

Advancing Structural Reforms to the Skilled Trades and Apprenticeships in Ontario

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SUMMARY OF RECOMMENDATIONS

- Move forward with the new “skill sets” model for credentialing and competency building.
- Examine options for greater educational permeability between skilled trades competencies and university and college programs.
- Reconceptualize and broaden the Ontario Youth Apprenticeship Program to involve more students across the province. The program should specifically target those students who do not show an interest in pursuing university or college studies.
- Advance the “moral case” for the skilled trades using the tools of “statecraft” including speeches, awards, and other policy instruments.
- Liberalize the current rules to permit new forms of associations among workers, employers, and unions to pool resources for training and skills development.
- Pursue participation in the New West Partnership Agreement with Alberta, British Columbia, and Saskatchewan.
- Simplify the current tax incentives (including the Apprenticeship Training Tax Credit) for apprentices and their employers.

INTRODUCTION

The current Ontario government has placed a significant focus on advancing the skilled trades as part of its overall economic agenda. This prioritization can be seen in legislative and policy reforms, organizational changes, and a recent public information campaign online and on television.

Greater governmental attention on the skilled trades is justified on various grounds. There is a considerable body of data and evidence, for instance, that Ontario will soon face significant labour shortages in the skilled trades due to demographic pressure.¹ There is also evidence that these types

¹ Dijkema, “Skilled trades – transition briefing,” Ontario 360, April 8, 2018. <https://wp-a52btu2v90.pairsite.com/30-30/skilled-trades-transition-briefing/>.

of jobs will be an important source of opportunity and stability for those Ontarians whose aptitudes, credentials, and skills put them at disproportionate risk from a mix of automation and globalization.² And, of course, given the Ontario government's ambitious public infrastructure commitments as well as ongoing demands for residential and commercial development, the province will require a steady labour supply in the skilled trades now and in the future.

In light of these pressures, the *Ontario 360* project released a "transition briefing" on the skilled trades in the context of the 2018 provincial election campaign.³ While these issues did not generate much attention in the campaign itself, the government has since adopted some of the policy recommendations contained in the briefing memo, including (but not limited to), winding down the Ontario College of Trades.

Many of these early reforms represent positive steps to improve the current apprenticeship model and better support those Ontarians who choose to enter the skilled trades. But there remains more work to be done. The recent transfer of the skilled trades file from the Ministry of Training, Colleges and Universities to the newly-constituted Ministry of Labour, Training and Skills Development should be viewed inside and outside of the government as a potential catalyst for more ambitious reforms to improve the model for apprenticeship training and ultimately bring more Ontarians into the skilled trades.

This new *Ontario 360* policy brief evaluates the government's progress to date on this file, identifies some risks and pitfalls that it will need to mitigate, and lays out some incremental reforms that ought to be considered as part of its agenda.

The first part of the policy brief sets out the case for policy reform in this area. The second analyses the government's progress on past *Ontario 360* policy recommendations. The final section sets out implementation considerations for the government in the short-term and proposes incremental policy recommendations as part of a long-term agenda for advancing structural reform to the skilled trades and apprenticeships in Ontario.

PUBLIC POLICY CONTEXT: THE CASE FOR REFORM

Ontario represents 40 percent of Canada's overall population, but it lags the rest of the country in apprenticeship registration. There were roughly 96,000 apprentices registered in the province in 2018. This amounts to less than 25 percent of the total number across the country.⁴ It is not just that there are fewer apprentices here in the province either. It is that their completion rate is also low relative to the other provinces and territories. The provincial Auditor General, for instance,

² Sean Speer, *Forgotten People and Forgotten Places: Canada's Economic Performance in the Age of Populism*, Macdonald-Laurier Institute, August 2019. https://macdonaldlaurier.ca/files/pdf/MLI_Speer_ScopingSeries1_FWeb.pdf.

³ Dijkema, "Skilled trades – transition briefing," *Ontario 360*, April 8, 2018. <https://wp-a52btu2v90.pairsite.com/30-30/skilled-trades-transition-briefing/>.

⁴ Statistics Canada, Table: 37-10-0023-01, Number of apprenticeship program registrations. <https://www150.statcan.gc.ca/t1/tb11/en/tv.action?pid=3710002301&pickMembers%5B0%5D=1.7&pickMembers%5B1%5D=3.1&pickMembers%5B2%5D=5.1>.

has observed that Ontario's completion rate has hovered below 50 percent for several years.⁵ This combination of low take-up and low completion rates will have significant implications for Ontario's labour market as well as the ability of young Ontarians not destined for university or college to develop their human capital.

There is a broad-based consensus that Ontario will soon face significant labour shortages in the skilled trades. The magnitude may be the subject of some debate, but the basic premise is broadly held. And the situation has not changed since the release of *Ontario 360's* briefing memo in 2018. If anything, the workforce has just gotten nearly two years older.

The case for a reform agenda to counteract these demographic changes is rooted in two interrelated factors. It is worth unpacking both here.

First, a failure to successfully address the skills training and apprenticeship issues described in this paper represents as a serious brake on the potential for earnings and personal satisfaction that accompanies meaningful, skilled, and well-paying work. As we note later in this policy brief, apprenticeship and journeyman status typically provide high wage, stable employment for segments of the population that can otherwise be "left behind" in a labour market that increasingly values post-secondary qualifications. Apprenticeships and skilled trades can therefore serve as a pathway to better jobs and more opportunity for Ontarians.

Second, the shortages in skilled trades will have a negative effect on the ability of Ontario's businesses to invest and grow and ultimately for its economy to expand. A recent report from Business Development Bank of Canada, for instance, found "a direct link between a shortage of workers and slower growth in company sales. Specifically, our statistical analysis shows that firms that are more affected by labour shortages are 65% more likely to be low-growth companies."⁶

This brake on firm-level growth extends to the province as a whole. The owner of Canada's largest construction projects, Ontario Power Generation notes that "the number one risk affecting Ontario Power Generation (OPG) projects right now is lack of skilled trades."⁷ Similarly, Phil Verster, head of Metrolinx, notes that the transit infrastructure projects on the books for the GTHA are "not adequate" for Ontario's needs, yet they "are about as much as the market can sustain."⁸ The inability to provide adequate skilled labour is one of the major contributors to this sustainability problem. It is not a stretch to say that if Ontario fails to address the need to train and develop skilled workers, it will harm economic activity in the province.

⁵ Auditor General of Ontario, *Employment Ontario: Chapter 3, Section 3.04*, 2016. http://www.auditor.on.ca/en/content/annualreports/arreports/en16/v1_304en16.pdf.

⁶ Author unknown, *Labour Shortage: Here to Stay – Worker Scarcity in Canada and What Businesses can do to Respond*, Business Development Bank of Canada, 2018. https://publications.gc.ca/collections/collection_2018/bdc/Iu134-5-2018-eng.pdf.

⁷ Angela Gismondi, "P3 conference panels explore 'dire' skilled labour shortage," *Daily Commercial News*, December 2, 2019. <https://canada.constructconnect.com/dcn/news/labour/2019/12/p3-conference-panels-explore-dire-skilled-labour-shortage>.

⁸ TVO *The Agenda*, "Infrastructure challenges in Ontario," accessed on February 5, 2020. <https://www.tvo.org/video/infrastructure-challenges-in-ontario>.

The labour supply challenge is driven by aging demographics and low take-up and completion of trades certification. As noted by construction labour market organization, Buildforce, “the share of the population that is 65 years and older is expected to increase over the coming decade, with 21 percent of the province’s residents being older than 64 by 2029. At the same time, the share of youth aged 15 to 24 is expected to decline to 10% by the end of the decade.”⁹

These demographic trends will affect most areas of employment, but the skilled trades, where the ability to work is currently predominantly governed by an apprenticeship system that takes multiple years to complete, will be hit particularly hard. Construction alone will require tens of thousands more workers over the next ten years than are projected to enter the workforce.¹⁰

For instance, analysis by Skills Canada, a non-profit organization focused on the skilled trades, estimates that while as many as 40 percent of new jobs created in Canada over the next decade will be in the skilled trades, only barely one quarter of Canadians aged 13 to 24 are considering a career in this area.¹¹

Add this fundamental demographic gap to existing regional shortages, and shortages within particular trades (e.g., boilmakers or bricklayers) and the hill for Ontario to climb remains steep. As major projects such as the refurbishment of the Bruce and Darlington power generating stations – the two largest construction projects in Canada – come on line, the labour market for skilled trades, already tightened by a booming and infrastructure hungry GTA, and growing Southern Ontario, will serve as a massive millstone weighing down Ontario’s growth trajectory.

These dynamics are exacerbated by the poor performance of Ontario’s apprenticeship model. As the 2016 Annual Report of the Auditor General observed, less than half of the people who begin an apprenticeship program in Ontario ultimately complete it.¹² And Ontario remains one of the poorer performers on apprenticeship completion in comparison with other provinces¹³, and with the exception of the territories most provinces have “completion probabilities significantly higher than Ontario.”¹⁴ Research tells us that there are various factors that contribute to low completion rates, including:

⁹ Author unknown, “Assessment of Ontario construction labour markets from 2020 to 2029,” Buildforce, 2020. <https://www.buildforce.ca/en/node/11852>.

¹⁰ Ibid.

¹¹ Dawson Strategic, Modernizing Ontario’s Skilled Trades Apprenticeship and Training System: Building New Opportunities through Governance and Regulatory Reform, 2015. <https://www.ohba.ca/wp-content/uploads/pdfs/policy-reports/DawsonStrategicOHBARreport-06-05-15-WebReady.pdf>.

¹² Office of the Ontario Auditor General, 2016 Annual Report, Chapter 3: Ministry of Advanced Education and Skills Development, Section 3.04: Employment Ontario. http://www.auditor.on.ca/en/content/annualreports/arreports/en16/v1_304en16.pdf.

¹³ Erica Refling and Nicholas Dion, “Apprenticeship in Ontario: An Exploratory Analysis,” Higher Education Quality Council of Ontario, January 13, 2015. http://www.heqco.ca/SiteCollectionDocuments/Apprenticeship_in_Ontario_EN.pdf.

¹⁴ Christine Laporte and Richard E. Mueller, “The Completion Behaviour of Registered Apprentices: Who Continues, Who Quits, and Who Completes Programs?,” Statistics Canada, March 2011. <https://www150.statcan.gc.ca/n1/pub/11f0019m/2011333/part-partie1-eng.htm>.

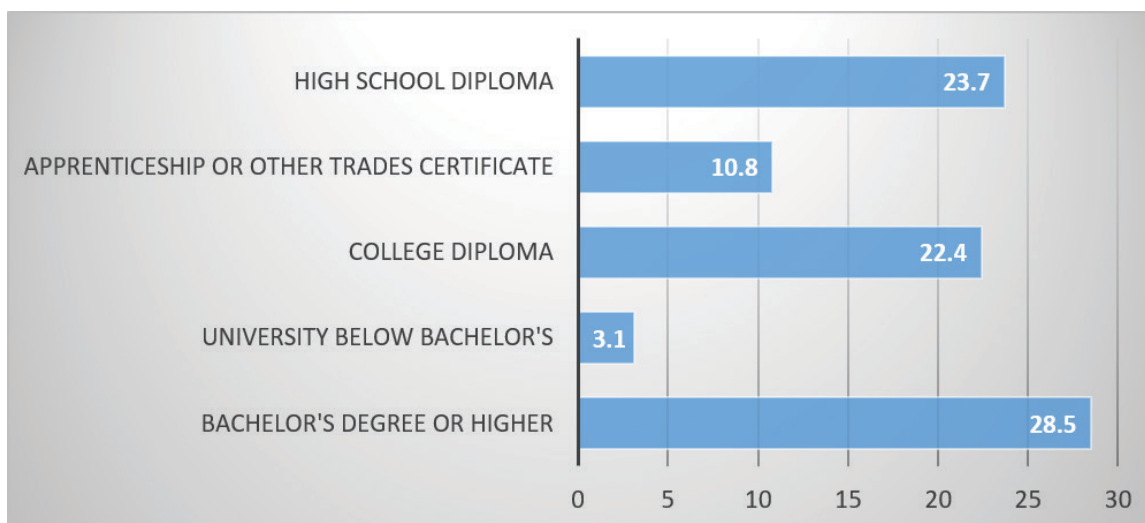
- Low wages
- Long durations (approximately two to five years)
- Personal and family obligations
- Other employment opportunities
- Reconsideration of one's fit in the skilled trades

In effect, then, the labour squeeze facing the skilled trades is a result of three factors: (1) aging demographics in the skilled trades, (2) low take-up of apprenticeship programs, and (3) low completion rates for those who enter apprenticeship programs.

It is not just the question of labour shortages though that justifies a policy emphasis on cultivating interest in apprenticeships and the skilled trades. It is often forgotten in our political debates and among those in public policy circles that a considerable share of the provincial population does not have post-secondary qualifications including university or college degrees or an apprenticeship certification. This cohort faces serious labour market challenges in the modern economy and, in our view, requires the attention of Ontario policymakers.

According to the 2016 Census, 31.9 percent of Ontarians (aged 25 to 64) had a bachelor's degree or higher, another 24.7 percent had a college degree, and 6.2 percent had an apprenticeship certificate.¹⁵ This is among highest overall rates of post-secondary qualifications in Canada and yet roughly 40 percent of Ontarians (aged 25 to 64) still only have a high school diploma or less. It is also interesting that Ontario's apprenticeship certification rate is only about two-thirds the national average (Figure 1).

Figure 1: Educational Attainment for Population aged 25 to 64, Canada, 2016



Source: Statistics Canada, 2017.

¹⁵ Statistics Canada, Education in Canada: Key Results from the 2016 Census, November 29, 2017. <https://www150.statcan.gc.ca/n1/daily-quotidien/171129/dq171129a-eng.htm>.

These data are relevant because earnings for someone with an apprenticeship certificate are considerably higher than those with only a high school diploma and even those with a college degree. Just consider, for instance, that, in 2015, the median annual earnings for Canadian men with apprenticeship certificate were 7 percent more than men with a college degree, 31 percent more than men with a high school diploma, and only 11 percent less than men with a bachelor's degree.¹⁶

The key point here is that, if public policy could help nudge Ontarians with only high school diplomas into completing an apprenticeship program, we could significantly increase their human capital and in turn boost their earning potential. This is particularly true for underrepresented groups such as Indigenous peoples, immigrants, and women. Seen through this lens, this is not just a utilitarian emphasis on labour market equilibrium; it is about helping Ontario's most vulnerable workers participate more fully in the modern economy.

Successive governments have enacted various policy and institutional reforms to respond to the challenges of a declining labour supply and to target those with only high school diplomas. These multi-partisan changes have improved the system on the margin but there is certainly scope for more ambition.

The good news is the current government has, to date, exhibited a high degree of ambition in this policy area. The most significant reform is probably Bill 47 (*Making Ontario Open for Business Act*) which, among other things, dissolved the College of Trades and increased the ratio of apprentices to journeypersons.¹⁷

More recently, the skilled trades file has been moved from the Ministry of Training, Colleges and Universities to the newly-constituted Ministry of Labour, Training and Skills Development. This organizational change makes sense. It elevates the skilled trades from underneath the weight of broader post-secondary files and situates it in an overall labour market strategy that ranges from labour regulations to occupational health and safety to training and workforce development. The key now is to maintain a high level of policy and organizational ambition, root it in evidence-based analysis, and translate it into further structural reforms to the skilled trades and apprenticeships in Ontario.

PROGRESS ON PREVIOUS ONTARIO 360 POLICY RECOMMENDATIONS

This effort can be aided by *Ontario 360's* previous briefing memo on the topic. The memo observed that Ontario's skilled-trades policy was rooted in a policy structure that originated in the 1960s and 1970s and requires modernization to reflect new opportunities and challenges. It put forward some guiding principles to inform a reform agenda focused on Ontario's apprenticeship and skilled-trades governance:

¹⁶ Statistics Canada, Education in Canada: Key Results from the 2016 Census, November 29, 2017. <https://www150.statcan.gc.ca/n1/daily-quotidien/171129/dq171129a-eng.htm>.

¹⁷ Making Ontario Open for Business Act (Bill 47), 2018. <https://www.ontario.ca/laws/statute/s18014>.

- *Equitable*: It should be “market agnostic” and not privilege any particular trade, industry, group, or association within the skilled trades.
- *Enabling*: It should look to maximize the leveraging of existing expertise and associations within the skilled-trades labour market. Industry associations and labour groups often have a better understanding of the needs of their members than the government, and are better equipped to serve them, and underrepresented populations, directly.
- *End focused*: It should focus on outcomes rather than maintenance of current inputs.
- *Encourage ease of entrance*: Trades in Ontario have seen increasing regulatory and administrative burden by both workers and employers. The government should focus on removing these barriers as quickly as possible.
- *Extending education*: the policy should focus not only on apprenticeships but also on the continual development of skills education throughout careers.

These principles stem from an examination of the policy literature as well as best practices from other jurisdictions in Canada as well as intensive engagement with industry associations, labour unions, educational institutions, and research done by groups such as the Canadian Apprenticeship Forum.¹⁸

Rooted in these guiding principles, the briefing memo then set out several policy recommendations. It is worth briefly analysing these recommendations and the extent to which they have been adopted in full or in part. This evaluation of progress can then help to inform where the government should focus next as part of an ongoing agenda.

Focus on competencies and graduated credentials

The briefing memo recommended that the government shift away from a “Pokémon approach” whereby a worker must master all of a sometimes-overly-wide suite of skills before “completing” his or her apprenticeship and attaining journeyperson status. The idea that someone must complete a full suite of competencies before considered competent to do any on their own is a needless barrier to opportunity and experience. Instead the briefing memo recommended that the government adopt a system that allows workers to build a more flexible set of competencies that are transferrable and cumulative.

The government’s Modernizing the Skilled Trades and Apprenticeship Act (which was passed in May 2019) responded directly and positively to this recommendation.¹⁹ The new law introduces the idea of “skill sets,” which provides the basis necessary for a skilled-trades environment based on competencies. This approach opens the door to resolving the fiction that workers who did not “complete” their journeyperson status are somehow “failures.”

The government’s response here is in line with recommendations from various studies and reports (including a 2015 study by Don Drummond) over the years.²⁰ Its promise to work with industry

¹⁸ See, for instance, Pennings and Dijkema, “Building Meaning,” Cardus, 2014, for a synopsis of this survey, as well as the Canadian Apprenticeship Forum’s body of research available at <https://caf-fca.org/research-reports/>.

¹⁹ Modernizing the Skilled Trades and Apprenticeship Act, 2019. <https://www.ontario.ca/laws/statute/19m07>.

to build a “portable skills set framework”²¹ is an important step that could be among the most consequential structural developments in apprenticeship and skilled trades since the 1960s.

In line with this, and in keeping with our recommended principle of focusing on outcomes rather than the maintenance of inputs, the government has also moved to reorient “restricted trades” (trades that may not be practiced at all unless one holds a mandatory certificate of qualification) toward “restricted activities.”²² This also represents a significant improvement to the status quo. It recognizes that some competencies in the skilled trades that are currently blocked from all but those holding such certificates can be done by others. By clearly identifying and focusing on particularly dangerous activities, and restricting those, it opens the door for workers to participate in all of the otherwise safe aspects of a given trade, while allowing inspectors and on-site supervisors to focus on limiting danger in particular areas.

The next section of this policy brief will set out potential risks associated with fully implementing these policy changes and provide recommendations on how to mitigate these risks.

Increase educational permeability

Our briefing memo recommended that the government find ways to match and standardize competencies gained in skilled trades against similar competencies in existing college or university programs so as to enable tradespeople to move into colleges or universities to further their education, and thereby remove or lessen one of the key criticisms of an education system in which children are “streamed” into the trades.

The government has yet to respond to this recommendation. But it has shown some willingness to experiment with different post-secondary arrangements and models. There is scope therefore to continue to pursue greater integration and recognition of apprenticeship-based skills and competencies in university and college programs.

Move to integrate trades/manual thinking into early K–12 curriculum

Ontario 360's briefing memo recommended that government adapt curriculum to ensure an integration between the built and material world and theoretical teaching at an early age rather than waiting for high-school technical classes.

Thus far the government has generally expanded its financial commitment to existing programs, including the High Skills Major program, dual-credit programs, Ontario Youth Apprenticeship

²⁰ Don Drummond and Ellen Kachuck Rosenbluth, “Competencies can bridge the interests of business and universities,” Education Policy Research Initiative (University of Ottawa), September 2015. <https://ruor.uottawa.ca/bitstream/10393/33200/4/EPRI%20Working%20Paper%202015-02.pdf>.

²¹ Government of Ontario, “Building a skilled workforce with portable skill sets,” May 31, 2019. <https://news.ontario.ca/maesd/en/2019/5/building-a-skilled-workforce-with-portable-skill-sets.html>.

²² Government of Ontario, “Ontario building a skilled workforce: Supports for apprenticeships and a new governance model,” May 31, 2019. <https://news.ontario.ca/maesd/en/2019/05/ontario-building-a-skilled-workforce-supports-for-apprentices-and-new-governance-model.html>.

Program, and others. But, as we outline in the next section, there is room for much greater ambition here. The Ontario Youth Apprenticeship Program, for instance, should be reconceptualized along the German model to give students greater opportunity to experiment with apprenticeship-based training and accumulate hours towards an apprenticeship upon completion of high school.

Moral case for the trades

We recommended that the government speak explicitly in moral terms about the worthiness of Ontarians pursuing the skilled trades. Research and evidence tell us that it is more than just about a paycheque.²³ Attracting young workers to the trades and supporting them through the steps required to master given competencies requires more than the promise of a paycheque, and explicitly making this case would benefit by increasing attraction to the trades. This is particularly important in light of the social pressures that orient young people away from the skilled trades.

This must be an ongoing priority. But, so far, the government has invested heavily in a media campaign that makes such a case compellingly. Its contours—which speak of trades as “more than a living”—are a good first step. They now need to be backed up with structural changes at the school level.

Leverage and expand existing training capacity

We recommended that the government expand the ability of joint labour pools to hold apprenticeships, and to partner with a plurality of front-line industry organizations to grow Ontario’s training capacity and labour supply.

The government has responded directly and positively to this recommendation. Its commitment to provide financial support “to encourage employers to come together to train apprentices by engaging greater apprenticeship partnership opportunities through group sponsorship” is not simply a financial commitment, but a structural reform that, combined with its moves toward a competencies-based system, has the potential to be a revolutionary structural change to Ontario’s trades system and one that also opens up possibilities to further strengthen Ontario’s labour environment, and potential to revitalize and refocus a labour movement whose function has, in recent years, been encroached on by government.²⁴

But, as the next section describes, it will require careful attention to how these changes are implemented to ensure that the potential gains can be fully realized.

²³ Dijkema, “Thinking about work as more than a paycheque,” Policy Options (Institute for Research on Public Policy), January 24, 2020. <https://policyoptions.irpp.org/magazines/january-2020/thinking-about-work-as-more-than-a-pay-cheque/>.

²⁴ Government of Ontario, “Ontario building a skilled workforce: Supports for apprenticeships and a new governance model,” May 31, 2019. <https://news.ontario.ca/maesd/en/2019/05/ontario-building-a-skilled-workforce-supports-for-apprentices-and-new-governance-model.html>.

Streamline registrations

We recommended that the government analyze the current process of registration with a view to removing redundant administrative work that employers and workers need to manage in order to gain access to apprenticeships, as well as removing unnecessary requirements linked to registrations that have not been shown to achieve any legitimate policy goal. The amount of steps at which a worker and employer – usually on their own – has to engage with and fill out administrative forms (at least five times in the course of an apprenticeship²⁵) is far more complicated than the single step of applying to a university or college.

The government has committed to two significant steps to streamline registrations. The first, a winding down of the Ontario College of Trades, removes an extra and unnecessary administrative step for workers and employers that served little purpose. The second, the movement of the requirement to have a ratio of three journeypersons for every new apprentice hired, to a ratio of 1:1, removed another unnecessary bottleneck to apprenticeship.²⁶

The dissolution of the College of Trades has been replaced with a commitment to designate a registrar that will be mandated to maintain a public register of certified tradespeople. This model should be able to accomplish most of the college's worthwhile public goals with considerably less overhead.

As for the ratio changes, no major studies have yet sought to understand their impact on new registrants. The government has boasted that total apprenticeship registrations are 11 per cent higher than at the same time last year.²⁷ It is, of course, difficult to isolate the effect of this particular policy change. But it is also intuitive that it should over time have a positive effect on the supply and demand of apprentices in Ontario.

There are also a number of other steps that the government could take to remove the burden on individual workers to navigate the administrative complexities of Ontario's apprenticeship system. A movement to integrate support for apprenticeship applications with existing support for college applications such as the Ontario College Application Service²⁸ would be a welcome start that would centralize and standardize applications, and would have the meaningful side benefit of signaling the trades as a worthy part of Ontario's tertiary education system.

²⁵ https://www.collegeoftrades.ca/wp-content/uploads/TRACTOR-TRAILER-COM-DRIV-638A.SOT_V300.-May172017.pdf.

²⁶ Government of Ontario, "skilled trades and apprenticeship system changes," date unknown. <https://www.ontario.ca/page/skilled-trades-and-apprenticeship-system-changes>.

²⁷ Government of Ontario, "Ontario building a skilled workforce: Supports for apprenticeships and a new governance model," May 31, 2019. <https://news.ontario.ca/maesd/en/2019/05/ontario-building-a-skilled-workforce-supports-for-apprentices-and-new-governance-model.html>.

²⁸ <https://www.ocas.ca/who-we-are/about-us>.

Reform tax-based policies to support apprenticeships

Our final recommendation was that the government explore a consolidation and simplification of tax benefits offered to employers for hiring and training apprentices. We also recommended that the Ministry of Finance carry out analysis aimed to ensure that the tax treatment of business investment in training is equal, or proportionate to, the value of tax credits and allowances offered to investments in capital.

The government has responded to this recommendation via the Apprenticeship Training Tax Credit that accompanies other credits offered by the province and federal government for registration and completion of apprenticeships.²⁹ It has not, to our knowledge, pursued consolidation or simplification of the current panoply of tax credits related to apprenticeships or carried out analysis on the relative tax treatment of training versus capital investment.

FURTHER POLICY RECOMMENDATIONS FOR THE GOVERNMENT

The previous section analysed the government's progress relative to the policy recommendations set out in our 2018 briefing memo. The record thus far is generally positive. But, as mentioned elsewhere, there remains further room for improvement.

The first key is to carefully manage the ongoing implementation of current policy reforms. The second is to build on them with further structural reforms to the skilled trades and apprenticeship model in Ontario in order to address projected labour shortages and help more people participate in the skilled trades.

This final section considers potential implementation issues with respect to ongoing policy reforms and puts forward some incremental recommendations that can form part of a long-term agenda for advancing structural reforms to the skilled trades and apprenticeships in Ontario.

Focus on competencies and graduated credentials

The government will face political economy challenges in its shift towards competency-based training and credentialing and its move to restrict dangerous activities rather than trades as a whole.

The main challenge is keeping their resolve in the face of those who prefer the status quo and that make use of the current system to protect what some have referred to as “insider status.”³⁰ There will be temptation to minimize the actual change that takes place on the job site as a result of the “skill sets” model in order to placate certain segments in industry whose structures are built on the current definitions and structure.

The government should keep in mind that the definitions of trades work are not platonic forms made in heaven, but working definitions built within the trades communities. They can and should be responsive to changing technologies, workplace organization, and other factors. It is important

²⁹ Government of Ontario, Apprenticeship Training Tax Credit, date unknown. <https://www.fn.gov.on.ca/en/credit/attc/>.

to note that the current definitions of given trades – whether a baker, or a boilermaker – are already based on competencies. A trades person who has been trained in and can prove their competency in a select group of competencies is entitled to a certificate of qualification. The government's proposal does not do away with this so much as reorient it toward groups of competencies that are needed in the marketplace, and which can be attained by workers with less friction than the current group of competencies, and which provides workers with attainable, portable, public recognition of training and skills that are valuable in the labour market.

The unions and companies (many of whose structures are shaped around how trades were defined in the aftermath of the Goldenberg report of the 1960s) which benefit from the high bar required to attain those credentials are those who are most likely to resist this change. The companies fear competition from firms who no longer face as high a bar of attaining a critical mass of skilled labour, and the unions fear the hollowing out of work by employers moving towards Taylorism on the job site, and the bargaining power that accompanies high bars to entry.

Yet, in spite of this anticipated resistance, there is a strong case to be made that the move towards credentialing for different groups of competencies than the current system can benefit workers and companies alike.

Ontario has experienced challenges with moving apprentices through to completion for years. As the 2016 report from the provincial Auditor General observed: “The average completion rate for apprentices in Ontario (from 2011/12 to 2015/16) was about 47 percent.”³¹ And given that the same report notes that the “number of apprentices at risk of non-completion remains high even after implementation of a monitoring strategy,”³² there appears to be no reason why today's numbers are any different. There are a host of reasons why this is the case but regardless of why, it remains true that the 53 percent of apprentices who failed to complete their training have *no* publicly supported, or transferable means of recognition for the training and skills that they *did* earn.

A fourth-year apprentice electrician or baker who fails to attain journeyman status has nothing to show for it. Despite being highly trained and highly competent at the vast majority of competencies required for work in the electrical industry, or the bakery, they have no means of communicating those to future employers, and thus lose the potential bargaining power that comes with public recognition of those competencies.

The government should not water down these proposed changes, rather it should focus on building these smaller credentials into a larger set. There is, in fact, plenty of precedent in some trades on this front which could serve as a basis for many of the trades. The presence of multiple, progressive credentials for gas technicians³³, for instance, can serve as a model on which to introduce a stackable set of credentials for all the 157 trades in Ontario.

³⁰ Robbie Brydon and Ben Dachis, “Access Denied: The Effect of Apprenticeship Restrictions in Skilled Trades,” C.D. Howe Institute (commentary #380), August 2013. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2303826.

³¹ Auditor General of Ontario, Employment Ontario: Chapter 3, Section 3.04, 2016. http://www.auditor.on.ca/en/content/annualreports/arreports/en16/v1_304en16.pdf.

³² Ibid.

³³ Ontario Colleges, “Gas/oil burner,” accessed on February 5, 2020. <https://www.ontariocolleges.ca/en/programs/professions-and-trades/gas-oil-burner>.

Increase educational permeability

The movement toward recognition of competencies provides a basis for the government to explore the potential for greater educational permeability in the future.

As the government works to flesh out definitions of its “skill sets” it should involve stakeholders from the college and university sector to align these skill sets in such a way as to raise the likelihood of recognition of skills gained on the job by competency-focused programs in colleges, polytechnics, and universities.

In particular, the government should look to significantly expand Prior Learning Assessment and Recognition available to mature students and allow Colleges Ontario to vet the training programs of employers so that employees enrolled in these training programs receive college credits for learning received on the job. As an example: the first of its kind in Ontario, the agreement between McDonald’s and Colleges Ontario, recognized segments of McDonald’s training courses as the equivalent of certain college credits.³⁴ Ontario should look to expand these programs in ways similar to British Columbia’s Advanced Placement and Prior Learning programs which already recognize prior learning that takes place in the military, as first responders, or as holders of industry training certificates.³⁵

The government’s commitment to allow employers to jointly hold apprenticeships provides the colleges with ready partners to facilitate the vetting of training required to make the boundary between a job and a college credit much more permeable, and allow workers to gain credit and bargaining power from knowledge gained in the workplace.

Move to integrate trades/manual thinking into early K–12 curriculum

The government’s expansion of pre-existing programs such as the High Skills Major program or the Ontario Youth Apprenticeship Program are positive steps. But there is definitely room for greater ambition here.

The Ontario Youth Apprenticeship Program, in particular, seems like a basis to shift in the direction of the German model which enables high school students to earn credits while at the same time accumulating hours and broader experience towards an apprenticeship certificate. Currently the Ontario Youth Apprenticeship Program enables eligible Grade 11 and 12 students to experiment with the skilled trades through cooperative education.

It is a great concept, but it is a disaggregated initiative delivered through the school boards which makes it challenging to evaluate its effectiveness. It is virtually impossible, for instance, to discern its overall costs or impact.

³⁴ Ontario Colleges and McDonald’s Restaurants of Canada student transfer agreement. <https://www.algonquincollege.com/business-hospitality/school-of-business/ontario-colleges-mcdonalds-canada/>.

³⁵ British Columbia Institute for Technology, Advanced placement & prior learning programs. <https://www.bcit.ca/experience-based-placement/advanced-placement-prior-learning/>.

The government should therefore reconceptualize the program including its marketing and promotion, its funding levels, and its design. The goal should be to encourage as many students as possible to experiment with the skilled trades in high school. It should specifically target those students who do not show an interest in pursuing university or college studies. Helping more of this group – particularly among underrepresented groups – pursue an apprenticeship could be transformative for these students.

The point here is that the government should approach the Ontario Youth Apprenticeship Program with an enormous level of ambition that touches on every aspect – from program design and delivery to funding level to its place in the curriculum. Currently OYAP is an ancillary program that functions on the side of high school education. The province should look to build trades training into the core of the education system and allow parents of students with technical aptitudes to choose a pathway where trades training is central to their education from the start.

This need not look exactly like the Dutch and German models of trades education which many see as being unequal and reinforcing of economic inequality, though it should look to foster the culture of esteem for trades present in those countries.³⁶ If Ontario were to reorient its curriculum to note the importance and value of trades education not just for economic outcomes, but for the development of the child as a person from kindergarten onwards, and if the government were to structure different educational pathways based on perceived academic ability rather than educational aptitude it would be closer to achieving the parity of esteem that is so lacking in our current educational structures. In doing so, it can come to embody the best of the German model and reorient how young Ontarians are introduced to apprenticeships and the skilled trades.

This type of transformation, of course, will not happen overnight. But the government should start with a major expansion of the OYAP and build from there.

Moral case for the trades

Building the moral case for the skilled trades is an ongoing exercise. It is using the tools of “statecraft” to promote “soulcraft” by which we mean helping to cultivate certain norms and perspectives in the broader society.

The government has a range of tools in this regard. The so-called “bully pulpit” is a valuable tool to validate the importance of the skilled trades in our economy and the meaning that can flow from this type of work. Awards and scholarships are another useful policy tool. It is notable for instance that the Alberta government currently has a wide range of awards and scholarships for high school students who choose to pursue an apprenticeship.³⁷ Yet the current Alberta government’s recent election platform committed to a new scholarship for “1,000 students who show promise in trades in high school.”³⁸

³⁶ Ontario Ministry of Education, “For the love of learning: Volume II: Learning – our vision for schools,” date unknown. <http://www.edu.gov.on.ca/eng/general/abcs/rcom/full/volume2/chapter9.html>.

³⁷ Government of Alberta, “Apprenticeship and industry training: scholarships,” date unknown. <https://tradesecrets.alberta.ca/financial-assistance/scholarships/>.

³⁸ United Conservative Party of Alberta, *Alberta Strong and Free: Getting Alberta Back to Work*, April 2019. <https://www.unitedconservative.ca/wp-content/uploads/2020/07/Alberta-Strong-and-Free-Platform-1.pdf>.

The point is the government should be creative about how to use different strategies and tactics to draw attention to labour market demands in the skilled trades and the benefits of this type of work. A multi-faceted strategy is an important correction to the university bias that permeates our society, our high schools, and households.

Leverage and expand existing training capacity

The Ontario government has taken early steps to leverage and expand the existing training capacity in the province. But there is more work to be done in this area.

Ontario's current structure only allows one type of labour organization—the traditional building craft unions—to serve as a cross-employer holder of a worker's apprenticeship registration. This system allows a worker to work within a pool of employers associated with their union without having to deal with administrative red tape each time they work with a new employer. The creation of a pool in which a given worker can work with multiple employers also provides the basis for a concentration of funds to build training infrastructure and methods that benefit all members of that pool. The impact of this concentration can be seen by the wide array of union training centres across the province, which have leveraged pooled employer contributions and significant amounts of public dollars (many union training centres receive both federal and provincial government grants) to create high-end training facilities and courses. Indeed, the success of these initiatives has been calling out for an expansion for years.

Currently, workers who are members of other organizations, whether in competing unions, or organized employer groups, must continue to register on an employer-by-employer basis because the laws, which were built in the 1960s, when the Building Trades were the only organized group in the industry, did not foresee the possibility of association of multiple labour pools.³⁹

Changing the apprenticeship laws to allow these new associations that have changed the face of construction since the 1960s will significantly expand Ontario's capacity to attract, retain, and develop skilled workers.⁴⁰

Allowing workers to join associations that can provide a common pool of employers diminishes one of the major challenges facing workers—the need to have steady, constant work in order for them to achieve the thousands of hours of training needed to attain journeyman status. It also diminishes the collective-action problems faced by employers, who are concerned about paying to train an employee who may or may not return.⁴¹

Leveraging the power of associations turns the collective-action problem on its head; training workers who may leave to join another employer in the pool will no longer be a reason for concern,

³⁹ H. Carl Goldenberg, Report of the Royal Commission on Labour-Management Relations in the Construction Industry, Government of Ontario, 1962.

⁴⁰ Ray Pennings, *Stepping Forward, 2005: The Face of Construction is Changing*, Cardus, 2005. <https://www.cardus.ca/research/work-economics/reports/stepping-forward-2005-the-face-of-construction-is-changing/>.

⁴¹ Morley Gunderson and Harry Krashinsky, "Youth and apprenticeships in Ontario," in Gunderson and Fazio (eds.), *Tackling Youth Employment*, (Cambridge: Cambridge Scholars Publishing, 2014).

as a competing company is also doing the same. Providing the legal basis for this type of community of competitors to develop is helpful as it will also force the plurality of labour pools to compete with one another for service to members, and will provide workers with an array of choices in which they can benefit from collective action rather than be forced to choose from within the binary of a collective or individualized apprenticeship system. The devil, though, will be in the details.

Laws related to who is eligible to hold apprenticeships will need to be updated, and regulations surrounding which entities can hold registered training agreements will need to find ways to ensure that employer and civil-society groups focused on trades can properly manage and support apprentices.

The government also deserves credit for opening up markets that hitherto had limited access to public projects to workers affiliated with one labour pool.⁴² Their move to open tendering on public construction projects in major markets such as Hamilton, the Region of Waterloo, Sault Ste. Marie, and other public purchasers of construction via a small change to the definition of “construction employer” in Bill 66 not only saved Ontarians hundreds of millions of dollars per year but also created a fair, open, and competitive environment that aligned with, and signalled their commitment to, a pluralist approach to trades development. The City of Toronto, and the Toronto District School Board, which chose to remain closed, will, regrettably, not benefit from the diversity and pluralism that are now the norm elsewhere in Ontario.

This move may also have the useful yet unintended consequence of setting up structures that open up the possibility of government working with multiple labour pools to provide benefits that extend beyond training. European labour markets—such as those in Denmark—often run employment benefits and other government programs through labour organizations.⁴³

If Ontario can successfully implement a partnership where the collective action of employers, labour unions, and other cooperative groups facilitate and deliver training through a combination of employer, worker, and government contributions, the door to deliver employment insurance and other programs may also be open. The presence of such a system in many EU countries has allowed many trade unions to thrive. Perhaps this may also serve as a first step toward giving Ontario private-sector unions—which have seen their core tasks absorbed by government in recent years—a renewed purpose and vigour.⁴⁴ One can hope.

In any case, the emphasis on pooled apprenticeships is one step towards achieving the highly successful German model where chambers of commerce (employer associations) are financially contributing and equal partners with government in education and training delivery.⁴⁵

⁴² Brian Dijkema, Shortchanging Ontario's Cities: A Cardus Competitiveness Monitor Update, September 25, 2018. <https://www.cardus.ca/research/work-economics/reports/shortchanging-ontarios-cities/>.

⁴³ The Danish Society of Engineers, “Union membership in Denmark,” date unknown. <https://english.ida.dk/union-membership-in-denmark>.

⁴⁴ Brian Dijkema, “How Ontario's labour laws will affect unions,” Policy Options (Institute for Research on Public Policy), June 13, 2017. <https://policyoptions.irpp.org/magazines/june-2017/the-changing-nature-of-work/>.

⁴⁵ <https://unevoc.unesco.org/SWL2014/presentations/Parallel%20Session%203%20-%20York%20Sievers.pdf>.

One word of caution to the government: in its admirable pursuit of bringing underrepresented groups into the trades, it should ensure that it remains focused on outputs, and not wed itself to approaches that restrict or otherwise burden the industry. The British Columbian government's attempt to use restrictive Community Benefits Agreements, for instance, are not able to deliver the long-term results in the same way that leveraging the full breadth of the industry does.⁴⁶ Ontario should avoid this model. If it seeks to move towards using procurement as a tool to develop its workforce via its Community Benefits Framework, it should focus on models that leverage the full strength of the entire industry, and ensuring that long-term outcomes rather than inputs are the predominant focus, that expectations are well defined and clear, and that such agreements are accompanied by transparent measurement tools to evaluate their efficacy.

Streamline registrations

With respect to registration, we would emphasize that the biggest step that the government can undertake to build on recent progress is to seek to join the New West Partnership Agreement (with Alberta, British Columbia, and Saskatchewan) in order to enable greater labour mobility with the Western provinces.

Joining the New West Partnership Agreement (NWTPA) would presumably produce some “losers” in the Ontario economy. The government may need to compensate them depending on the magnitude of the losses. But there is little doubt that it would represent a boon to the skilled trades. The current mix of labour mobility barriers represent a huge opportunity cost for the Canadian economy in general and Ontario's in particular.

Notwithstanding some of the stakeholder issues that may arise, it should be seen as low-hanging fruit for Ontario. Many mines in Northern Ontario are closer to Winnipeg than it is to Toronto. It takes seven hours to get from Winnipeg to Thunder Bay, while it takes fifteen hours to get from Thunder Bay to Toronto. Yet workers coming from the mines in Thompson, Manitoba, hit a wall when they cross the border. That wall stands in the way of regional development in Northern Ontario.

Joining the NWTPA would allow Ontario to benefit from the progress that has already been made by governments across the west and would functionally integrate an economy and labour market for which interprovincial barriers serve no purpose other than impediments.⁴⁷

Joining the NWTPA is a significant and important enough step that it is worth describing the case for it in some detail.

The first argument is a moral one. The workers in Ontario and other provinces are not just Ontarian, Nova Scotian, or Albertan workers; they are Canadians. We are, as the Fathers of Confederation observed, “one great nationality bound like the shield of Achilles, by the blue rim of ocean” and by

⁴⁶ Brian Dijkema, “Infrastructure plan will make labour shortages worse,” Times-Colonist (Victoria), July 22, 2018. <https://www.timescolonist.com/opinion/op-ed/island-voices-infrastructure-plan-will-make-labour-shortage-worse-1.23375120>.

⁴⁷ New West Partnership, “Professional or skilled tradesperson,” date unknown. http://www.newwestpartnershiptrade.ca/professional_or_skilled_tradesperson.asp.

“bound together by free institutions, free intercourse, and free commerce.”⁴⁸ The argument made by D’Arcy McGee, before Canada was even a nation, was not primarily about the cash that would flow as a result of this “free commerce” but about the way in which trade, travel, and work helped bind together a community – or, to use the unfortunate term used by sociologists: create social capital.

The arguments against participating in the NWTTPA are primarily based on fear of Ontario “losing” from increased trade within provinces. Opponents look to data which seems to suggest that Ontario does not gain from liberalizing trade and may even lose people to other parts of the country. But a closer look at the data suggests a different story.

It is true that Ontario stands to gain the least from internal free trade in comparison with other provinces, but that is more because the overall gains are large than that Ontario’s gains are small. The province would receive an economic boost. And it could be substantial.

Economists Trevor Tombe and Lukas Albrecht estimates that the elimination of trade asymmetries between Ontario and other provinces would increase per capita GDP by 2.8 percent.⁴⁹ As they note, “trade cost asymmetries are likely to reflect factors that policy makers can influence.”⁵⁰ Joining the NWTTPA is one tangible way that Ontario can influence policy in a way that reduces those asymmetries and contribute to Ontario’s economic growth.

While Ontario may worry about being a net “loser” in trade with other provinces to which it has major exports, it should remind itself that trade is not zero sum, and that all parties of course gain. Indeed, studies of existing trade agreements show that “provincial routes affected by the free trade agreements saw higher trade flows than other routes.”⁵¹ Is notable, for instance, that the current mix of provincial agreements on liberalized trade including the NWPTA.⁵²

Ontario has been a major beneficiary of the increased trade flows that came as a result of NAFTA, and there is no reason to believe that interprovincial trade would offer different results. Given the Ontario’s government enthusiasm for, and active work done to support international trade treaties such as USMCA,⁵³ it would seem odd for the government to sit on its hands when the opportunity to increase trade with our fellow citizens is offered to them by friendly partners.

⁴⁸ These quotations are from a speech by D’Arcy McGee to the Empire Club in 1860. <https://www.macdonaldlaurier.ca/speech-by-thomas-darcy-mcgee-constitutional-difficulties-between-upper-and-lower-canada-the-shield-of-achilles-may-2-1860/>.

⁴⁹ While the focus of this paper is on skilled trades, it is important to note that Tombe and Albrecht say that certain industries are likely to have higher gains. Among those industries is finance, a leading contributor to Ontario’s economy, and a sector likely to experience large gains from liberalized trade among provinces. See Tombe and Albrecht, “Internal trade, productivity and interconnected industries: A quantitative analysis,” *Canadian Journal of Economics*, September 2016. <https://www.jstor.org/stable/43974479>.

⁵⁰ Ibid.

⁵¹ Jorge Alvarez, Ivo Krznar, and Trevor Tombe, “Internal trade in Canada: Case for liberalization,” *International Monetary Fund*, July 22, 2019. <https://www.imf.org/en/Publications/WP/Issues/2019/07/22/Internal-Trade-in-Canada-Case-for-Liberalization-47100>.

⁵² Ibid.

⁵³ Rob Ferguson, “Premier Ford headed to Washington next week to unveil strategy aimed at Buy American Policies,” *Welland Tribune*, January 30, 2020. <https://www.wellandtribune.ca/news-story/9836500-premier-doug-ford-headed-to-washington-next-week-to-unveil-strategy-aimed-at-buy-american-policies/>.

While the government may worry about the possibilities of “out migration” that may come as a result of liberalization (Tombe and Albrecht suggest a range of roughly 1-2 percent in response to a 10 percent reduction in trade barriers⁵⁴), it should keep in mind that, in the skilled trades sector, the province is as (or more) likely to be a beneficiary. This is particularly the case given that Alberta’s construction and resource sector face massive unemployment⁵⁵, while Ontario faces a growing need for skilled labour in the same fields. Creating a pathway for skilled, but unemployed Albertans to fill Ontario’s need for skilled labour makes both economic and social sense. Moreover, other data show that “Ontario is the highest migration hub for both internal and external migrants.”⁵⁶ It is these migrants that will fill the gap for Ontario’s skilled trades that do not have enough people to fill the jobs that are needed to spur growth.

Internal regulatory harmonization also opens up the door for sectors, like construction, which are laggards in internal trade. This is in part because construction is dominated by small- and medium-sized firms which do not generally possess the resources necessary to deal with regulatory barriers. As an analysis by the federal Department of Industry observes: “Only 5.6 percent of SMEs in construction trade internally, the lowest propensity of all sectors. This may be a result of a combination of the local nature of much of the work in this industry and the rules and red tape that exist, which make it difficult for construction companies to operate outside their home province.”⁵⁷ Given that in 2018, 73 percent of all Ontario construction firms have less than 100 employees, and given that 87 percent of all construction companies have less than 500 employees⁵⁸, the gains in a major sector of Ontario’s economy (construction is the 5th largest contributor to Ontario’s GDP by sector) could be significant.

Research and analysis, for instance, by policy scholar, Laura Dawson, lays out the steps for the government to follow.⁵⁹ The best part here is that Ontario’s potential inclusion in the New West Partnership could be the catalyst needed to produce broader, cross-Canada reform. The combination of Ontario’s joining of the NWPTA with its move toward group apprenticeship registration and management opens the door to broader national reforms that could significantly ease the ability of workers to count work in multiple jurisdictions towards the completion of apprenticeships and the attainment of credentials.

⁵⁴ Tombe and Albrecht, “Internal trade, productivity and interconnected industries: A quantitative analysis,” *Canadian Journal of Economics*, September 2016.

⁵⁵ Bill Kaufmann, “Alberta sheds 18,000 jobs in November; energy sector takes a beating,” *Calgary Herald*, December 6, 2019. <https://calgaryherald.com/news/local-news/alberta-sheds-18000-jobs-in-november-energy-sector-takes-a-beating>.

⁵⁶ Nusrate Aziz and Gerry Mahar, “Labour mobility and interprovincial trade in Canada,” *Global Labour Organization (GLO) Discussion Paper*, 2019. <https://www.econstor.eu/bitstream/10419/195101/1/GLO-DP-0341.pdf>.

⁵⁷ Andrea Pierce, “SME profile: Interprovincial trade, Department of Industry. Accessed on February 5, 2020. https://www.ic.gc.ca/eic/site/061.nsf/eng/h_02840.html.

⁵⁸ Statistics Canada, *Employment for all employees by enterprise size, annual (Table 14-10-0215-01)*. Accessed on February 5, 2020. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410021501&pickMembers%5B0%5D=1.7&pickMembers%5B1%5D=3.21> (author’s calculations).

⁵⁹ Dawson, *Toward Free Trade in Canada: Five Things the Federal Government can do to Open our Internal Market*, Fraser Institute, November 2015. <https://www.fraserinstitute.org/sites/default/files/toward-free-trade-in-canada-five-things-federal-government-can-do-update.pdf>.

Reform tax-based policies to support apprenticeships

The government's creation of a new Apprenticeship Training Tax Credit is a positive step. There are data to suggest that such tax credits expand involvement in the apprenticeship system.⁶⁰ But as good as it is, it does not represent a structural change, and it requires a significant amount of administrative burden (borne by employers, workers, and government) to receive. There is still room for improvement in simplifying Ontario's tax treatment of training and employer support. The government would also benefit from a complete audit of its various apprenticeship-oriented benefits to find ways to ensure that its suite of policies (including tax-based and direct spending) has the maximum effect on business spending on training and in so doing would level the playing field with incentives for capital investments.

CONCLUSION

The government is to be commended for undertaking structural changes to modernize Ontario's apprenticeship and skilled-trades environment. Its active work with stakeholders and industry has resulted in changes that can help Ontario grow a highly skilled workforce that can meet the province's economic needs and provide fulfilling, well-paid work for Ontarians.

Its greatest challenge will be to ensure that the transition from policy development to implementation remains in line with its objectives and principles. But even with that caution, the government's move to release and leverage the tremendous capacity of labour organizations, employer associations, and civil-society organizations to meet its policy goals has shifted the province's apprenticeship model and the skilled trades in the right direction. This policy brief has aimed to help inform the implementation process and to put forward incremental policy reforms to improve the model and ultimately to help encourage more Ontarians to pursue a career in the skilled trades.

⁶⁰ Colin Becht, "Apprenticing America: The Effects of Tax Credits for Registered Apprenticeship Programs, (unpublished MPP thesis), Georgetown University, April 2019. https://repository.library.georgetown.edu/bitstream/handle/10822/1055057/Becht_georgetown_0076M_14207.pdf?sequence=1&isAllowed=y.



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