning “Aboriginal Business Procurement Policy and Incentives” formally notified federal departments and agencies that the government had approved a strategy to promote Aboriginal business development through the federal government procurement process.

This policy had several objectives: increased participation by Inuit firms in business opportunities in the Nunavut Settlement Area economy; improved capacity of Inuit firms to compete for government contracts; and increased access by Inuit to on-the-job training (e.g., apprenticeship, skill development, upgrading and other job-related programs). It also provided greater opportunities for Inuit to receive training and experience to successfully create, operate, and manage Northern businesses (McCrudden, 2007).

Moreover, in order for a bid to be qualified under this policy, the bidder must certify that an Aboriginal business would perform at least 33% of the value of the work performed under the contract.

Critics claim that set-asides disrupt/pervert market forces in two ways:

1. They limit competition, and because contractors that do compete may pass on the cost of compliance to the government.
2. Some have also argued (Arrowsmith, 2010) that set-asides result in higher prices and/or a compromise on quality, as they limit competition and may have workforces that face steeper on-the-job learning curves and are, at least initially, less efficient than other established enterprises.

Nevertheless, set-asides have proven themselves useful. For example, they allow governments to work closely with a limited group of firms on an ongoing basis to improve those firms’ practices (Arrowsmith, 2010).

Set-asides or other inclusive procurement policies can contribute to the competitive advantage of Ontario in two ways.

First, as the example below of the Malmesbury prison shows, an inclusive procurement policy helps flow capital to underdeveloped communities and underprivileged peoples. This, in turn, increases local demand for goods and services that catalyzes entrepreneurs to open local businesses that contribute to a healthy, productive workforce and local economy well beyond the period of time of one specific project.

Second, the jobs that are created by construction projects result in the skilling of those who have traditionally been unable to access the skilled workforce. The biggest generation in Canadian history, the baby boomers, have started retiring. Last year, the first baby boomers turned

65, and by 2030, for the first time ever, Canada will have more people over the age of 65 than under the age of 20. Over the next two decades, the number of seniors will double. As a result, the ratio of working-age Canadians to seniors is expected to fall from 4-to-1 in 2011 to 2-to-1 in 2030 (Honourable Diane Finley, 2012). A skilled labour force, particularly one with specialized skills such as those transferred through construction and trades work, is critical to compete domestically and internationally (Porter, 1998).

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*“Governments must work together to address infrastructure, transportation, processing, electricity pricing and availability, and Aboriginal education and labour market access...Costs need to be shared between federal, provincial, and municipal governments and their private sector partners” (Emerging Stronger, 2013).*

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## CASE STUDIES

### SOUTH AFRICA

South Africa is a leading jurisdiction for targeted or affirmative procurement. Research shows that the financial premiums born by the state in South Africa in adopting affirmative procurement policy in the construction industry, in particular, have proven to be nominal compared with outcomes and the overall benefits (Watermeyer, 2000). Targeted Procurement has proven effective in directing capital flows into underdeveloped or disadvantaged rural communities on conventional construction projects.

“In South Africa, Targeted Procurement has been used mainly to target those groups of society that were disadvantaged under the apartheid system. It has however also been used within South Africa to support local economic development, to promote growth within the small business sector and to target the unemployed in poverty alleviation programmes” (Watermeyer, 2000).

The Malmesbury Prison complex is the project that gave birth to Targeted Procurement in South Africa in 1996. The Prison contract proved to be more efficient at channelling money into communities



**Malmesbury Prison Complex**

Source: <http://www.secelec.co.za/projects/project10.htm>

than some focused poverty alleviation programs in South Africa involving the construction of community buildings. (Watermeyer, 2000).

Malmesbury is a small rural town approximately 70 km from Cape Town, South Africa. Those involved in the development of the Targeted Procurement procedure were unaware of any target group businesses in Malmesbury and considered that a 10% goal might be achieved if contractors who fell into the target group were drawn from the Cape Town area. The result was thirty percent of the value of \$13 million (US) worth of contracts being channelled into this community through targeted enterprises.

### **THUNDER BAY**

Inclusive policies can contribute to the skilling building. The Sheet Metal Workers Local 397 in Thunder Bay, for example, hired a First Nations liaison to assist in actively recruiting Aboriginals. In the 10 months since the position has been created, 16 Aboriginals have joined the union and received training and job opportunities.

Workers came onto the Detour Lake gold mine job “green, with no prior experience” and received training in the sheet metal trade. The First Nation’s liaison emphasizes that once these new union members are certified as sheet metal workers, they will have the opportunity to work anywhere in North America.

The First Nation liaison with the union encourages First Nation communities to “use unionized companies to build their projects so any community members working on the project will have an opportunity to continue working in construction once the project is completed” (Garrick, 2012).

### **BLOODVEIN FIRST NATION**

In early 2012, the governments of Canada, Manitoba and Bloodvein First Nation announced an access project to link Bloodvein First Nation with the all-season road project underway in northern Manitoba. When the access road was completed in the spring, the benefits to Bloodvein First Nation were clear. The access road was completed with approximately 50 local residents and the community’s construction company working on the project.

Prior to the access road project, Bloodvein signed an initial \$7.75 million community benefits agreement (CBA) with East Side Road Authority (ESRA) in 2009 to undertake pre-construction work, including wilderness clearing, site preparation and gravel crushing for the all-season road project. As a result of the CBA, Bloodvein First Nation Construction Ltd. was established. The successful company has since purchased its own gravel crusher, excavators and heavy equipment trucks. Additionally, the community has established two quarries to

supply gravel to the all-season road project and a camp to house workers. Roland Hamilton, Chief of Bloodvein First Nation, credits the project for providing community members jobs and further economic development opportunities to service the newly established camp.

As construction on the all-season road project moves north, the Bloodvein quarries will continue to supply construction crews. A new \$15 million CBA was signed in 2012, which will give Bloodvein sole source contracts to clear wilderness and crush gravel over 5 years for the all-season road project. ESRA, in turn, provides a mentoring relationship that includes project and contract administration services. It also includes safety training and guidance regarding construction practices.

It is expected that in addition to the CBA, construction of the all-season road and bridges on Bloodvein traditional territory will generate further jobs and economic development opportunities, including \$106 million in contracts over the next five years. All told, the all-season roads project will inject almost \$129 million dollars over the next five years into the Bloodvein community, whose population is a mere 1,669 people. That represents an income of \$77,290 per person in a community where the average annual income is \$15,000.

## **RECOMMENDATION**

- Include mandatory provisions in procurement qualifications that require local contractors to provide skills training and meaningful employment opportunities to youth, unemployed/underemployed, and traditionally underrepresented populations of Ontario residents with hiring targets.

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# BUILD TO ENHANCE HEALTH AND SAFETY

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## QUESTION

*What is the demonstrable effect of procurement policies that mandate enhanced occupational safety and training standards on productivity, quality work and timeliness?*

## RESEARCH

Traditionally, procurement policies for infrastructure projects have limited themselves to securing compliance with general legal requirements—for example, a requirement for contractors to pay workers the minimum wage applicable by law within the jurisdiction.

Jurisdictions have differing levels of minimum training and on-site health and safety requirements for construction projects.

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*Construction is a highly skilled, highly labor intensive and highly mobile industry with a constantly changing mix of contractors and subcontractors for each new project. For worksites to function productively and cooperatively and for construction to be completed on time, the often hundreds, if not thousands of workers on the site must have confidence that their colleagues possess adequate training on the tools and techniques required to get the job done (Waites, 2002).*

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In the construction industry some contractors invest in apprenticeship and skills development, and others do not. Most people agree that contractors who do not invest in apprenticeship and skills development have a cost advantage over contractors who do; the playing field is not entirely level, but should be as those that invest in apprenticeship and skills development are creating a long-term economic and social benefit.

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*Canada's labour productivity growth continues to lag behind [the U.S.]. Over the last 30 years, U.S. labour productivity growth has outpaced that of Canada by an average of 0.8 per cent a year (Emerging Stronger, 2013). Despite Canada's lag in labour productivity, it should be noted that as much as one-quarter of Ontario's labour productivity growth in the 2000s can be attributed to improved infrastructure (Conference Board of Canada, 2010).*

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In 2010, The *Expert Advisory Panel on Occupational Health and Safety* report made recommendations regarding worker training. The report recommends that every Ontario worker and supervisor receive mandatory information about workplace rights and responsibilities before they start their job; that every construction worker receive entry-level training on construction site safety; and that there be rigorous training standards for those who work at heights and in other high risk settings (Dean, 2010).

Research suggests that building trades programs (those offered by unions) have the highest quality training facilities and the best training program for both apprentices and journeypersons. Typically, these apprenticeship and journeypersons training programs require thousands of hours of closely supervised, on-the-job training, plus an additional 1,000 hours or more of related classroom and shop instruction (Waites, 2002).

From a skills building perspective, it is incompatible for public policies to support and advocate both expansion of the apprenticeship system and more industry investment in skills development on the one hand, and then on the other, give employers who do not contribute to the apprenticeship system and who make no direct investments in skills training a cost advantage when bidding on public procurements (O'Grady, 2006).

A single public infrastructure project will require hundreds of well-trained, experienced craft personnel in numerous occupations and classifications and may involve dozens of subcontractors. Indeed a construction project of any magnitude typically involves at least 15 individual trades (e.g., plumbers, pipefitters, electricians, carpenters), hundreds, even thousands of craft personnel and dozens of contractors and subcontractors (Waites, 2002).

Worthy of note and concern, the skilled labour work force is declining as it collectively approaches retirement age. An assessment of construction labour by markets from 2013 to 2021 for Ontario estimates 20,000 new work force entrants will join the province's construction work force, but over the same period an estimated 75,000 workers will retire (Construction Sector Council, 2013). The challenge will be to create attractive working and remunerative conditions sufficient to attract the number of replacement workers that will be needed over the next nine years.

An absence of qualified trades can cripple a construction project in terms of schedule, quality and/or cost. Trades need to be proficient in the use of increasingly complex tools and undertake complicated procedures to meet today's construction standards, including the use of green technologies and new building materials.

This is why the quality—not just the quantity of available apprenticeships—of training has never been more important than today. A recent study by the Ontario Construction Secretariat reviewed MTCU apprentice registration and completion data, which provides initial evidence confirming higher completion rates in the unionized sector. A comparison of estimated completion rates for union and non-union apprentices shows estimates of union completion rates to be 30% higher than non-union (Ontario Construction Secretariat, 2013).

About \$200 million in training and workplace safety programming is provided annually by construction trade unions in Ontario. The Workplace Safety Insurance Board of Ontario (WSIB) data shows a marked difference in lost time injuries between union and non-union employers (O' Grady, 2006). The lost time injury rate of non-union contractors is more than double that of union contractors. A recent study of WSIB claims in electrical and mechanical disciplines found that the average unionized contractor had a lost-time rate of 10.0 days per 1,000 workers compared to 21.5 days among non-union contractors (St. John, 2012). In addition to human suffering, workplace injuries are a major contributor to construction cost overruns.

*The Building Trades Councils are taking it upon themselves to address the need for enhanced safety training to those entering the skilled trades workforce. The Central Ontario Building Trades (COBT) established the Hammer Heads program, which equips graduates with health and safety training that goes above and beyond the requirements of WHMIS and Fall Protection. The COBT devotes over \$1 million annually to train program participants. The first two weeks of the program are focused exclusively on health and safety training. This ensures that when graduates leave the program, they can be leaders in safety on the job site (Central Ontario Building Trades, 2011).*

In addition to avoiding workplace injuries, lost workdays and project overruns research is emerging that shows a link between workplace safety training and productivity. This link was made apparent by the Chair of the Expert Advisory Panel on Occupational Health and Safety, who recommended:

*The Ontario government should develop procurement policies that consider the occupational health and safety performance of suppliers in order to motivate a high level of performance. The initial focus could be on the purchasing of services. . . Furthermore, to demonstrate its commitment*

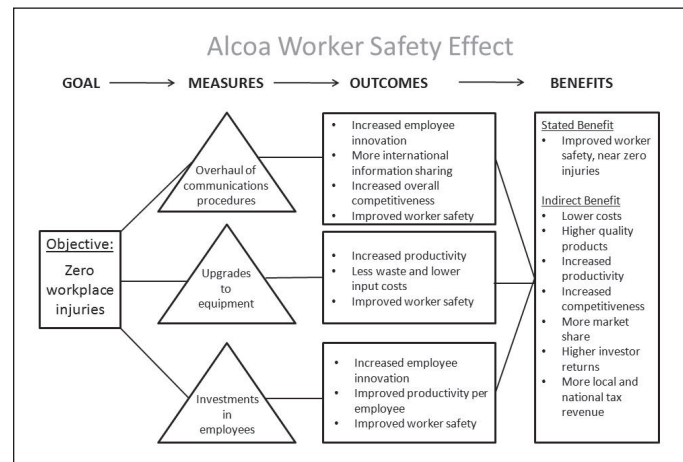
*to enhancing health and safety performance throughout the supply chain, the government must ensure that such provisions are included in the procurement policies and procedures of the Health and Safety Associations that the new prevention organization will oversee (Dean, 2010).*

## CASE STUDIES

### ALCOA

In 1987, Alcoa — one of the world's largest producers of aluminum — was losing ground to competitors, and its stock price was in a slide. To the dismay of investors and analysts, Alcoa choose to focus on one goal: zero workplace injuries.

What was not apparent to investors at the time was that Alcoa's drive for zero workplace injuries would entail the most radical corporate realignment in the company's history, and that this would positively impact every area of Alcoa's business. It would necessitate investments in people and equipment that would launch the company from laggard to leader in just a few years.



Adapted from Duhigg. (2012). *The Power of Habit*. Toronto: Double Day Canada

Alcoa overhauled internal communications procedures to ensure the CEO received notification within 24 hours of a safety incident, and presented a plan to prevent such an incident from occurring in future. This reorganization of entrenched habits of internal communications meant the ease and speed with which information could travel from the factory floor to the executive suite improved exponentially.

Continual employee safety training improved both overall productivity and workplace safety. Replacing dangerous machines to reduce workplace injuries resulted in a higher quality product with which to compete in the market. And less dangerous spillage of molten aluminum meant less wasted product, driving down costs.

Alcoa did not publically attach the safety drive to a profit-motive, but as the safety campaign gathered steam, Alcoa's costs came down, quality rose, innovation excelled and overall productivity reached new heights. For example, an international corporate email system, introduced well before its time for the purpose of sharing safety information, quickly became a way for employees to share every manner of business information in real-time, and gave Alcoa an enormous advantage over the competition for several years.

Alcoa recognized that safety procedure was a keystone habit—a habit that if changed would have repercussive effects on other habits, spilling over to transform the entire company.

The push for a higher standard of safety produced startlingly positive results for shareholders, employees, local and national economies, and the thousands of communities in which Alcoa operates. By the year 2000, Alcoa's annual net income was five times what it was when the zero workplace injury initiative began in 1987, and the growth in the company's market capitalization and stock price directly reflected that. The worker safety campaign was also a success—Alcoa's injury rate fell to one-twentieth the U.S. average (Duhigg, 2012).

### **HAMMER HEADS**

The Hammer Heads program, established by the Central Ontario Building Trades, runs three 12-week training programs of 15 participants each year. The participants are given extensive health and safety training, and an introduction to a selection of 28 different trades through hands-on training. Almost 100% of the participants are linked to apprenticeship upon graduation.

Concert Properties is a real estate enterprise that has worked closely with their contractors to place Hammer Heads graduates on their construction sites. The successful partnership has been so worthwhile that Concert Properties “will be making references in [their] future scopes of work that the trades will have to be involved in taking on a Hammer Heads graduate” (Central Ontario Building Trades, 2011).

Providing training through the Hammer Head program not only increases the skilled work force, but also improves the community. Because the program is limited to applicants in priority neighbourhoods or under-resourced communities, many of the participants were on social assistance. The program allows them to “pursue apprenticeship programs and become contributing members of society, thus decreasing the impact on Ontario Works, city-run shelters and homelessness, rather than drawing from them” (Central Ontario Building Trades, 2011).

The success of the program is dependent on its partners, who recognize the importance of investing in their human resources to remain

leaders in their industry. One such partner is Tridel, an award winning, Toronto-based condominium builder with a 70-year history in Canada. Tridel works with the Hammer Head program in an ongoing way and recognizes the value Hammer Heads graduates bring to the construction sites including professionalism, training, and focus on safety.

### **CALAPPRENTICESHIP.ORG**

The Registered Apprenticeship system of training, run by affiliates of the State Building and Construction Trades Council of California, combines both classroom instruction with on-the-job training. Apprentices learn occupational skills in the classroom and that experience and skilling is expanded to include hands-on, paid, on-the-job training.

“The Apprenticeship Programs train men and women to craftsman status. By participating in a program, local apprenticeship training committees shape applicants with character, aptitude, motivation and good personality traits into competent journeymen and journeywomen who have in-demand skill sets, comprehensive knowledge, positive attitudes and superior abilities.

The benefits of the Union Apprenticeship Programs include the opportunity to learn while you earn; state-of-the-art training; career advancement opportunities; excellent wages and benefits; safe working conditions; and pride and dignity” (About Apprenticeship, 2013).

In California alone, there are over 250 union-sponsored apprenticeship programs. These programs invest nearly \$9,000 a year per student on average while unions spend \$200 million a year for apprenticeship programs in California training over 20,000 individuals per year.

## **RECOMMENDATIONS**

- Policies for public procurement contain secondary provisions that explicitly promote apprenticeship by requiring that bidders on provincially-supported construction projects to either hold a trade certification or be registered as apprentices, and be registered with the Ontario College of Trades.
- Infrastructure Ontario mandate prime contractors and sub-contractors to implement Best Practices that will exceed the minimum requirements of the *Occupational Health and Safety Act* and its related regulations.
- Infrastructure Ontario give preference where possible to general contractors that directly support community programs such as Helmets to Hard Hats, Hammer Heads, etc., and sub-contract to trade contractors who also support such programs.

- Infrastructure Ontario should include in its annual report a review of how general and trade contractors that performed work for Infrastructure Ontario supported community and industry programs that promote inclusiveness.
- Include in bid submissions a detailed Safety Plan that addresses the following: identification of known risks; a description of how health and safety factors will figure into the selection of sub-contractors and the incentive rewards of managers; identification of the required training, certifications and licenses and a description of how these will be documented for both workers and managers; and a description of the ongoing inspection system for the project and the various roles and responsibilities that will pertain to health and safety.

## BUILD TO MAXIMIZE SOCIAL AND ECONOMIC BENEFIT

### QUESTION

*What social and economic net benefit is realized for every unit of construction and trades training mandated through public procurements?*

### RESEARCH

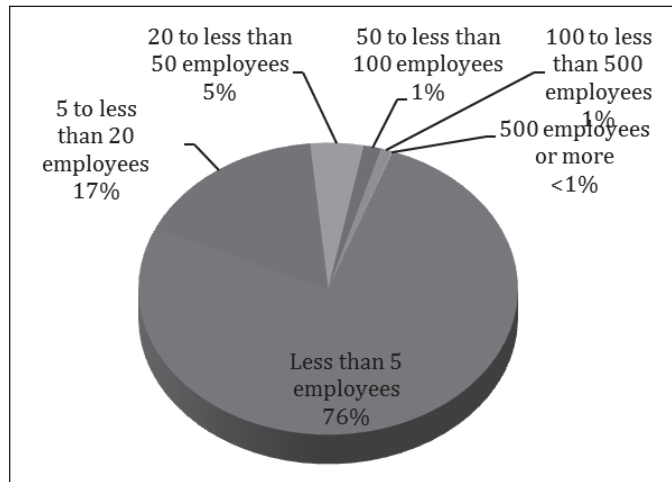
Traditionally, economic development policies have included measures such as subsidies, tax reductions, government guarantees, and low-interest financing which have only an indirect effect of stimulating demand. However these supply-side interventions are falling out of fashion as it is demonstrated that they simply do not deliver a net benefit.<sup>3</sup>

As with workforce inclusion policies, policies that limit participation to a particular group, sometimes called set-asides or carve outs, can be used to provide economic opportunities for small and medium enterprises (SMEs) in the communities in which they operate. This demand-side policy intended to induce the growth of SMEs by increasing the demand for their products and services. The more immediate effect of this type of policy can be creating jobs (and therefore people with incomes who themselves create demand with their purchasing power); triggering innovation; and generating a competitive and innovative supplier base for goods and services used by both the public and private sector (Bolton, 2006). Research indicates that public procurement, for example, has had more success triggering “innovation impulses” than R&D subsidies (Elder, 2007).

The importance of the SME sector to the Canadian economy has been growing steadily over the past 40 years. Whereas the SME sector accounted for roughly one quarter of the Gross Domestic Product (GDP) then, it now accounts for approximately 42 per cent of Canada’s private sector GDP (Industry Canada, 2012). Of the approximately 1 million businesses with employees in Canada, over three-quarters employ fewer than five people, and over 97 percent of businesses have less than 50 employees (Statistics Canada, 2012).

<sup>3</sup> Recently a Massachusetts Tax Expenditure Commission pegged overall foregone state revenue from tax breaks (including loans to companies, loan guarantees, grants, tax breaks and incentives) at an estimated \$26 billion in 2012, more than the total amount of tax revenue the commonwealth expects to collect during the fiscal year. Few of these incentives came with mechanisms for reviewing their effectiveness or recovering lost revenue if the beneficiaries fail to produce the hoped-for economic benefits (Chieppo, 2012).

## MAJORITY OF BUSINESSES IN CANADA ARE SMALL



TOTAL OF 1,048,900 PRIVATE SECTOR FIRMS WITH PAID EMPLOYEES

Source: Statistics Canada. (2009) Table 527-0002 - Employer businesses in the private sector, by employment dynamics and firm size, annual (number)

Another important characteristic of the SME sector is its role in job creation. A 2011 study of small businesses showed private sector firms with fewer than 100 employees created 618,000 net jobs in the Canadian construction industry, while firms with 100-499 employees created 122,991 net jobs. In the construction industry, small businesses account for 73 per cent of employment (Industry Canada, July 2012).

Maximizing local content is a demand-side policy intended to induce the growth of SMEs by increasing the demand for their products and services. Its more immediate effect can be creating jobs, triggering innovation, and creating a competitive supplier base for inputs into public infrastructure projects (Bolton, 2006).

## CASE STUDIES

### FER-PAL

One such example of procurement triggering innovation is Fer-Pal construction, a Toronto based company specializing in the repair and installation of water mains.

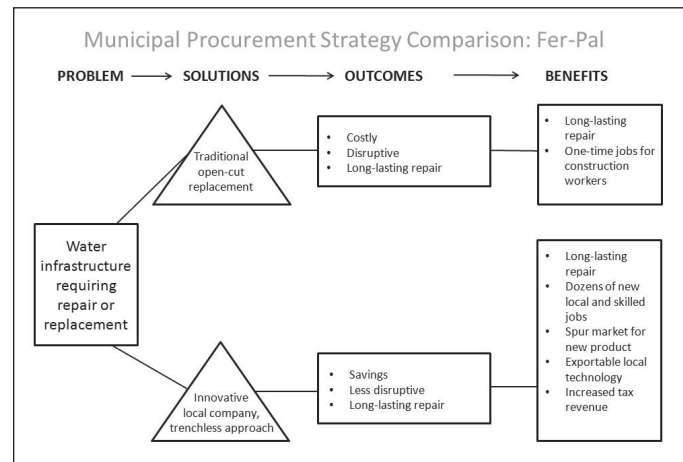
Underground water mains in municipalities around North America are deteriorating with age and are in need of repair. Traditionally, open-cut replacement of the pipes was the only solution, a costly and disruptive procedure.

In 2002, the City of Toronto chose an innovative, Toronto-based company to make structural repairs to underground water mains that otherwise

would have required the digging of a trench. The results demonstrate the benefits of inclusive public procurement.

Fer-Pal Construction Ltd. was established in Toronto in 1986 as a provider of trenchless water main rehabilitation services. In 2002 Fer-Pal began offering Cured-in-Place Products (CIPP), a new approach they developed to restore structurally compromised water mains without the need to dig them up. The City of Toronto was Fer-Pal's first contract for CIPP. The City took a risk on a local innovative firm, which runs counter to the traditional behavior of public officials, decision-makers and procurers alike (Elder, 2007).

"We're the largest installer of these products in Canada and the United States right now, and our CIPP installation business is growing," Vice President and Principal Shaun McKaigue says. "We've been installing CIPP for a while, so we have a leg up on our competitors, but we're investing in research and development to stay ahead."



In the summer of 2012, Fer-Pal joined the Toronto trade mission to Chicago, where there was considerable interest in the company's services. As a result of that trip, a representative of the State of Illinois visited Fer-Pal's North York headquarters in September to witness the installation of CIPP in an old and leaking water main. Fer-Pal is considering opening a third office in Illinois, and expects to add another 20 jobs to the Toronto office as a result. In the next five years Fer-Pal is expecting to hire 100 more workers.

*While it is clear that SMEs are an important factor in Canada's economy, "only 7% of Ontario's SMEs export. The average value of Ontario's SME exports would rank it 47th out of 50 states in the US" (Ontario Chamber of Commerce, 2012).*

By choosing a local, highly-skilled company for public procurement, and opening up the market for Fer-Pal's innovative product, the City of Toronto spurred economic benefits that have lasted a decade—good jobs, more tax revenue, municipal savings and an industry leading company with an exportable, sought-after technology headquartered in Toronto.

### **BRUCE POWER**

Bruce Power is Canada's first private nuclear generator and largest nuclear facility in North America in terms of output with a total output capacity of 6,224 MW. The 2,300-acre site on the shores of Lake Huron houses the Bruce A and B generating stations, which each hold four CANDU reactors. Over the last 11 years, Bruce Power has invested \$7 billion in the life extension and refurbishment of all eight units.

The employment and economic benefits to Ontario from refurbishing and operating the Bruce and Darlington reactors are substantial: almost 25,000 jobs and annual economic activity of over \$5 billion over the refurbishment period 2014 through 2024. The long-term operational benefits comprise 15,600 jobs and an annual economic benefit of \$2.5 billion (Canadian Manufacturers and Exporters, July 2010).

"The \$10 billion refurbishment at Bruce Power made it the biggest infrastructure project in Ontario in recent years, but that's one of the stories that is never told," Duncan Hawthorne, CEO of Bruce Power, said. Another \$36 billion in investment will follow in 2016.

*"On our site, we've done things with skilled trades that people thought were impossible," like using specially-designed robotics to remove highly radioactive materials. "These are techniques and technologies developed in Ontario for Ontario," but "these are the messages that don't get out." (Ontario Chamber of Commerce, 2012)*

### **RECOMMENDATION**

- Procurement policies should include provisions that promote hiring local firms, local contractors, local subcontractors, and local workers.

## **BUILD LASTING COMPETITIVE ADVANTAGE**

### **QUESTION**

*Can government invest infrastructure dollars in a way that promotes innovation and creates competitive advantage vis-à-vis other regions and other countries?*

### **RESEARCH**

In 1998, Michael Porter, a Harvard University scholar and a leading authority on the competitiveness of nations and regions, introduced a new way of looking at national competitive advantage. This paper borrows from Porter's *Determinants of National Competitive Advantage* and applies his four determinants concept to explain how procurement policies for major public infrastructure projects can be translated into enduring competitive advantage. Like Porter, we understand "competitiveness depends on ... having strong domestic rivals [competing on a level playing field], aggressive home-based suppliers, and demanding local customers" (Porter, 1998).

Specifically, an economy's competitive advantage is determined by four conditions:

1. **Factor Conditions:** These include skilled and trained labour, and infrastructure, such as a broad array of innovative small and medium enterprises that can supply specialized inputs. Porter argues that simply having a general workforce that is high school, or even college-educated, represents no competitive advantage in modern international competition. Rather, to support competitive advantage, a factor must be highly specialized to an industry's particular needs (e.g., boilermakers require over 6,000 hours of training in order to work on supercritical nuclear power plant boilers).
2. **Demand Conditions:** Competitive advantage is gained when buyers, in this case government procuring large infrastructure projects, are demanding and pressuring suppliers to meet high standards. These buyers prod bidders to improve, to innovate, and to upgrade their workforces. Government procurement can be used to create demand. For example governments were among the first movers to use procurement to stimulate domestic supply of "green" products and services. The private sector followed.

3. *Related and Supporting Industries*: This determinant lends itself to the discussion of maximum use of local content as a source of competitive advantage: “suppliers and end-users located near each other can take advantage of short lines of communication . . . and an ongoing exchange of ideas and innovations. Companies have the opportunity to influence their suppliers’ technical efforts and can serve as test sites for R&D work, accelerating the pace of innovation”.
4. *Firm Strategy, Structure, and Rivalry*: Domestic competition is a necessary ingredient for innovation and individual motivation to work and expand skills, which are also important to competitive advantage. Mandating local content in public-sector bids helps involve sectors of the population who have traditionally been marginalized from the skilled workforce and helps create innovative firms who are able to compete in the global marketplace.

Each of these four conditions contains critical elements discussed in this paper. Building to promote inclusion and building to enhance health, safety, and training create a specialized and highly-trained workforce and associated industry leaders, which speaks to Porter’s ‘factor conditions.’ Ontario and municipalities are able to create ‘demand conditions’ which spur innovation and cause firms and workers to upgrade their technology, their know-how, and their ability to do complex work in innovative and cost-effective ways. Conditions 3 and 4 described by Porter are also within reach; as Ontario moves forward with major investments, local competition can be fostered and enhanced.

## RECOMMENDATIONS

- Procurement officials should frame their policies based on a lens similar to Porter’s four conditions in order to create a unique and long-lasting economic advantage for the region.
- Promotion and awareness building of the economic benefits of inclusive procurement should be undertaken.

John Stuart Mill rightly observed that “no great improvements in the lot of mankind are possible, until a great change takes place in the fundamental constitution of their modes of thought” (Mill, 1963). Today, policy makers face a clear choice: they can pursue narrow zero sum procurement practices focused strictly on cost considerations and short-term payoffs or they can build with purpose. That is, they use public sector construction procurement as a non-zero-sum tool to skill a new generation of workers, to make workplaces safer, and to drive social and economic inclusion at a time of growing economic inequality.

## POLICY RECOMMENDATIONS

Ontario and its municipalities should build with purpose and during public infrastructure procurement processes, should:

- Require contractors to provide skills training and meaningful employment opportunities to youth, local communities, unemployed/underemployed, and traditionally underrepresented populations of Ontario residents with specific participation and hiring targets during construction.
- Explicitly promote apprenticeship by requiring that bidders on provincially-supported construction projects either hold a trade certification or be registered as apprentices, and be registered with the Ontario College of Trades.
- Infrastructure Ontario mandate prime contractors and sub-contractors to implement Best Practices that will often exceed the minimum requirements of the *Occupational Health and Safety Act* and its related regulations.
- Support community programs such as Helmets to Hard Hats, Hammer Heads, etc., which sub-contract to trade contractors who also support such programs, or insist they be used.
- Infrastructure Ontario should include in its annual report a review of how general and trade contractors that performed work for Infrastructure Ontario supported community and industry programs that promote inclusiveness.
- Include in bid submissions, a detailed Safety Plan that addresses the following: identification of known risks; a description of how health and safety factors will figure into the selection of sub-contractors and the incentive rewards of managers; identification of the required training, certifications and licenses and a description of how these will be documented for both workers and managers; and a description of the ongoing inspection system for the project and the various roles and responsibilities that will pertain to health and safety.
- Procurement policies should include provisions that promote hiring local firms, local contracts, and local subcontractors.
- Procurement should not be approached as a zero-sum economic game in which one party’s gain is another’s loss; gaining lasting value from procurement means moving beyond price to capturing social and economic benefits as well as improving project quality.
- Procurement officials should frame their policies based on a lens similar to Porter’s four conditions in order to create a unique and long-lasting economic advantage for the region.

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