



Skilled Trades Certification in British Columbia

BUSINESS CASE

Ministry of Advanced Education and Skills Training
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Executive Summary

Overview

British Columbia is facing an unprecedented time of change that will reshape our society and economy in lasting ways. Not only is B.C. confronting the challenges and uncertainties of a global pandemic, but also rapid technological shifts coupled with demographic, social, and environmental transformations that will change the very nature of work in the 21st century.

Successfully meeting the challenges and opportunities ahead requires a skilled workforce with the knowledge and skills to embrace innovation and diversity, while staying resilient in the face of rapid change. This is particularly true for B.C.'s trades workforce.

Now, more than ever, the trades are the foundation of B.C.'s economy. The province's trades workforce is vital to building critical infrastructure, realizing the potential of a cleaner environment and maintaining the services that British Columbians rely on. As government navigates the path forward to recovery from COVID-19, B.C.'s trades training system will be at the centre of building a stronger B.C. as large infrastructure projects and government stimulus spending continue to drive the growing demand for skilled trades workers.

Over the past seventeen years, B.C.'s Industry Training Authority (ITA) has built a robust trades training system. However, meeting the growing demand for workers over the next decade while ensuring these workers have equal opportunity and access to good-paying jobs requires an even greater focus on high-quality training and skills development to ensure no workers are left behind. This new reality is supported by B.C.'s Labour Market Outlook which predicts 77% of the more than 860,000 job openings in B.C. over the next ten years will require some post-secondary education or training, inclusive of trades apprenticeships.

In response, the B.C. government is moving the current system to a new certification model that will ensure B.C. trades workers are credentialed at the highest possible skill level. To be known as Skilled Trades Certification, this designation will require workers to either be a certified journey person or registered as an apprentice to be legally able to work in that trade.

Since 2003, B.C. has been the only province in Canada where workers can be employed in a trade without first becoming certified or registering as an apprentice. This has resulted in a trades workforce where thousands of uncertified workers are practicing a trade with no formal confirmation of their skills and knowledge levels.

While B.C.'s safety and regulatory system has been effectively keeping the public safe, the broader implications of the current system have not been reviewed in the context of what is now a very different economy from 2003—one that demands a competitive and highly skilled workforce that can respond to growing labour demands and remain resilient in the face of the evolving world of work.

As a result, the Ministry of Advanced Education and Skills Training (AEST), advised by an industry-led stakeholder advisory working group (working group), has taken an evidence-based approach to better understand the potential benefits and inherent challenges of introducing skilled trades certification in B.C.—now and in the future.

As part of this process, in-depth studies were undertaken to explore the social and economic impacts, research to assess whether certified workers have higher levels of skill than uncertified workers, and a comprehensive jurisdictional scan of compulsory trades models. This work was validated by working group members who provided additional context and perspectives from their experience across a variety of trades and work environments.

The working group also developed a data driven, evidence-based framework to identify which trades would benefit most from a skilled trades certification designation and provided additional recommendations on implementation considerations.

Benefits and Considerations of Skilled Trades Certification

Taken together, this work demonstrates that skilled trades certification will benefit British Columbians by:

- **Standardizing trades skills at a high level** – resulting in increased wages and the skills needed to adapt to changing labour needs, while enhancing productivity and profit for employers and B.C.’s economy over the long-term.
- **Increasing opportunities for under-represented and equity-seeking groups in skilled trades careers by “leveling the employment playing field”** – by providing a recognized, portable credential for those workers who currently have fewer options for career advancement without a formal recognition of their skills.
- **Increasing prestige of the trades**– encouraging more youth to enter the trades to replace retiring workers by improving the perception of trades occupations as a well-paid career equal to other professions that require post-secondary credentialing.

Like any change, implementing skilled trades certification will also require mitigation strategies to support implementation:

- **To support continued labour supply as workers transition in the short-term** –some uncertified workers will need supports to become certified and continue in the trades. This can be supported by implementing skilled trades certification in stages, beginning with trades where there are fewer uncertified workers, to enable the system time to adapt and put in place supports to successfully transition workers informed by the expanded industry consultations to come.
- **To minimize costs and support a smooth transition for employers** –small businesses and employers in rural and remote communities may need supports to help them attract trades labour or to remain productive when apprentices are required to leave the workplace for technical training. The working group identified potential strategies to address this, such as sharing apprentices among a group of employers. Further exploration is needed through expanded industry consultation to finalize the approach to support a smooth transition for employers.

Similar to other jurisdictions in Canada with compulsory trades, skilled trades certification, on its own, will not improve apprenticeship completion rates. Issues such as racism, sexism, and bullying that cause workers to fail to complete their certification and/or leave the trades can of course persist in a skilled trades certification environment. Nor will certification influence whether trades skills are meeting the needs of employers or the broader economy with respect to adapting to new technologies and automation or enhancing soft skills such as communication, critical thinking or problem solving—which employers say are lacking. Additional trades system enhancements¹ implemented together with certification, however, could play a significant role in resolving these long-standing issues. These enhancements are not in the scope of this business case. Skilled trades certification would be one part of an overall apprenticeship development and completion strategy.

¹ Trades training system enhancements could include initiatives such as greater coordination and accountability of training system partners, and expanded financial and academic supports to help apprentices overcome barriers to completion.

The challenges associated with certification can be effectively mitigated and are outweighed by the opportunity for uncertified workers to realize the benefits of career advancement, wage equity and job security that come with being able to successfully compete in a skills and knowledge-based economy.

Based on this work, Government will implement skilled trades certification in B.C. for specific trades, recognizing that now is the time to build the long-term foundational change required to place B.C.'s trades training system at the forefront of a strong and sustainable economy.

Implementation Approach

The Work Group recommended an implementation approach that includes the following three components:

- 1. Implement skilled trades certification for 10 recommended trades (three electrical, four mechanical and three automotive trades) in two stages over four years and establish a clear mechanism for industry to recommend additional trades to become compulsory in future.**
 - The 10 trades recommended by the working group have relatively low numbers of uncertified workers (fewer in electrical and mechanical than automotive) which enables the trades system time to build up training seat capacity and minimizes the disruption for workers and employers—particularly during COVID-19 economic recovery.
 - Requiring certification for these trades first also allows time to evaluate the impacts of the certification model and the effectiveness of transition supports for workers and businesses before expanding to additional trades with higher numbers of uncertified workers who could benefit from certification. Including additional trades would require incremental investment in training system capacity and further industry consultation.
- 2. Establish journeyman to apprentice ratios for each designated trade to ensure minimum levels of supervision and training quality assurance for apprentices.**
 - Establishing journeyman to apprentice ratios for trades designated for skilled trades certification was a priority for the working group as a mechanism to ensure employers don't hire more apprentices than they can realistically supervise or train. Ratios would be set for each of the 10 trades in consultation with industry and the ITA.
 - Implementing ratios for these trades meets the objectives of the 2017 mandate letter direction to increase apprenticeship opportunities by implementing effective apprenticeship ratios on government-funded infrastructure projects. A provincewide trade ratio for designated trades eliminates the need for further development of a ratio policy specifically for public projects.
- 3. Create a new compliance and enforcement body to provide oversight for skilled trades certification and journeyman to apprentices ratio regulation. The legislative authority would reside with the Industry Training Authority (ITA).**
 - Creating a new compliance and enforcement model was recommended by the working group as the best approach to ensure skilled trades certification is adopted fairly across B.C.'s trades employers.
 - The working group felt the ITA was best positioned to lead compliance because it already has strong cross-sector relationships and extensive experience working with both workers and employers in a supportive capacity.

Other critical components for successful implementation of skilled trades certification include:

- Regulatory and legislative changes to support the implementation, including providing the ITA with the authority to oversee compliance and enforcement, and designate new trades for Skilled Trades Certification trades under the *Industry Training Authority Act* (AEST led).
- Comprehensive Indigenous and public engagement (including targeted industry consultation) to seek input on effective implementation supports (AEST led).
- A robust education and awareness campaign that emphasizes the long-term advantages and benefits of skilled trades certification compliance (AEST led).
- A suite of supports and services to ensure workers and businesses can successfully transition to the compulsory environment (ITA led).

For the purposes of this business case the terms compulsory trades, mandatory certification and Skilled Trades Certification are used interchangeably. All data referenced was current as of September 2020.

1. Process Overview for Selection of Skilled Trades Certification

Introduction

A strong focus on skills development informed how trades were analysed and selected for skilled trades certification designation. This process was guided by a 16-member stakeholder advisory working group with representation from industry associations, labour, post-secondary institutions, Indigenous skills trainers, and the Industry Training Authority (ITA) (See Appendix A: Stakeholder Advisory Working Group Members).

Over the course of 18 months, the working group reviewed labour market data across all 93 ITA-certified trades and invited input from a range of industry and technical experts. The primary objective of the working group was to develop a set of principles and evidence-based criteria for selecting which trades would most benefit from skilled trades certification.

The following summary outlines these criteria and the process the working group took to make its final recommendations on which specific trades should be made compulsory.

Trades Selection Process

The working group developed a selection process incorporating six principles and associated criteria based on the unique interests of trades workers, businesses and the public. The overarching objective of the process was to ensure that trades designated for skilled trades certification should benefit workers by improving their skills and standard of living while maintaining high safety standards, and benefit employers and the public by supporting labour supply during the transition and minimizing costs.

The six principles and associated criteria developed by the working group were further divided into two groups:

- three ***assessment principles*** to evaluate which trades would benefit most from certification based on available data; and
- three ***implementation principles*** to identify the potential impacts on workers, businesses, and the public.

Assessment Principles & Criteria

1. **Workers** – Skilled trades certification should result in a substantial number of trades workers benefiting from the highest level of training and skill. To support this principle, a trade should meet two criteria:
 - **Trade is in high demand:** The trade has a high number of workers currently employed and is expected to have substantial growth in job openings in the future. The higher number of workers in the trade occupation the more workers who will benefit from completing training and achieving certification.
 - **Trade requires a high level of skill:** Workers in trades requiring a high skill level have greater opportunity: for earning high wages, increasing their standard of living, and career advancement.

2. **Businesses** – Skilled trades certification should result in skilled trades workers supporting business viability and growth, and supporting investment for a strong economy. To support this principle, a trade should meet two criteria:
 - Trade occupation may be **critical to large investment (e.g. large infrastructure projects):** Access to an adequate supply of highly skilled workers to support large investment will increase BC’s economic competitiveness; and
 - Trade occupation is **less vulnerable to economic shifts:** Trades with a workforce that is stable during economic volatility help ensure businesses remain viable and continue to prosper.

3. **Public** – Skilled trades certification should maintain or enhance public safety, as well as consumer confidence. To support this principle, the trade should meet two criteria:
 - Trade occupation is a **high safety risk to public:** certification will ensure all workers are certified with professional knowledge of their trade with occupational and public safety standards and practices; and
 - Trade occupation is a **service purchased by the public:** certification would give consumers confidence that the trades people they hire have the highest level of training and service quality.

Based on the above criteria, the working group then measured each of the ITA’s 93 active trades (Appendix B, *Impact of Certification on Trade Skills in British Columbia*) using the following data:

- combined length of in-class and on the job training (hours);
- average highest level of workers’ educational attainment;
- projected job openings (10-year forecast);
- potential for wage growth;
- level of employment in the construction industry;
- level of safety risk to the public; and
- share of work conducted in a consumer-orientated service industry.

This approach produced an initial shortlist of 20 trades which were further assessed against the following implementation principles to understand the potential impacts on workers, businesses, and the public.

Implementation Principles

- 4. **Workers** – Skilled trades certification implementation should maximize opportunities for all workers to successfully transition to a certified environment.
- 5. **Business** – Skilled trades certification implementation should enable businesses to successfully transition to a mandatory environment that does not hinder business viability.
- 6. **Public** – Skilled trades certification implementation should result in the public continuing to have access to trades services at reasonable costs.

Additional demographic data and insight from industry experts provided the working group with a more in-depth understanding of the environments in which specific trades operate.

Finally, these quantitative and qualitative data were then used to ensure each trade considered for implementation would not overburden or unfairly disadvantage workers, employers, or vulnerable communities – particularly during COVID-19 recovery.

Selected Trades

This process resulted in a final shortlist of 10 trades which then underwent a full assessment, including further analysis and validation of the data in addition to discussions with technical experts, to confirm the potential benefits and implications to workers and businesses and the public (Appendix C, *Impact of Mandatory Trades Certification in British Columbia*): The recommendation for trades designated for skilled trades certification were:

<u>Electrical Trades</u>	<u>Mechanical Trades</u>	<u>Automotive Trades</u>
1. Electrician (Construction)	4. Refrigeration and Air Conditioning Mechanic	8. Heavy Duty Equipment Technician
2. Industrial Electrician	5. Gasfitter A & B	9. Automotive Service Technician
3. Powerline Technician	6. Steamfitter/Pipefitter	10. Autobody and Collision Technician
	7. Sheet Metal Worker	

Other trades could be considered for skilled trades certification in the future once a permanent process has been established for industry to recommend additional trades.

2. Background on Compulsory Trades

In 2003, the B.C. government introduced new legislation to govern the apprenticeship system. This legislation established the Industry Training Authority (ITA) and moved the province to a voluntary credentialing system that resulted in elimination of 11² compulsory trades³ as well as prescribed journeyman to apprentice ratios.

The ITA offers voluntary certification in more than 100 trades programs, involving a combination of work-based and classroom training delivered by designated training providers. Fifty-one of these programs are Red Seal trades governed by a national standard and result in a Red Seal Credential recognized across Canada. The remaining trades programs follow a provincial standard and are typically designated at the request of industry, often to support sector or industry-specific training needs such as renewable energy, ship-building or other occupations stemming from emerging sectors.

All provinces except B.C. have implemented compulsory trades which vary by province from four to 34 trades. All jurisdictions also have prescribed journeyman to apprentice ratios for each compulsory trade which range from 1:1 to 1:2.

Table 1: Compulsory certification by province⁴

Province	Number of Compulsory Trades
Alberta	34
Ontario	22
Nova Scotia	21
Quebec	21
New Brunswick	13
Manitoba	9
Prince Edward Island	5
Saskatchewan	4
Newfoundland	4
British Columbia	0

In Canada, industry stakeholders have historically recommended that specific trades be designated as compulsory to ensure health and safety standards are enforced for workers and the public, and to bolster consumer confidence. In B.C., training and safety are regulated separately, with safety standards monitored and enforced by various government agencies, including the BC Safety Authority, WorkSafeBC, and Consumer Protection BC.

Data from WorkSafeBC indicates there have been no negative effects on workers or public health and safety as a result of eliminating compulsory trades in 2003. Trends show that injury rates in trades

² Automotive Collision Repair Technician, Automotive Refinishing Technician, Automotive Service Technician, Electrician, Plumber, Power Line Technician, Refrigeration Mechanic, Roofer, Sheet Metal Worker, Sprinkler System Installer, and Steamfitter/Pipefitter.

³ A compulsory trade designation means that no one may work in the designated trade unless he/she is a registered apprentice or a certified journeyman. In contrast, when a trade is voluntary, a person can legally work in the trade without any form of qualification.

⁴ MNP, *A Multi-Sector Industry Lens on Compulsory Certification* (2019), p. 8.

occupations have been declining while overall employment in the trades has increased, suggesting that worksites have continued to improve safety over the last decade.⁵

In 2014, government mandated a formal review of the role and function of the ITA, culminating in the McDonald Report.⁶ A key recommendation of the report was for government to strengthen industry's role in providing direction to improve the trades system, including the potential to re-introduce compulsory trades. In the interim, several B.C. industry groups have called on government to explore reinstating compulsory certification.

In May 2019, the B.C. government approved exploring a new approach to compulsory trades (now known as skilled trades certification)—not as a return to the past compulsory trades, but a forward-thinking policy that reflects B.C.'s current and future labour market needs. As a result, the Ministry of Advanced Education and Skills Training (AEST) was directed to establish a Stakeholder Advisory Working Group (working group) to better understand the wide-reaching potential impacts, risks, and benefits of implementing skilled trades certification on workers, businesses, and the public. This work has resulted in the following business case for implementing compulsory certification for 10 trades in B.C.

3. Context

Current State of B.C.'s Trades Training System

B.C. has a strong trades training system that offers multiple pathways to enter trades training and achieve certification. This has resulted in increasing apprentice recruitment numbers over the past five years, with more than 13,000 new apprenticeship entrants per year including increases in recruitment of women and Indigenous peoples.

This success is supported by strong numbers of employer sponsors, with more than 10,000 current sponsors in the system, as well as strong alignment and utilization of training seats (currently at 90% of capacity). In addition, the ITA has a well-established system for workers who have gained their experience on-the-job and wish to gain certification through challenging an exam as opposed to a formal apprenticeship program.

A variety of proven support programs and services also exist for apprentices and employers to incent apprentice registration and completion. These include a wide variety of financial supports, 20 ITA Apprentice Advisors,⁷ and targeted initiatives to reduce barriers to entry and completion for under-represented groups including: training programs designed to prepare workers to enter an apprenticeship; exam preparation supports and writing accommodations; and upgrading courses for uncertified workers. These supports also align with recent shifts in workplace cultures that no longer tolerate harassment or discrimination on the jobsite.

⁵ B.C. Government, *Impacts of Eliminating Compulsory Trades on Consumers, Workers and Employers in British Columbia*, 2019.

⁶ Jessica L. McDonald, *The Industry Training Authority and Trades Training in BC: Recalibrating for High Performance* (2014).

⁷ There are 20 Apprenticeship Advisor located in every region across BC. Advisors provide face to face support for apprentices and employers in navigating the apprenticeship system.

Despite this progress, a significant proportion of those entering trades training are failing to transition to an apprenticeship program or continue through to full certification. There are various points along the apprenticeship journey where students exit the trades training system, resulting in only 45%⁸ of apprentices becoming certified (this is consistent across other Canadian provinces).

The reasons for this low completion rate are complex and vary depending on when in the apprentice journey the student chooses to exit the system. In broad terms, however, barriers associated with low literacy and numeracy, limited access to training, sexism and racism—as well as a lack of alignment and coordination between trades training system partners—are all contributing factors.

Preparing B.C.'s Trades for the Future

The 2019 B.C. Labour Market Outlook forecasts 73,000 trades job openings by 2029. While many of these jobs are driven by new growth, the majority will be driven by an aging population that will result in 38,000 workers retiring in the construction trades alone by 2029. In addition, fewer younger workers are entering the workforce to replace these workers, and fewer youth are choosing a career in the trades over other professions that require a post-secondary education. The resulting workforce gap is already being felt in some trades, with employers reporting that they are unable to hire the skilled workers they need.

Rapid technological advancements, automation and new demands from emerging sectors like the clean economy are not only changing the technical “on-the-tools” skills trades workers need, but also demanding enhanced “soft skills” such as communication, critical thinking and problem solving.⁹

Post-secondary trades education has a central role to play in helping to keep pace with these changing demands. This is confirmed by broader labour force trends that predict 77% of the more than 860,000 job openings in B.C. over the next 10 years will require some post-secondary education or training, such as a certificate or college diploma, apprenticeship training, or a bachelor's, graduate or professional degree.¹⁰

Now more than ever, those without a post-secondary credential are at risk of being left behind, and uncertified trades workers are no exception. These workers—who include a large proportion of Indigenous people, new immigrants and other equity-seeking groups—tend to earn less over a lifetime and are more vulnerable to unemployment during economic disruption. With the proper supports to overcome existing barriers, however, skilled trades certification represents an additional pathway to standardize the skill sets of all trades workers, thereby leveling the employment playing field, while fostering future employment resiliency in the face of technological change and economic uncertainty.

Raising Prestige of the Trades

Despite the benefits that come with pursuing a job in the trades—higher employment rates, increased wages, stability and opportunities of upward advancement—there remains a stigma around trades careers as blue-collar jobs that lack the prestige of more academic careers. This stigma manifests as

⁸ Completion rates are calculated by measuring the number of new apprentices within a cohort who complete six years from registration.

⁹ BCIT, *Impact of Certification on Trades Skills in British Columbia* (2020).

¹⁰ BC Labour Market Outlook 2019.

lower transition rates from high school into post-secondary trades programs compared to other college and university programs.

The ITA has helped to address this issue through a variety of highly effective youth outreach initiatives, including career fairs, youth apprenticeship programs, and various industry campaigns to promote the trades as a viable career path. These measures have had an impact with increases in total apprenticeship registration rates of 6.1% between 2016/17 and 2019/20 alone. More needs to be done, however, in order to attract and keep the number of apprentices required to meet future demand.

Many trades stakeholders have strongly advocated that compulsory certification has the potential to contribute to more youth choosing the trades as a long-term career that offers prestige, long-term growth and professional satisfaction by placing a trades education on par with other professions in B.C. that require a degree or certificate. In addition, some employers have suggested that professionalizing trades occupations may also make some workers less vulnerable to illegal or unfair labour practices.¹¹

Implications of COVID-19

The onset of the COVID-19 pandemic has profoundly impacted B.C.'s economy, and the trades are no exception. Before the pandemic, employment levels in trades were stable, with more than 230,000 trades workers employed. Between February and July, however, 17,250 construction trades workers and 9,000 non-construction workers lost their jobs due to COVID-19 (including apprentices).

However, positive signs of recovery for trades occupations are emerging. In July of 2020, the construction trades saw some improvement with an unemployment rate of 10.2% (down 4.1 percentage points from the previous month). Non-construction trades, which include occupations such as cooks and hairdressers, benefited from the re-opening in June and sit at an unemployment rate of 14.7% in July (down 10.6 percentage points). The long-term impact of the pandemic on B.C.'s economy remains uncertain at this time.

While trades workers, apprentices, and businesses have been impacted by COVID-19, skilled trades certification is not expected to exacerbate current economic and labour disruption given that full implementation would occur over several years, beginning in 2022, allowing the economy time to continue to recover and workers time to gradually transition into compliance.

4. Summary of Research

Even though all jurisdictions across Canada have had compulsory trades for several decades, there has been little research or data analysis on this topic, and no data for B.C. prior to 2003. This has created challenges for assessing the overall impact of compulsory certification based on quantitative information. In addition, comparisons across jurisdictions on the outcomes of compulsory certification are difficult, due to differences in reporting methodology (e.g., completion rates).

There is a broad continuum of strongly held stakeholder views on the relative benefits and challenges of compulsory certification. Some stakeholder groups favour the current open labour market system which allows employers the flexibility to meet their business needs. Some have concerns that compulsory certification of trades would restrict labour supply by: imposing increased regulations, which might limit

¹¹ PwC, *The Impact of Mandatory Trades in British Columbia* (2020), p. 44.

employers' ability to hire uncertified or lower-skilled trades workers; and requiring apprentices to complete classroom training, which may conflict with employer needs and work schedules. In contrast, other stakeholder groups believe that compulsory trades will ensure employers have access to workers who meet a standardized skill level, thereby ensuring a skilled labour supply that meets the needs of employers.

To gain a full understanding of the potential implications of a new approach to certification in the B.C. context, input was sought from two empirical research studies:

1. BC Institute of Technology – analysis of the potential growing gap in skills between certified and uncertified workers, and how compulsory certification might impact these gaps now and over the next 10 years (Appendix B, *Impact of Certification on Trades Skills in British Columbia*).
2. PriceWaterhouseCoopers – assessment of the socio-economic impacts of implementing compulsory certification on workers, employers and the public. Research explored impacts of implementing 40 different trades occupations as mandatory (hereafter referred to as the “the 40 study trades”) in both weak and strong economic scenarios spanning over 10 years (Appendix C, *Impact of Mandatory Trades Certification in British Columbia*).

Assumptions

- While government economic forecasts do not indicate *when* B.C. will recover from the impacts of COVID-19, this business case assumes B.C. will experience strong economic conditions (similar to pre-COVID) within the next several years. This economic scenario is helpful in understanding the most extreme potential impacts of Skilled Trades Certification on labour supply, wages and consumer costs during a 10-year period, with the knowledge that a weaker economy will lessen these impacts.
- Technology may change the tasks within trades occupations but will not reduce the overall number of jobs over the next decade.¹²
- Findings are presented as averages across the entire province; however, individual outcomes by region, population, Indigeneity, and business size may differ from general trends. These differences have been noted where relevant.

Limitations

- Key limitations related to data analysis completed by PwC are referenced in Appendix C, *Impact of Mandatory Trades Certification in British Columbia*, pages 49–50.¹³
- The number of uncertified workers in each trade occupation is an estimate based on Labour Force Survey results which asks respondents to indicate their highest level of education achieved rather than identify specific educational attainment. In addition, there is limited reliable data available on the age, geographic location, industry, Indigeneity etc. of uncertified workers.

¹² PwC, *The Impact of Mandatory Trades in British Columbia* (2020), p. 33.

¹³ PwC, *The Impact of Mandatory Trades in British Columbia* (2020), pp. 49–50.

- Given evidence suggests that safety has not been impacted by the elimination of compulsory trades in 2003, safety was not a factor considered in the PwC study.¹⁴
- Targeted stakeholder input on the implications of skilled trades certification collected through the two research reports does not represent all stakeholders, workers, businesses, or Indigenous Peoples and communities and does not take the place of Indigenous or broader public engagement necessary to fully inform implementation.
- Much of the research conducted for this analysis was completed prior to the onset of the COVID-19 pandemic; however, reasonable efforts have been made to ensure key findings remain relevant and applicable based on an uncertain economy.

5. Key Findings

Research conducted on the potential impacts of skilled trades certification collected a variety of qualitative and quantitative data across a diverse and complex trades training system. At times, this work resulted in differing perspectives on the extent or consequences of some impacts of compulsory certification on workers, employers or the broader economy.

For example, employers with experience working in an environment that includes certification requirements (most often unionized employers) may have more positive views on compulsory certification than those employers who operate within an open labour market. In addition, forecasting and data modelling may not always adequately capture day-to-day employer or apprentice experiences on the work site.

The key findings summarized below represent a range of stakeholder views and lived experience that complements the research.

Impact of Skilled Trades Certification on Trades Workers

Summary of Findings

- Skill levels of uncertified workers who undertake training will increase, improving their long-term employment opportunities by making them equal to their certified peers, and therefore more attractive to employers.
- Wages will increase for most uncertified workers in Skilled Trades Certification trades, as a result of recognition of higher levels of skills and experience.
- Without adequate supports, some uncertified workers, particularly those 55+, may choose to leave the trades labour force rather than become certified.
- Without adequate supports, skilled trades certification will not create new barriers to certification for Indigenous peoples and equity-seeking groups but could exacerbate existing challenges. With proper supports, however, certification is a possible and desirable pathway to greater economic

¹⁴ B.C. Government, *Impacts of Eliminating Compulsory Trades on Consumers, Workers and Employers in British Columbia* (2019).

opportunity for individuals in these groups.

Raising and Standardizing Skills

Based on research conducted by PwC and BCIT, most employer stakeholders believe Skilled Trades Certification will have a positive impact on increasing and standardizing skill levels of uncertified workers who undertake training, but quantifying this impact is challenging.¹⁵

General industry perception is that certified tradespeople are more skilled than their uncertified peers, with 70% of employers believing that there is a skills difference between certified and uncertified workers.¹⁶ Employers also believe that certified workers demonstrate a keen attitude of self-development, which confers a resiliency that is critical in the fast-changing trades sector and economy. Certified workers are also regarded as having a better understanding of industry codes and regulations, which could be correlated with public and worker safety, as well as with productivity.

BCIT did not, however, find a strong difference between uncertified and certified workers when it came to measuring foundation skills such as literacy, numeracy and problem solving as measured by the PIACC.¹⁷ This finding does not necessarily apply to more complex technical (on-the-tool) skills, where the skills gap¹⁸ may, or may not be more pronounced.

In addition, it is important to note that BCIT apprentices perform at a higher level in literacy and numeracy than the average Canadian or British Columbian. Using average national and provincial PIAAC scores as an alternate proxy for uncertified workers, the impact of skills training associated with certification would be greater than the BCIT research suggests.¹⁹

To understand where specific skill gaps exist, BCIT's research highlighted that soft skills in the trades are among the most valuable—and the most lacking—from the industry perspective. The majority of employers believe that apprentices have significant gaps in many of the soft skills that matter most, with active listening, time management, critical thinking, and troubleshooting being some of the most notable gaps.

Wages

PwC research and Working Group input agree that implementing skilled trades certification is expected to raise wages for most trades workers. This increase is primarily due to an anticipated decrease in labour supply during the next 10 years due to demographic changes, some uncertified workers leaving the trades workforce as well as overall increased demand for trades labour resulting from a strong economy. There was less alignment, however, on the extent of the expected wage growth.

PwC research forecasted that wage increases would be relatively small, with an average total of \$1,100 increase in annual salary per worker for the 40 study trades, and \$285 for the 10 recommended trades

¹⁵ PwC, *The Impact of Mandatory Trades in British Columbia* (2020), p. 35.

¹⁶ BCIT, *Impact of Certification on Trades Skills in British Columbia* (2020), p. 5.

¹⁷ BCIT administered the Programme for the International Assessment of Adult Competencies (PIAAC) to volunteer apprentices to measure skills acquisition. The PIACC is a skills test developed by the OECD to assess everyday skills in literacy, numeracy, and problem solving in technology-rich environments (PSTRE).

¹⁸ A skills gap refers to the difference in skill level between apprentices and uncertified workers.

¹⁹ BCIT, *Impact of Certification on Trades Skills in British Columbia* (2020), p. 12.

by 2032 in a strong economic growth scenario.²⁰ A weak economic growth scenario, such as a recession, would reduce this wage growth by reducing labour shortages. For the 10 recommended trades, a weak economy during COVID-19 economic recovery would largely negate any impact on wage growth.

Some working group members felt that PwC's estimate of the impact of skilled trades certification on wage increases was low and did not account for the full impact of training and skills development on higher wages over the long-term. They also stressed that, at an individual level, certification would enable uncertified workers earning significantly lower wages than their certified counterparts to increase their wages substantially by raising the ceiling of their earning potential.

This perspective was supported by Labour Force Survey Data which indicated that, for many of the trades being considered for skilled trades certification, there was considerable room for wages to increase between the median worker and highest paid workers. Electricians for example currently experience a wide wage range within their trade, with workers at the median earning \$29.00/hr and those at the high end (top 10%) earning \$42.00/hr.

Equity Seeking Groups and Indigenous Peoples

PwC research concluded that skilled trades certification would not introduce new barriers for equity-seeking or under-represented groups such as women, Indigenous people, new immigrants, youth and people with disabilities, but would also not, on its own, significantly address existing barriers to certification. For those that receive added training supports to achieve certification, however, there are clear opportunities to access better paying jobs and increase their respective standard of living.

For example, despite making up 50.9% of the province's population, women represent only 3.7% of workers in the study trades, and 2.3% of workers in the 10 recommended trades.²¹ A 2017 report by WorkSafeBC found that common barriers faced by women in the trades include harassment, lack of mentors/role models, and discriminatory recruitment that lead women to leave trades employment or never consider it in the first place.²² Despite these barriers, however, BCIT research found that women tend to outperform men on academic testing associated with trades training and may therefore more easily achieve certification.²³

Conversely, Indigenous peoples' employment in the trades is greater than their proportion of the provincial population (5.9%), accounting for 8.3% of registrations in the 40 study trades and 6.3% of registrations in the 10 recommended trades. Yet Indigenous workers are more likely than others to be uncertified due to racism, essential skills gaps, lack of training near their communities, and lack of Indigenous mentors.²⁴

Similarly, new immigrants also make up a high proportion of uncertified workers. Many new immigrants with English as a second language face barriers to the technical training and test-writing required to become a certified journey person.

²⁰ Note these estimates are based on 2015 dollars.

²¹ PwC, *The Impact of Mandatory Trades in British Columbia* (2020), p. 44.

²² WorkBC, "Enhancing the Retention and Advancement of Women in Trades in British Columbia: Final Report" (2017).

²³ BCIT, *Impact of Certification on Trades Skills in British Columbia* (2020), p. 20.

²⁴ PwC, *The Impact of Mandatory Trades in British Columbia* (2020), p. 44.

For youth, who may not have had access to high school trades programs, finding an employer sponsor in order to register as an apprentice can be challenging and there is a risk that without the right supports skilled trades certification may exacerbate this, as employers tend to prioritize hiring more experienced workers. This problem is demonstrated by the trend of fewer youth under the age of 26 pursuing a trades education. In 2018/19, just under 60% of new trades registrants in the study trades were under the age of 26, a decline from 65% in 2009/10. In the 10 recommended trades, corresponding shares of new registrants under the age of 26 were 51% in 2018/19 and 46% in 2009/10.²⁵

Workers with disabilities may also experience more difficulty attaining certification without the right supports. For example, those with dyslexia or other learning disabilities may struggle with standardized tests despite being competent on the job.

PwC did not find any evidence that LGBTQ2S+ workers would be differentially affected by Skilled Trades Certification or that skilled trades certification would create any new barriers for this community; however, it should be noted that B.C.'s trades system has inherent cultural and social biases that continue to discourage LGBTQ2S+ people from entering a career in trades.

Despite these long-standing barriers, both stakeholder interviews and working group feedback stressed that existing impediments to certification should not be viewed as insurmountable, or that government succumb to the “racism of low expectations.” They felt strongly that implementing skilled trades certification alongside the right supports could increase opportunities for under-represented and equity-seeking groups over the long-term to “level the employment playing field” and result in a recognized, portable credential. This would have the most immediate impact on those individuals already working in the trades, who currently have fewer options for career mobility or advancement without a formal credential.

Impact of Skilled Trades Certification on the Economy and Business

Summary of Findings

- Without the right supports, decreases in labour supply are expected to be minimal in the 10 recommended trades.
- Over the long term, industry and business will benefit from increased economic productivity due to a more highly skilled workforce.
- Without supports, small businesses and employers in rural and remote communities could experience more disruption in the short-term due to increased competition for workers and employees leaving the job site for training.
- Consumer cost changes would be negligible for the 10 recommended trades.

Labour Supply and Demand

Skilled trades certification will decrease the trades labour supply in the short-term to a greater or lesser extent depending on: the number of uncertified workers in any given trade; the percentage of these workers who choose to exit the trades permanently over pursuing certification; and the ability to draw

²⁵ PwC, pp. 46–7.

new certified workers into the system to replace them. PwC research also noted that additional policies such as journey person to apprentice ratios could restrict labour supply due to employers required to hire a specified number of certified workers for every apprentice.

PwC research indicates that while consensus among industry stakeholders is that most uncertified workers can become certified over time with sufficient support from government and employers. Without those supports, approximately 7% of all uncertified workers from the study trades (5,300 individuals in the 40 study trades and 700 individuals in the 10 recommended trades) are at risk of leaving their jobs permanently and would not be replaced by immigration or new entrants. This impact is the same in both strong and weak economic growth scenarios.

These workers include those who face barriers to pursuing certification such as new immigrants, Indigenous workers, people with disabilities and those with low levels of education, as well those who don't intend to stay in the trades long-term—particularly workers close to retirement.²⁶

Some working group members felt PwC's estimates were too high based on experience working with uncertified workers who are provided opportunities to become certified. They noted that many trades workers are motivated by the opportunity to become certified and would actively seek additional training and recognized credentials with the right supports.

The degree to which a decrease in labour supply results in a worker shortage, however, is largely dependent on the overall strength of the economy (e.g. the overall labour demand in trades occupations). In a strong economy with relatively high labour demand, the worker shortage associated with skilled trades certification of the 40 studied trades is estimated to be about 8% (or 14,600 workers) averaged over a 10-year period.²⁷ In a weaker economy, a 3% worker shortage of 5,400 individuals over the 40 studied trades is anticipated over the same time period.

For the 10 industry-recommended trades, however, the anticipated impact is considerably smaller with an estimated labour shortage of 1% (900 workers) in a strong economy, which becomes a surplus of 3% (2,200 workers) in a weak economy. This is because the majority of trades workers in these trades are already certified (see Table 15 on page 56 of Appendix C: Changes in Labour Supply in Strong- and Weak-Growth Scenarios).

PwC's analysis indicates that labour shortages would be relatively even across the province's seven economic regions. For the 10 recommended trades, this shortage would be minor (between 1.1% and 2.2%), with regions like the Mainland South West, Vancouver Island Coast, and Thompson Okanagan experiencing greater overall labour demand in absolute terms based on population.²⁸

Additionally, some industries will experience greater labour constraints following skilled trades certification, especially the construction industry where 56% of the study trades and 34% of the recommended trades operate. With respect to the 10 recommended trades, construction and automotive industries are most likely to be negatively impacted by a decrease in labour supply in key trades, but labour shortages are expected to be small and manageable.²⁹

²⁶ PwC, p. 30.

²⁷ Time frame is based on the assumption that skilled trades certification would be implemented on January 1, 2022.

²⁸ PwC, *The Impact of Mandatory Trades in British Columbia* (2020), p. 43.

Productivity

For the purposes of this business case, productivity is defined as Gross Domestic Product (GDP) per worker. Increases in GDP per worker are driven by investment in capital, technological progress, and human capital development (e.g. training and skills development).

Based on interviews (with industry and labour organizations, employers, and working group members) and modelling conducted by PwC, skilled trades certification is expected to increase the productivity of those trades workers who undertake additional training to become certified (as opposed to uncertified workers who challenge the exam without additional training).

PwC estimates that this increase in labour productivity would be up to 5% over 10 years across all trades studied. These gains are more prominent in trades with a higher share of uncertified workers such as Carpenters and Automotive Service Technicians.³⁰

The following table illustrates this labour productivity impact on B.C.'s total GDP in both strong and weak economic scenarios.

Table 2: Impact of Skilled Trades Certification on Productivity in Study Trades

	Strong Growth Scenario GDP/Worker Growth until 2032*	Weak Growth Scenario GDP/Worker Growth until 2032*
40 Study Trades	\$1.8B	\$1.6B
10 Recommended Trades	\$230M	\$200M

*Dollar amounts represent total financial benefit to the B.C. economy from a 5% increase in labour productivity between 2022–2032.

Implications for Business

PwC research indicates that individual trades-related businesses will be positively impacted by skilled trades certification through gains in the skill level of workers who take additional training and through the productivity gains that will result from these higher skill levels. For example, a 2009 study by the Canadian Apprenticeship Forum found that, for each \$1 an employer invests in apprenticeships, they receive \$1.47 in benefits.³¹

During the first few years of implementation, without adequate supports, some employers may experience short-term disruptions, including increased competition for workers and higher labour costs in some trades depending on the number of uncertified workers in a trade. Businesses may require some supports due to additional training and supervision required for uncertified workers. More journeyman time will be spent supervising apprentices and some uncertified workers may need to leave the workplace to take in-class technical training.³²

³⁰ PwC, pp. 9, 14.

³¹ PwC, p. 34; Canadian Apprenticeship Forum, *It Pays to Hire an Apprentice: Calculating the Return on Training Investment for Skilled Trades Employers in Canada* (2009). The study also found that third- and fourth-year apprentices generally began to provide a net benefit to employers compared to wages.

³² PwC, *The Impact of Mandatory Trades in British Columbia* (2020), pp. 33–34.

For businesses not located near training institutions (e.g. in rural or remote communities), the impact of this training may be more significant as some apprentices may need to travel and/or leave their communities for training—sometimes for six to seven weeks at a time.³³

Interviews conducted by PwC and BCIT revealed mixed employer attitudes towards compulsory certification, with just under half (48%) believing that compulsory certification would be significantly advantageous to their company, 27% believing it would be significantly disadvantageous, and the remainder expressing uncertainty about its impact.³⁴

Overall, skilled trades certification could disproportionately impact small businesses, without targeted supports, as 95% of companies in trades-intensive industries have fewer than 50 employees.³⁵

Approximately 55% of businesses that employ workers in the study trades are very small, with fewer than 5 employees (see Table 3 below).

Table 3: Industry and Trades Employment (2011)³⁶

	Employment share of study trades workers	Employment share of 10 recommended trades workers	Businesses employing workers in the study trades	Businesses with fewer than 5 employees
All industries	100%	100%	190,006	103,947 (54.7%)
Residential Construction	34%	21%	25,736	16,025 (62.3%)
Non-residential Construction	22%	13%		
Manufacturing	12%	7%	7,371	2,835 (38.5%)
All other industries	32%	59%	156,899	85,087 (54.2%)

Consumer Costs

Implementing skilled trades certification could marginally increase the price of some consumer goods, including the costs of new home construction and renovation, depending on the trades selected and the economic scenario in which the policy is implemented. The extent of consumer cost increases largely depend on the response of wages to labour shortages in affected trades.

In their scenario modelling, PwC found that for the 40 study trades consumer prices in construction could marginally increase. For the 10 recommended trades, changes in labour supply would not be large enough to cause a material effect on prices in the construction sector.

For the 10 recommended trades, automotive repair and maintenances businesses would be the most significantly impacted by potential wage increases, as two trades (automotive service technician and motor vehicle body repairer) account for roughly 40% of all employment among the 10 trades. Despite this finding, however, PwC’s modelling suggests that the total cost increase for this industry (other services) would be negligible at 0.06%.

The most heavily impacted sector as a result of skilled trades certification (due to its high proportion of workers from the study trades) is expected to be construction, where it is estimated that costs could

³³ PwC, p. 8.

³⁴ BCIT, *Impact of Certification on Trades Skills in British Columbia* (2020), p. 24.

³⁵ Labour Market Information Office analysis.

³⁶ PwC, *Impact of Certification on Trades Skills in British Columbia* (2020), pp. 24–5, 35.

increase by 0.3% by 2032, as a result of the implementation of the proposed policy under the strong growth scenario.

In all other sectors of the economy, the average cost increase is estimated to be less than 0.1%. Under a weak economic growth scenario, the cost impact would be reduced by a factor of ten (see Table 12, page 38–39 of Appendix C – Impacts on costs to businesses and consumers).

Impact of Skilled Trades Certification on the Trades Training System

Summary of Findings

- An initial apprenticeship registration “bubble” is anticipated in the first eight years after skilled trades certification is implemented and while apprentices are completing training—resulting in the need for increased trades training seat capacity. In the long-term, increased prestige of the trades due to certification will result in an approximate 7% increase in apprenticeship registrations.
- Skilled trades certification, on its own, will not improve apprenticeship completion rates. Other system enhancements are required to address long-standing barriers as part of a system-wide apprenticeship development and completion strategy.
- Minimum journey person to apprentice ratios should be explored along with skilled trades certification to ensure high-quality supervision and on-the-job training in a compulsory certification environment.

Trades Prestige

PwC research shows that skilled trades certification will result in an initial increase in apprenticeship registrations as a result of a high proportion of existing uncertified workers registering for training. Following this initial “bubble,” apprenticeship registrations are expected to settle at roughly 7% above current annual figures due to an anticipated increase in the prestige and professionalism associated with trades. This would result in approximately 310 net new apprenticeship entrants per year across the 40 study trades, and 170 for the 10 recommended trades per year over the long-term (once uncertified workers complete training and/or become certified).

Working group members felt strongly that skilled trades certification will increase the prestige and professionalism of trades careers as equivalent to other professions that require post-secondary education and certification, making them occupations of choice for young people with advancing career opportunities.

Implementing skilled trades certification in B.C. is expected to increase the annual number of new apprenticeship entrants, with a more pronounced “bubble” in new apprenticeship registrations in the initial transition period.

Although data limitations prevent certainty, as many as 3,900 out of an estimated 8,150 uncertified workers could register as apprentices across the 10 recommended trades during this transition. The majority of remaining uncertified workers are expected to challenge the certification exam, but again exact numbers are not known.

Completion Rates

Implementing skilled trades certification is not expected to have a significant impact on overall apprenticeship completion rates on its own, as it will not address the broader systemic issues such as racism, sexism, low essential skills, lack of training system coordination, or the many other complex reasons apprentices choose not to complete their certification.³⁷ Skilled Trades Certification would be one part of an overall apprenticeship development and completion strategy.

Stakeholders interviewed by PwC also did not strongly believe that implementing compulsory certification would have a significant impact on completion rates as sufficient benefits to completion (higher wages and increased mobility) already exist in a voluntary environment. Some stakeholders also expressed concerns that the policy could reduce completion rates since workers may be forced to register in order to work in a trade and may not intend to complete the training.³⁸

Individual trades training programs with lower completion rates, or trades with higher levels of uncertified workers, may see moderately higher completion rates as a result of certification in the short-term. However, completion rates for the 10 recommended trades are not expected to significantly increase as these trades are already more highly regulated and have fewer uncertified workers to begin with.

Apprenticeship Ratios

Implementing skilled trades certification provides an opportunity to also establish a minimum level of supervision to ensure apprentices are receiving an adequate level of mentorship that is expected in an apprenticeship training program.

Roughly 80% of an apprentice's training occurs on the job under the supervision of a journeyman. As a result, supporting the relationship between apprentices and journeymen is critical to the quality of training an apprentice receives.

Certification may lead some employers to register multiple workers as apprentices in order to comply with the policy but they may not have enough certified journeymen to adequately supervise training.

Other jurisdictions with compulsory trades use prescribed journeyman to apprentice ratios as a tool for improving the overall quality of training by ensuring adequate supervision of apprentice work. Apprenticeship ratios are regulations limiting the number of apprentices a business can hire per journeyman they employ. In B.C. there is currently no prescribed limit to the number of apprentices a journeyman can supervise.

Ratios vary by jurisdiction but are commonly 1:1 or 1:2, with specific ratios sometimes applying to an individual trade. While these measures have undoubtedly reduced the incidence of employers not acting in good faith, like any approach, apprenticeship ratios can present challenges that will require work to help mitigate them, including:

- Potential to restrict labour supply, given the need for additional journeymen.

³⁷ BC's completion rates are 45%. The ITA measures completion rates starting with a cohort of newly registered apprentices and measuring the percentage that complete their program six years later.

³⁸ PwC, *Impact of Certification on Trades Skills in British Columbia* (2020), p. 26.

- A lack of guarantee that journeypersons are good teachers or mentors.
- Hardship for small businesses and businesses in rural and remote communities who may struggle to attract journeypersons in a competitive market and who tend to employ uncertified workers practicing multiple trades.³⁹

The working group indicated that good quality training and mentoring on the job are the foundation of apprenticeship training. While several members agreed that apprenticeship ratios should be introduced in conjunction with skilled trades certification designation for some trades as a means of ensuring adequate supervision, it is important to consider that ratios on their own do not guarantee that employers are good mentors in providing quality training experiences. Some members stressed that ratios need to be introduced in a way that provides flexibility to support small business needs and minimize impact on labour supply. Determining appropriate apprentice to journeyperson ratios for the 10 recommended trades is not a one-size-fits-all approach and will require consultation with industry representatives and trades experts to determine the right ratio for each trade.

6. Conclusion

Government is committed to a vision of shared prosperity for B.C., guided by the principles of: making life more affordable; raising the standard of living for British Columbians; delivering the services that people count on; building an innovative and sustainable economy; and supporting true and lasting reconciliation with Indigenous peoples. An important part of realizing this vision is ensuring that all British Columbians have the skills and supports to fully participate in the economy, both in today's labour market, and in the opportunities of the emerging economy.

Skilled trades certification for designated trades in B.C. can play a pivotal role in helping trades workers gain the skills and technical competencies they need for good-paying jobs and remain resilient and thrive as B.C. recovers from the COVID-19 pandemic and moves forward toward a brighter future. It will also benefit B.C. businesses by increasing productivity and profit as large infrastructure projects and government stimulus spending continue to drive the growing demand for skilled trades.

This represents a significant trades training system change. Assisting all impacted stakeholders to adjust is a central priority of government's implementation approach that emphasizes strong services and supports to facilitate the successful transition for both workers and employers. The support and guidance of Indigenous Peoples is a critical part of this approach, and AEST is committed to undertaking comprehensive engagement with Indigenous Peoples and communities to ensure skilled trades certification is a policy that contributes to government's goals for reconciliation.

In conclusion, skilled trades certification is the next right step to ensure B.C. has enough trades workers with the right skills to support the infrastructure, services, and shared growth of a strong and sustainable B.C. At the same time, it will benefit workers by leveling the employment playing field, enhancing wage equity, and building secure, resilient careers for trades workers across the province. These benefits cannot be realized through incremental improvements alone. Now is the time to invest in skilled trades certification as a long-term, foundational change needed to place B.C.'s trades system at the forefront of a stronger economy and a better future for all British Columbians.

³⁹ PwC, p. 41.

8. Appendices

Appendix A: Stakeholder Advisory Working Group Members

- | | |
|------------------------|---|
| 1. Laird Cronk | BC Federation of Labour |
| 2. Rieghardt van Enter | Progressive Contractors Association |
| 3. Larry Richardson | Christian Labour Association of Canada |
| 4. Chris Atchison | BC Construction Association |
| 5. Lisa Langevin | BC Tradeswomen Society |
| 6. Kathy Kinloch | BC Institute of Technology |
| 7. Helen Boyce | ACCESS Trades |
| 8. Ken Tourand | Nicola Valley Institute of Technology |
| 9. Kaanesh Ghosh | LNG Canada |
| 10. Irene Kerr | BC Infrastructure Benefits |
| 11. Abigail Fulton | BC Construction Foundation |
| 12. Ron Tremblay | Automotive Retailers Association |
| 13. Robin Lucas | Allteck Power Line Contractors |
| 14. Ken McCormack | Construction Labour Relations Association |
| 15. Jud Martell | BC Building Trades |
| 16. Shelley Gray | Industry Training Authority |

Appendix B:

[BCIT Report, “Impact of Certification on Trades Skills in BC”](#)

Read the report on the Skilled Trades Certification website at
engage.gov.bc.ca/app/uploads/sites/1032/2021/06/BCITFinalReport.pdf

Appendix C:

PwC Report, “The Impact of Mandatory Trades Certification in BC”

Read the report on the Skilled Trades Certification website at

engage.gov.bc.ca/app/uploads/sites/1032/2021/06/PricewaterhouseCoopersFinalReport.pdf

Appendix D: List of Trades Considered and Recommended for Skilled Trades Certification

Industry Training Authority (ITA) Designated Trades

Through the ITA, BC has 102 designated trades: 93 active trades, 4 inactive trades, and 5 endorsements. There are 49 Red Seal trades in BC (denoted by grayscale).⁴⁰ Proposed Skilled Trades Certification trades are highlighted in orange.

ITA-Active Trades (93)	
1. Agricultural Equipment Technician	48. Lather (Interior Systems Mechanic)
2. Aircraft Maintenance Technician	49. Locksmith
3. Aircraft Structural Technician	50. Machinist
4. Appliance Service Technician	51. Marine Service Technician
5. Arborist Technician	52. Marine Mechanical Technician
6. Architectural Sheet Metal Worker	53. Meatcutter
7. Asphalt Paving / Laydown Technician	54. Metal Fabricator (Fitter)
8. Automotive Glass Technician	55. Mobile Crane Operator
9. Automotive Painter	56. Mobile Crane Operator Hydraulic 80 tonnes and under
10. Automotive Refinishing Prep Technician	57. Motor Vehicle Body Repairer (metal & paint)
11. Automotive Service Technician	58. Motorcycle and Power Equipment Tech.
12. Baker	59. Oil Heat System Technician
13. Boilermaker	60. Painter and Decorator
14. Boom Truck Operator - Folding Boom Unlimited tonnage	61. Parts and Warehousing Person 1
15. Boom Truck Operator -Stiff Boom Unlimited tonnage	62. Partsperson 2
16. Bricklayer (mason)	63. Partsperson 3
17. Broadband Network Technician	64. Petroleum Equipment Installer
18. Cabinet Maker	65. Petroleum Equipment Service Technician
19. Carpenter	66. Piledriver and Bridgeworker
20. Climbing Arborist	67. Plumber
21. Concrete Finisher	68. Power Line Technician
22. Construction Craft Worker (Labourer)	69. Professional Cook 1
23. Cook	70. Professional Cook 2
24. Dairy Production Technician 1	71. Railway Car Technician
25. Diesel Engine Mechanic	72. Recreation Vehicle Service Technician
26. Drywall Finisher	73. Refrigeration and Air Conditioning Mechanic

ITA-Active Trades (93)	
27. Electric Motor Systems Technician	74. Residential Building Maintenance Worker
28. Electrician, Construction	75. Residential Steep Roofer
29. Electrician, Industrial	76. Rig Technician
30. Embalmer	77. Roofer (Roofer, Damp & Waterproofer)
31. Embalmer and Funeral Director	78. Saw Filer
32. Floor Covering Installer	79. Security Systems Technician
33. Funeral Director	80. Sheet Metal Worker
34. Gasfitter – Class A	81. Shipyard Labourer
35. Gasfitter - Class B	82. Sprinkler Fitter
36. Geoexchange Driller	83. Steamfitter/ Pipefitter
37. Geotechnical / Environmental Driller	84. Tidal Angling Guide
38. Glazier	85. Tiler
39. Hairstylist	86. Tool and Die Maker
40. Heavy Duty Equipment Technician	87. Tower Crane Operator
41. Heavy Equipment Operator	88. Transport Trailer Technician
42. Horticulturist, Landscape	89. Truck and Transport Mechanic
43. Industrial Mechanic (Millwright)	90. Utility Arborist
44. Instrumentation and Control Technician	91. Water Well Driller
45. Insulator (Heat and Frost)	92. Welder
46. Ironworkers (Generalist)	93. Well Pump Installer
47. Ironworker (Reinforcing)	

Inactive Trades: (4) – Programs currently under review
1. Inboard / Outboard Mechanic
2. Dairy Production Technician 2
3. Horticulturist, Production
4. Field Arborist

Endorsements (5)
1. Boilermaker Endorsement: Marine Fitter
2. Electrician Endorsement: Marine
3. Saw Filer Endorsement: Benchperson
4. Metal Fabricator (Fitter) Endorsement: Marine Fitter
5. Welder Endorsement: Multi-Process Alloy Welding (MPAW)

Appendix E: List of Compulsory Designated Trades by Jurisdiction

Compulsory Trades in other Canadian Jurisdictions

- In total, 28 of BC's 93 active trades are considered compulsory in at least one other jurisdiction in Canada – the majority of the 28 trades are interprovincial Red Seal trades.

Legend: Red Seal Trades (Denoted in Red) R - Regulated Trade C - Compulsory Trade X – Formerly Compulsory in BC *Recommended											
Compulsory/Regulated Trade	BC	Alb.	Sask.	Man.	Ont.	Que.	NS	NB	Nfld.	PEI	Total
Automotive											
Auto Body and Collision Technician*	X	C			C		C				3
Automotive Service Technician*	X	C			C		C	C		C	5
Heavy Duty Equipment Technician*		C									1
Motorcycle Mechanic/Technician		C			C						2
Recreation Vehicle Service Technician/Mechanic		C									1
Truck and Transport Mechanic		C			C		C				3
Transport Trailer Technician					C						1
Boilers, Pressure Vessels, Pipefitting and Refrigeration											
Boilermaker	R	C				C	C	C			4
Gasfitter A*	R	C									1
Gasfitter B*	R	C									1
Industrial Instrument Mechanic (Millwright)						C					1
Plumber	X	C	C		C	C	C	C		C	7
Refrigeration & Air Conditioning Mechanic*	R X	C	C	C	C	C	C	C			7
Sprinkler Fitter	X		C	C		C	C	C			5
Steamfitter/Pipefitter*	R X	C		C	C	C	C	C		C	7
Construction											
Bricklayer						C	C	C			3
Roofer	X										0
Ironworker (Generalist & Reinforcing)		C									1
Sheet Metal Worker*	X	C	C		C	C	C	C			6
Welder		C									1
Electrical											
Appliance Service Technician	R	C									1
Electrician, Construction*	R X	C	C	C	C	C	C	C	C	C	9
Electrician, Industrial*	R			C		C					2
Powerline Technician*	R X				C						1

Legend: Red Seal Trades (Denoted in Red) R - Regulated Trade C - Compulsory Trade X – Formerly Compulsory in BC *Recommended											
Compulsory/Regulated Trade	BC	Alb.	Sask.	Man.	Ont.	Que.	NS	NB	Nfld.	PEI	Total
Elevating Devices											
Boom Truck Operator	R	C							C		2
Mobile Crane Operator	R			C	C			C	C		4
Mobile Crane Operator (Hydraulic)	R	C		C	C			C			4
Tower Crane Operator	R	C		C	C	C			C		5
Human Services											
Hairstylist		C		C	C						3
Number of Compulsory Trades	0	21	5	9	15	11	11	11	4	4	

Source: Provincial Government websites and The Ellis Chart (www.ellischart.ca) – last updated Jan. 27th, 2021.

Note - Automotive Refinishing Prep Technician was formerly compulsory in BC (1996) but will be inactivated by the ITA effective April 1, 2021.

- This list only includes active B.C. trades that are designated as compulsory in at least one other jurisdiction (province), some of these trades have been merged with other “like” trades that may have different trade names but have similar scope of work.

Appendix F: Criteria Assessment Results

	Trade requires High Level of Technical Skill	Trade is in high demand	Trade is less vulnerable to economic shifts	Trade may be critical to large investments	Trade is a high safety risk to the public	Trade is a service purchased by the public
Construction Electrician	Requires a high level of skill compared to many other trades – an average of 7,200 hours (4 years) of training and most workers have certification or a diploma.	Higher demand for workers over the next 10 years – 2,752 expected job openings or 21 percent of current labour force (13,065).	Relative to other trades, Construction Electrician has experienced lower fluctuations in employment over the past 15 years – 27% difference between high and low employment.	Trade is critical to large scale investment and economic growth in BC – 88% of Construction Electricians are employed in BC's construction industry.	Industry experts and stakeholders suggest untrained workers could pose a high safety risk to the public due to poor or incorrect wiring and installation.	Only 6% of electrical work is conducted in a consumer orientated service industry (frequent direct interaction with common consumers).
Industrial Electrician	Requires a high level of skill compared to many other trades – an average of 7,200 hours (4 years) of training and most workers have certification or a diploma.	Higher demand for workers over the next 10 years – 1,171 expected job openings or 30 percent of current labour force (3,835).	Relative to other trades, Industrial Electrician has experienced lower fluctuations in employment over the past 15 years – 44% difference between high and low employment.	Trade is critical to large scale investment and economic growth in BC – 88% of Industrial Electricians are employed in BC's construction industry.	Industry experts and stakeholders suggest untrained workers could pose a high safety risk to the public due to poor or incorrect wiring and installation.	Only 4% of industrial electrical work is conducted in a consumer orientated service industry (frequent direct interaction with common consumers).
Powerline Technician (PLT)	Requires a high level of skill compared to many other trades – an average of 6,830 hours (4 years) of training and most workers have certification or a diploma.	Lower demand for workers over the next 10 years – 330 expected job openings but represents a moderately high percent of current labour force (26% of 1,235).	Relative to other trades, PLT has experienced moderate fluctuations in employment over the past 15 years – 51% difference between high and low employment.	Trade is critical to large scale investment and economic growth in BC – 43% of PLTs are employed in BC's construction industry.	Industry experts and stakeholders suggest untrained workers could pose a high safety risk to the public due to poor or incorrect powerline maintenance or installation.	Only 2% of PLT type work is conducted in a consumer orientated service industry (frequent direct interaction with common consumers) – mostly install/fix powerlines on large projects.

	Trade requires High Level of Technical Skill	Trade is in high demand	Trade is less vulnerable to economic shifts	Trade may be critical to large investments	Trade is a high safety risk to the public	Trade is a service purchased by the public
Gasfitter A/B	Requires a high level of skill compared to many other trades – an average of 7,800 hours (4 years) of training and most workers have certification or a diploma.	Lower demand for workers over the next 10 years – 379 expected job openings but represents a higher percent of current labour force (36% of 1,040).	Relative to other trades, Gasfitter has experienced high fluctuations in employment over the past 15 years – 66% difference between high and low employment.	Trade is critical to large scale investment and economic growth in BC – 62% of Gasfitters are employed in BC's construction industry.	Industry experts and stakeholders suggest untrained workers could pose a high safety risk to the public due to improperly maintained/repair ed gas lines & other gas utilities.	Sometimes purchased directly by public consumers – 9% of work is conducted in a consumer orientated industry.
Steamfitter/ Pipefitter	Requires a higher level of skill compared to many other trades – an average of 6,400 hours (4 years) of training and most workers have certification or a diploma.	Lower demand for workers over the next 10 years – 725 expected job openings but represents a high percent of current labour force (29% of 2,460).	Relative to other trades, Steamfitter has experienced moderate fluctuations in employment over the past 15 years – 48% difference between high and low employment.	Trade is critical to large scale investment and economic growth in BC – 61% of Steamfitters are employed in BC's construction industry.	Industry experts and stakeholders suggest untrained workers could pose a high safety risk to the public due to improper work resulting in pressure vessel failure.	Only 5% of Steamfitter type work is conducted in a consumer orientated service industry (frequent direct interaction with common consumers).
Refrigeration & Air Conditioning Mechanic (RACM)	Requires a higher level of skill compared to many other trades – an average of 8,060 hours (4 years) of training and most workers have certification or a diploma.	Lower demand for workers over the next 10 years – 696 expected job openings but represents a high percent of current labour force (27% of 2,570).	Relative to other trades, RACM has experienced moderate fluctuations in employment over the past 15 years – 43% difference between high and low employment.	Trade is critical to large scale investment and economic growth in BC – 68% of RACM are employed in BC's construction industry.	Industry experts and stakeholders suggest untrained workers could pose a high safety risk to the public due to improper maintenance/inst allation of refrigeration or ventilation systems.	Sometimes purchased directly by public consumers – 16% of work is conducted in a consumer orientated industry.

	Trade requires High Level of Technical Skill	Trade is in high demand	Trade is less vulnerable to economic shifts	Trade may be critical to large investments	Trade is a high safety risk to the public	Trade is a service purchased by the public
Sheet Metal Worker (SMW)	Requires a higher level of skill compared to many other trades – an average of 6,400 hours (4 years) of training and most workers have certification or a diploma.	Lower demand for workers over the next 10 years – 693 expected job openings but represents a high percent of current labour force (27% of 2,515).	Trade has experienced moderate fluctuations in employment over the past 15 years – 48% difference between high and low employment.	Trade is critical to large scale investment and economic growth in BC – 63% of SMW are employed in BC’s construction industry.	Industry experts and stakeholders suggest untrained workers could pose a high safety risk to the public – poor work can result in serious structure or equipment failure.	Only 2% of Sheet Metal type work is conducted in a consumer orientated service industry (frequent direct interaction with common consumers).
Automotive Service Technician (AST)	Requires a higher level of skill compared to other trades – average of 10,380 hours (4 years) of training, most workers have a diploma.	High demand for workers over the next 10 years – 6,176 expected job openings represents a high percent of current labour force (35% of 17,575).	Trade has experienced low fluctuations in employment over the past 15 years – 22% difference between high and low employment.	Trade is not critical to large scale investment and economic growth in BC – only 2% of ASTs are employed in BC’s construction industry.	Industry experts and stakeholders suggest untrained workers could pose a high safety risk to the public – poor work can result in vehicle and public roadway safety issues.	Frequently purchased directly by public consumers – 75% of work is conducted in a consumer orientated industry.
Automotive Body Repairer (MVBR)	Requires a higher level of skill compared to other trades – average of 7,230 hours (4 years) of training and most workers have a diploma.	High demand for workers over the next 10 years – 1,282 expected job openings represents a high percent of current labour force (31% of 4,145).	Trade has experienced low fluctuations in employment over the past 15 years – 34% difference between high and low employment.	Trade is not critical to large scale investment and economic growth in BC – only 2% of MVBRs are employed in BC’s construction industry.	Stakeholders and experts suggest untrained workers could pose a high safety risk to the public – poor work can result in vehicle and public roadway safety issues.	Frequently purchased directly by public consumers – 91% of work is conducted in a consumer orientated industry.
Heavy Duty Equipment Technician	Requires a higher level of skill compared to other trades – average of 7,200 hours (4 years) of training and most workers have a diploma.	High demand for workers over the next 10 years – 1,644 expected job openings represents a high percent of current labour force (31.5% of 5,220).	Trade has experienced low fluctuations in employment over the past 15 years – 22% difference between high and low employment.	Trade not critical to large scale investment and economic growth in BC – 16% of HDETs employed in BC’s construction industry.	Stakeholders and experts suggest untrained workers could pose a high safety risk to the public – poor work can result in equipment malfunction close to public areas.	Not often a service purchased by the public but has a moderate percent of work conducted in consumer orientated environment (22%)