



CANADA'S TERRITORIES

**HIGHLIGHTS
2018–2027**

CONSTRUCTION TRADES OUTLOOK FOR MAJOR PROJECTS IN CANADA'S TERRITORIES

Construction activity in Canada is approaching a new plateau following two decades of almost uninterrupted growth during which the workforce doubled. The resource expansion, which propelled the rapid pace of growth over the last decade in many provinces, has given way to a new period in which demands are sustained at high levels by infrastructure renewal, stable residential demands, and steady increases in ICI (industrial, commercial, institutional) building construction and maintenance work, while industry grapples with responses to the anticipated retirement of one quarter of a million skilled workers over the coming decade.

While the longer-term outlook is positive across most provinces, the pace of growth is expected to be slower compared to the past decade, and demands continue to shift toward meeting modest increases in infrastructure, sustaining capital, maintenance, and residential renovation requirements. Under the 2018–2027 outlook scenario, total construction employment is mostly unchanged at the end of the scenario period in 2027, as moderate gains in non-residential demands outpace small declines in residential.

The outlook scenario reveals several key themes that emerge across the rest of Canada:

- Uncertainty surrounding future commodity prices and changing global demands has translated into delays and cancellations of some resource development projects across Canada. As a result, related engineering construction employment is expected to decline by 4 percent across the scenario period, partly offset by planned infrastructure investment.
- ICI building construction demands rise over the near term following recent population growth and a modest manufacturing recovery, but growth is moderate.
- Maintenance work (heavy industrial and non-residential buildings) is on a steady, but moderate increase across the decade, with larger than normal industrial demands expected in 2018 in Alberta and New Brunswick.
- Major public transportation and other infrastructure projects add to employment opportunities across most provinces, with an added boost by provincial and federal government long-term commitments to infrastructure renewal.

- The timing of new major projects is varied and irregular, and these changes drive most of the regional volatility in non-residential employment:
 - In British Columbia, proposed LNG (liquefied natural gas) facilities, pipelines, and infrastructure projects increase non-residential employment by 24 percent between 2019 and 2021.
 - In Alberta, demands are expected to continue to decline in 2018 as existing major oil sands projects near completion. Renewed growth in oil and gas investment is not anticipated until later in the scenario period and is expected to remain below previous peak levels of activity.
 - A smaller rise is expected in Saskatchewan, sustained by rising industrial investment and high levels of highway and bridge work, while in Manitoba, major hydro and transmission project demands step down from record levels of activity.
 - New Brunswick demands are sustained near current levels to 2020 before current projects wind down. The anticipated start of a major hydro refurbishment project should increase demands later in the scenario period.
 - Most resource mega-projects in Newfoundland and Labrador are now complete, but further declines in employment are expected to continue over the near term as work on the Muskrat Falls hydro project is completed. The start of a new offshore platform only partly offsets expected employment declines.

Despite slower employment growth across the rest of Canada, demographic trends add to market challenges. As population growth slows, there are less youth available to enter the workforce as construction retirements increase over the long term. An estimated 255,000 construction workers, or 21 percent of the 2017 workforce, are expected to retire over the next decade, and this represents a significant loss of skilled workers.

For the territories, balancing labour requirements will require a mix of short- and long-term mobility that includes fly-in, fly-out movement into remote northern locations and more long-term additions of young and permanent workers to each regional labour market. The BuildForce labour market information (LMI) system has been tracking these developments and assessing the impacts on labour markets for 34 construction trades and occupations in each province. Large construction projects regularly drive up labour requirements, creating peak demands and recruiting challenges for skilled trades and occupations.

BuildForce's LMI System

BuildForce Canada uses a scenario-based forecasting system to assess future construction labour requirements in the heavy industrial, residential, and non-residential construction markets. This labour market information (LMI) system tracks 34 trades and occupations. To further improve the robustness of the system, BuildForce consults with industry stakeholders, including owners, contractors, and labour groups, to validate the scenario assumptions and construction project lists, and seeks input from government on related analysis. The information is then distilled into labour market condition rankings to help industry employers with the management of their respective human resources.

The purpose of this document is to identify key projects and provide estimates of construction trades requirements for these projects. While BuildForce produces provincial forecasts for construction trades, the lack of detailed historical labour market information for Canada's territories makes it difficult to provide similar outlooks for these regions. Nevertheless, there are several major construction projects proposed for the territories, mainly in the mining sector, that will draw on the same skilled labour pool needed for other major resource projects underway and proposed across Canada.

The next section of this report provides some background on the economies in the three territories. The third section identifies the major projects currently being tracked. The fourth section provides estimates of the trades requirements for the projects.

BACKGROUND

The Northwest Territories has the largest economy in the North and has fared reasonably well over the last few years. In 2014, GDP growth was at 5 percent. In 2015 and again in 2016 it slowed to 1.3 percent, with a marginal decline of 0.1 percent. The Yukon economy contracted rather sharply in 2015 with real GDP declining by 6 percent, but then rebounded in 2016 with growth at 8.2 percent. The Nunavut economy has a history of volatility with large changes in growth, but has been relatively stable over the last few years with growth of 1.2 percent in 2015 that increased to 3.9 percent in 2016.

Table 1 shows the level and percent change in real gross domestic product by region for the period 2009 to 2016.

These divergent patterns are primarily due to the differing development paths of the mining industry across the territories. In the Northwest Territories, the diamond mining sector has reached maturity and production declines can be expected in the future. The Diavik and Ekati mines are expected to be shut down over the next decade. The new Gahcho Kué mine adds to production, but will not be a sufficient offset for the industry in the Northwest Territories. The construction of new mines in the Yukon has been postponed; however, as commodity prices continue to rise in the coming years, it is expected that new mines will

open. The construction of the Meliadine Gold mine in Nunavut is currently under way and is expected to begin production in 2019.

PLANNED MAJOR CONSTRUCTION PROJECTS IN THE TERRITORIES

This section provides brief overviews of proposed major construction projects across Canada's territories.

There are exploration projects currently being tracked, but not included in this analysis, as there is limited information available on the estimated capital costs or anticipated schedules. These projects include Golden Predator Mining Corp.'s 3 Aces Project located in Southeastern Yukon, where a drilling program is currently underway, as the company is still working on realizing the potential of this land holding; and, also in the Yukon, Fireweed Zinc Ltd.'s Macmillan Pass zinc-lead-silver project, which started a drilling program in July 2017 and has a preliminary economic assessment expected by Q2 2018.

In the Yukon, Selwyn Chihong's proposed zinc-lead open-pit mine located in eastern Yukon is estimated to be one of the largest undeveloped zinc-lead deposits in the world. A Preliminary Economic Assessment has been completed for the mine, which will have an 11-year operation period. Estimated capital costs are \$2.12 billion and construction is expected to commence in 2022. This project remains on our watch list.

Table 2 lists the major current and proposed projects for the territories, including the estimated capital costs associated with the construction phase, as well as the anticipated start and end dates, if available. The construction capital costs are used to estimate trades requirements. Under current market conditions with lower commodity prices and uncertain global demands, a number of known projects being tracked have been postponed, including the Nechalacho (Thor Lake) Project, NICO Project, Pine Point Mine, Prairie Creek, and Yellowknife City Gold projects in the Northwest Territories, and the Brewery Creek, Carmacks Copper, and Whitehorse Copper projects in the Yukon. Pending final development approvals, the start and end dates for these projects are unknown.

Table 1: Real GDP of the territories (millions of 2007 dollars*)

	2009	2010	2011	2012	2013	2014	2015	2016
Yukon	2,024	2,112	2,215	2,303	2,338	2,332	2,193	2,374
	6.2%	4.3%	4.9%	4.0%	1.5%	-0.2%	-6.0%	8.2%
Northwest Territories	3,674	3,775	3,427	3,408	3,502	3,677	3,724	3,720
	-10.4%	2.7%	-9.2%	-0.6%	2.8%	5.0%	1.3%	-0.1%
Nunavut	1,389	1,647	1,742	1,785	1,966	1,939	1,963	2,040
	-6.5%	18.6%	5.8%	2.5%	10.1%	-1.4%	1.2%	3.9%

Source: Statistics Canada

* \$2007 millions indicates that the investment values are in year 2007 dollars (base year), that is, adjusted for inflation. This is used to calculate the real physical year-to-year change of the value of construction, factoring out growth (increase value) due to increases in prices.

Table 2: Major projects and capital costs

	PROJECTS	CONSTRUCTION		
		Start year	End year	Cost (millions)
Northwest Territories	Giant Mine Remediation Project	2020	2030	\$900
	Nechalacho (Thor Lake) Project	---	---	\$900
	NICO Project	---	---	\$210
	Pine Point Mine	---	---	\$140
	Prairie Creek	---	---	\$240
	Yellowknife City Gold Project	---	---	\$190
	Total			\$2,580
Yukon	Casino Mine	2020	2023	\$2,450
	Coffee Gold	2018	2019	\$320
	Eagle Gold Project	2017	2019	\$370
	Resource Gateway Project	2018	2024	\$360
	Brewery Creek	---	---	\$200
	Carmacks Copper	---	---	\$260
	Whitehorse Copper	---	---	\$5
	Total			\$3,965
Nunavut	Meliadine Gold mine	2017	2019	\$911
	Total			\$911

Source: Yukon Economic Development, NWT Bureau of Statistics, Nunavut Bureau of Statistics and company websites

Giant Mine Remediation Project, Northwest Territories

The Giant Mine was a large gold mine located on the Ingraham Trail just outside of Yellowknife. Remediation work will remove material contaminated with arsenic and asbestos. The remediation plan requires regulatory approval; work is not likely to begin before 2020–2021. Estimated capital costs stand at \$900 million.

Nechalacho (Thor Lake) Project, Northwest Territories

The Nechalacho rare earth elements deposit, located at Thor Lake about 100 kilometres southeast of Yellowknife, is now on care and maintenance, but could be reactivated over the near term pending investor interest. There has been renewed interest in rare earth elements, largely due to their role in producing the magnets used

in electric vehicles. The company is completing the permitting process under the *Mackenzie Valley Resource Management Act*. The estimated capital construction cost is \$902 million, but a proposed schedule is unknown.

NICO Project, Northwest Territories

The NICO deposit, located 150 kilometres northwest of Yellowknife, contains open-pit and underground proven and probable mineral reserves totalling 33 million tonnes. The company has recently received environmental assessment approval to construct an all-season road from Whati to the proposed mine site. Estimated capital costs are \$210 million, but the project is currently postponed pending a final investment decision.

Pine Point Mine, Northwest Territories

The Pine Point Mine is located west of Fort Resolution on the south shore of Great Slave Lake. The zinc project was purchased in 2016 by Darnley Bay Resources Ltd. A positive preliminary economic assessment has been completed showing a 13-year operation potential. They recently signed an exploration deal with First Nations groups, and a ground geophysical survey is currently under way. Project capital costs are \$140 million, but construction is currently postponed pending results of further exploration and the geophysical survey.

Prairie Creek Mine, Northwest Territories

A recent technical report on the Prairie Creek Mine updated the average annual production projection to approximately 60,000 tonnes of zinc concentrate and 55,000 tonnes of lead concentrate with an initial mine life expectancy of 17 years. Construction capital costs for the mine are estimated at \$244 million (including provisions for an all-season road). The Mackenzie Valley review board has recommended approval of an all-season road for the mine, with construction expected to take three years. This project is currently postponed, with an unknown construction schedule.

Yellowknife City Gold Project, Northwest Territories

The Yellowknife City Gold Project is located in the South Mackenzie Mining District near Yellowknife. The company is conducting an exploration program on their recently acquired land holdings. If approved, the company estimates a two-year construction period with estimated capital costs of \$193 million. This project is postponed.

Casino mine, Yukon Territories

The Casino Mining Corporation, a wholly-owned subsidiary of Western Copper and Gold, is planning to build what would be the Yukon's biggest mine, about 400 kilometres northwest of Whitehorse. Once in operation, the mine is expected to produce more than 400,000 ounces of gold annually and more than 200 million pounds of copper with a mine life of about 22 years. The construction of an open-pit mine will have an estimated capital cost of \$2.45 billion with an expected start date of 2020. The project is under review by the Yukon Environmental and Socio-economic Assessment Board.

Coffee Gold Project, Yukon Territories

Goldcorp Inc. owns the Coffee Gold Project, approximately 130 kilometres south of Dawson City. Coffee Gold is a proposed open-pit heap leach gold mine. It is expected to produce about 200,000 ounces of gold per year for about 10 years. The company completed a Preliminary Economic Assessment in 2014 and filed with the Yukon Environmental and Socio-economic Assessment Board. The proposed start of construction is in 2018. The estimated capital cost is \$317 million.

Eagle Gold Project, Yukon Territories

Victoria Gold Corp.'s Eagle Gold Project is located 375 kilometres north of Whitehorse. The open-pit mine will operate as a drill, blast, shovel, and haul operation with a nominal rate of 29,500 tpd (tonnes per day) of ore and a mine life expectancy of nine years. The project will produce 200,000 ounces of gold annually at an operating cost of \$600 per ounce. Estimated capital costs for construction are \$400 million. The company officially broke ground in August 2017 for the first phase of construction. First production is expected to begin in two years.

Resource Gateway Project, Yukon Territories

The Government of Canada and the Government of Yukon have committed to contributing close to \$360 million in infrastructure investment for the Resource Gateway Project. The aim is to increase access to the resource-rich territory and promote private investment. The project focuses on two particularly resource-rich areas – Dawson Range and Nahanni Range. Engineering and planning has commenced and construction is expected to occur between 2018 and 2024.

Brewery Creek, Yukon Territories

Golden Predator Mining Corp. holds the Brewery Creek project, a past-producing heap leach gold mine. The company has conducted a Preliminary Economic Assessment and the next steps are advancing the project through feasibility and permitting. Construction costs are estimated at \$200 million and will extend over a two-year period, but the project is postponed.

Carmacks Copper, Yukon Territories

Copper North Mining Corp. holds the Carmacks Copper project located 198 kilometres north of Whitehorse. The project is progressing to feasibility study for the early production of copper, gold, and silver from proposed leach operations. A Preliminary Economic Assessment estimated capital costs at \$264 million with construction to extend over a two-year period. The mine is expected to have an operating life expectancy of seven years. This project is currently postponed until overall market conditions improve.

Whitehorse Copper Project, Yukon Territories

The Whitehorse Copper mine closed in 1982 and left behind 10 million tonnes of tailings. Eagle Whitehorse plans to truck ore from the mine to the port of Skagway to be shipped to market. The world price for magnetite has fallen sharply, however, and the project is postponed until market conditions improve. Capital construction costs are estimated at \$5 million, with an expected six-to-seven-month construction period.

Meliadine mine, Nunavut Territory

The Meliadine gold project is located 25 kilometres northwest of Rankin Inlet. Initial capital costs are estimated at \$911 million and sustaining capital costs at \$357 million. The mine is expected to produce 5.3 million ounces of gold with a mine life expectancy over 14 years. The Nunavut Impact Review Board gave Agnico Eagle a Project Certificate. Key permits and a production lease were received in 2017 and the mine is under construction. Production is expected to start in 2019.

TRADE REQUIREMENTS

The construction and operation of a mine often faces challenges in attracting and training skilled workers. This is especially problematic for mines located in remote locations. Companies are reporting that skilled workers are becoming increasingly difficult to find and this problem is being accentuated by an aging workforce and a wave of retirements from the industry.

The development of the mining sector in Canada's territories will require key construction trades and occupations that are common to engineering and industrial work in other industries and provinces. The demand for these construction trades has grown dramatically and steadily for at least a decade and, while growth is expected to slow with some projects postponed, industry groups and governments will need to remain focused on recruiting and training plans.

The BuildForce LMI tracking system is limited to broad occupational classifications. The requirements of mine construction and related resource projects have traditionally focused on the following trades and occupations:

- boilermakers
- carpenters
- construction estimators
- construction managers
- contractors and supervisors
- drillers and blasters
- electricians
- heavy equipment operators
- heavy-duty equipment mechanics
- ironworkers and structural metal and platework fabricators and fitters
- pipefitters
- trades helpers and general labourers
- truck drivers
- welders

The estimated capital cost for each project and additional information on occupation requirements associated with heavy construction inform our estimate of trades requirements. Importantly, it is assumed that all announced projects proceed as scheduled.

Tables 3 and 4 provide estimates of trades requirements that are generated by the construction of the various projects over the next few years. The total number of workers required for all projects by territory is shown in Table 3. The time pattern for the projects in the territories as a whole is shown in Table 4.

The total number of trades tracked by BuildForce¹ required for the projects as a whole is 4,983 workers. The largest number of requirements is for heavy equipment operators at 1,934, followed by 976 trades helpers and labourers, and 356 truck drivers.

¹ The BuildForce LMI system tracks labour market conditions for 34 trades and occupations. This group includes on-site workers and accounts for approximately 75 percent of the full construction workforce. Excluded from this group are office workers, engineers, office managers, etc..

Table 3: Construction trades demand by territory

	Northwest Territories	Yukon	Nunavut	Total
Boilermakers	13	46	13	72
Construction estimators	24	112	25	161
Construction managers	15	209	16	240
Construction millwrights and industrial mechanics (except textile)	4	15	4	23
Contractors and supervisors	31	201	31	263
Crane operators	38	135	39	212
Drillers and blasters – surface mining, quarrying and construction	36	141	36	213
Electricians	4	56	4	63
Heavy-duty equipment mechanics	22	122	22	167
Heavy equipment operators (except crane)	323	1,283	327	1,934
Ironworkers, structural metal and platework fabricators and fitters	19	84	19	123
Sheet metal workers	1	4	1	6
Steamfitters, pipefitters and sprinkler system installers	4	15	4	22
Trades helpers and labourers	116	743	117	976
Truck drivers	63	230	63	356
Welders and related machine operators	28	97	28	153
Total	740	3,493	749	4,983

Source: Yukon Economic Development, NWT Bureau of Statistics, Nunavut Bureau of Statistics, company websites and BuildForce Canada

Table 4: Construction trades demand

All projects	2017	2018	2019	2020	2021	2022–2027
Boilermakers	4	11	9	11	11	27
Construction estimators	7	25	22	24	24	58
Construction managers	4	41	48	40	39	68
Construction millwrights and industrial mechanics (except textile)	1	4	3	3	3	8
Contractors and supervisors	9	43	43	42	41	87
Crane operators	11	33	25	31	31	81
Drillers and blasters – surface mining, quarrying and construction	10	33	27	32	32	79
Electricians	1	11	13	11	10	18
Heavy-duty equipment mechanics	6	27	25	26	25	57
Heavy equipment operators (except crane)	92	302	246	288	287	718
Ironworkers and structural metal and platework fabricators and fitters	5	19	17	19	18	44
Sheet metal workers	0	1	1	1	1	2
Steamfitters, pipefitters and sprinkler system installers	1	3	3	3	3	8
Truck drivers	18	55	43	53	52	135
Trades helpers and labourers	33	159	157	154	151	322
Welders and related machine operators	8	24	18	22	22	58
Total	211	790	700	759	751	1,772

Source: Yukon Economic Development, NWT Bureau of Statistics, Nunavut Bureau of Statistics, company websites and BuildForce Canada

CONCLUSIONS

The labour requirements for projects in the Northwest Territories, Yukon, and Nunavut add to the complexity of demand requirements for construction trades and occupations across Canada. While some of the proposed resource development projects in the territories have been postponed, meeting labour demands for ongoing resource projects and replacing an aging workforce will require a mix of short- and long-term mobility options that include both the movement of workers into remote northern locations and more long-term additions of young and permanent workers to address an aging workforce. Some new workers may be drawn

from the populations of the Northwest Territories, the Yukon and Nunavut, while others will have to be drawn to the territories from outside the local construction industry.

The industry scenario-based approach developed by BuildForce Canada to assess future labour market conditions provides a powerful planning tool for industry, government, and other stakeholders to better track labour market conditions and identify potential pressure points. The anticipated labour market conditions reflect the current long-term economic outlook and industry major project assumptions. Any changes to these assumptions presents risks and potentially alters anticipated market conditions.

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