



CANADA'S TERRITORIES

HIGHLIGHTS 2020–2029

CONSTRUCTION TRADES OUTLOOK FOR MAJOR PROJECTS IN CANADA'S TERRITORIES

Construction activity in Canada is entering a period of slower growth following two decades of almost uninterrupted growth during which the labour force 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, steady increases in the construction of ICI (industrial, commercial, institutional) buildings, and maintenance work. This is occurring while industry grapples with responses to the anticipated retirement of more than 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 demand continues to shift toward meeting modest increases in infrastructure, sustaining capital, maintenance, and residential renovation requirements. Under the 2020–2029 outlook scenario, total construction employment rises modestly by 5%, as stronger non-residential growth adds to rising demands in the residential sector.

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 1% across the scenario period, partly offset by planned infrastructure investment.
- Construction of ICI buildings rises steadily over the coming decade following population growth and a modest manufacturing recovery. Stronger near-term demand related to health services projects is expected in Nova Scotia.
- Maintenance work (heavy industrial and non-residential buildings) is on a steady but moderate increase across the decade, with strong industrial demands expected in 2020 in British Columbia, Alberta, and Ontario.
- 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**, LNG (liquefied natural gas) facilities, pipelines, and infrastructure projects increase non-residential employment through the near term.
 - In **Alberta**, demands are expected to be supported by petrochemical and pipeline projects in the near term. 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. Shutdown and turnaround maintenance increases demand for workers with specialized skills for short periods within 2020 and 2021.
 - Longer-term potential for mining exists in **Saskatchewan**, sustaining modest gains in construction employment, while in **Manitoba**, major hydro and transmission project demands step down from record levels of activity.
 - **New Brunswick** demands are sustained near current levels, with public infrastructure projects sustaining demands over the near term. The anticipated ramp-up of a major hydro refurbishment project should increase demands later in the scenario period.
 - With work on the Muskrat Falls hydro project now complete, declines in employment are expected in **Newfoundland and Labrador**. This is despite ongoing work on Voisey's Bay and West White Rose. The start of construction on a new offshore platform in 2022 offsets employment declines.

Despite slower employment growth across the rest of Canada, demographic trends add to market challenges. As population growth slows due to Canada's demographic structure, there are less youth available to enter the labour force as construction retirements increase over the long term. An estimated 257,100 construction workers – 22% of the 2019 construction labour force – 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, with the mining industry accounting for more than 35% of total GDP in recent years. The territory hosts three operating diamond mines. Production began at the Gahcho Kué Mine in 2016 and ramped up the following year, resulting in a 50% expansion of mining industry GDP during the period. Despite massive growth in mining over these years, associated reductions in construction have left overall GDP growth relatively modest.

The Yukon economy expanded by 3.3% in 2018 following limited growth the previous year. Since 2017, growth in the economy has been supported by investment in the Eagle Gold Project, while waning metal mining production has acted as a hindrance. Mining's share of Yukon's GDP fell from 10% in 2016 to 5% in 2018.

The Nunavut economy has a history of volatility, but it had exceptionally strong growth in 2017 and 2018, a result of construction of the Amaruq satellite and Meliadine mines, which recently began commercial production. Mining accounted for 25% of Nunavut's total GDP in 2018.

Table 1 shows the level and percent change in real GDP by region for the period 2010 to 2018.

Over the last few years, the divergent patterns for the territories are primarily due to the differing development paths of the mining industry in each. 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 will add to production but will not be a sufficient offset for the industry. In the Yukon, exploration is down and various mining projects are at a standstill; however, as commodity prices continue to rise in the coming years, it is expected that some of these projects will commence. Meanwhile, the re-opening of Minto, the start of production at Eagle Gold, and the construction of Coffee Gold will help push economic growth. Sustained output at the Meadowbank Complex, production at the new Meliadine gold mine, and expansion of road infrastructure all provide encouragement for Nunavut's mining industry in the coming years.

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, Fireweed Zinc Ltd.'s Macmillan Pass zinc-lead-silver project, TerraX's Yellowknife City Gold project, and Selwyn Chihong's proposed zinc-lead project.

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. Pending final development approvals, the start and end dates for these projects are unknown.

Table 1: Real GDP of the territories (millions of 2012 dollars*)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Yukon	2,343	2,460	2,558	2,595	2,614	2,409	2,588	2,612	2,699
	4.0%	5.0%	4.0%	1.4%	0.7%	-7.8%	7.4%	0.9%	3.3%
Northwest Territories	4,843	4,408	4,394	4,521	4,735	4,779	4,712	4,798	4,889
	2.6%	-9.0%	-0.3%	2.9%	4.7%	0.9%	-1.4%	1.8%	1.9%
Nunavut	2,039	2,150	2,199	2,410	2,379	2,372	2,492	2,776	2,986
	18.5%	5.4%	2.3%	9.6%	-1.3%	-0.3%	5.1%	11.4%	7.6%

Source: Statistics Canada

* **\$2012 millions** indicates that the investment values are in year 2012 dollars (base year), that is, adjusted for inflation. This is used to calculate the real year-to-year change of the value of production, factoring out growth (increased value) due to increases in prices.

Table 2: Major projects and capital costs

	PROJECTS	CONSTRUCTION		
		Start year	End year	Capital cost (\$millions)
Northwest Territories	Nechalacho (Thor Lake) Project	---	---	\$10
	Prairie Creek	2021	2023	\$210
	Prairie Creek All-Season Road	2020	2022	\$69
	NICO Project	---	---	\$210
	Giant Mine Remediation Project	---	---	\$900
	Pine Point Mine	---	---	\$140
	Tlicho All-Season Road	2019	2022	\$200
	Total			\$1,739
Yukon	Whitehorse Copper	---	---	\$5
	Brewery Creek	---	---	\$89
	Carmacks Copper	---	---	\$264
	Casino Mine	---	---	\$2,900
	Coffee Gold	---	---	\$317
	Resource Gateway Project	2019	2025	\$468
	Total			\$4,043
Nunavut	Black River Project	---	---	\$420
	Grays Bay Road and Port Project	2020	2023	\$500
	Total			\$920

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 project's water license and land use permit applications have been working their way through the regulatory process since April 2019. The public hearing segment of the regulatory process is expected to take place in January 2020. The entire project is anticipated to take up to 10 years and estimated capital costs stand at \$900 million.

Nechalacho (Thor Lake) Project, Northwest Territories

The Nechalacho rare earth deposit is located at Thor Lake, about 100 kilometres southeast of Yellowknife. In 2018, Avalon Advanced Materials Inc. announced that it will re-activate the project due to strong demand for the rare earths used in magnets. Contrary to

its 2013 feasibility study, the company now intends to focus on a near-surface small-scale development in partnership with Cheetah Resources Pty. Ltd. The company has received approval for the extension of its land use permit and water license for the first year of site preparation and preliminary low-impact construction activities in 2019. Capital costs of the small-scale development are estimated to be as low as \$10 million for a pilot project.

NICO Project, Northwest Territories

The NICO deposit is located 150 kilometres northwest of Yellowknife. The cobalt, gold, bismuth, and copper deposit has proven and probable mineral reserves totaling 33 million tonnes. In November of 2019, Fortune Minerals Limited announced that it had come to an agreement with the Tlicho Government that outlines conditions under which the company can build and operate an access road to the mine. Fortune plans to make use of the newly under-construction Tlicho all-season road, which is expected to be completed in the fall of 2022. While cobalt prices have been somewhat bleak in recent months, a rise in price is expected by

2022–2023 due to a shortage caused by the electrification of the auto industry. Despite the recent progress, it is still unclear where materials from the mine will be processed. Estimated capital costs are \$210 million.

Pine Point Mine, Northwest Territories

The Pine Point Mine is located west of Fort Resolution on the south shore of Great Slave Lake. Osisko Metals Inc. acquired the lead-zinc project in December 2017. The most recent drill program estimates that 5.3 billion pounds of zinc and 2.1 billion pounds of lead can be extracted from the mine. The company has stated the mine could be in operation as early as 2023; however, it listed ongoing trade disputes between the U.S. and China as creating uncertainty for investors, creating a downside risk to the project. Project capital costs are estimated at \$140 million.

Prairie Creek Mine, Northwest Territories

Prairie Creek is an advanced-stage zinc, lead, and silver mine located 250 kilometres west of Fort Simpson. With the November 2019 issue of water licenses and a land use permit for an all-season road to the mine, NorZinc Ltd. hopes to begin construction on the road portion of the project in 2020, hinging on similar permits from Parks Canada, who's jurisdiction the road overlaps. The road will take roughly three years to complete. The company already has permits to construct and operate the mine, for which construction is planned to take around three years, commencing in 2021. Construction capital costs are estimated at \$68.5 million for the road and \$210.4 million for the mine.

Tlicho All-Season Road, Northwest Territories

Ground was broken in August 2019 on a new 97-kilometre all-season road to Whati from Highway 3 west of Behchoko. The project is expected to be completed by the fall of 2022 with a capital cost of \$200 million and will be essential to the development of the NICO Project.

Casino mine, Yukon Territories

Casino Mining Corporation is developing the Casino Project, a copper, gold, molybdenum, and silver deposit, located about 300 kilometres northwest of Whitehorse. It is among the largest copper-gold deposits in the world. Casino is proposing a conventional open-pit, truck-and-shovel operation to make the project economically viable. The mill is expected to process about 120,000 tons of ore per day over a 22-year mine life. The estimated capital cost with current exchange rates is in the range of \$2.9 billion. The project is currently in the environmental assessment review stage. In late August 2019, Casino Mining announced completion of the acquisition of the Canadian Creek Property from Cariboo Rose, which lies adjacent to the Casino Project. The company anticipates the acquisition will add significant exploration potential and will considerably strengthen the project.

Coffee Gold Project, Yukon Territories

Coffee Gold is a proposed open-pit heap leach gold mine, approximately 130 kilometres south of Dawson City. It is expected to produce roughly 200,000 ounces of gold per year for about 10 years. Construction was previously stated to begin in 2021; however, with the merger of Goldcorp and Newmont, there is increased uncertainty regarding the development timeline of the project. The Coffee Gold Project is still under review by the Yukon Environmental and Socio-economic Assessment Board. The estimated capital cost is \$317 million.

Eagle Gold Project (Construction completed in 2019), Yukon Territories

Victoria Gold Corp.'s Eagle Gold Project is located 375 kilometres north of Whitehorse. The open-pit mine has entered its operation phase, with its first gold pour in September 2019. There are around 300 workers on-site as of late November, in line with the ramp-up plan. The mine will operate as a drill, blast, shovel, and haul operation with a nominal rate of 29,500 tonnes per day of ore and a mine life expectancy of nine years. The project will produce around 200,000 ounces of gold annually. Capital costs between 2017 and 2019 are estimated to have totalled \$347 million.

Resource Gateway Project, Yukon Territories

The Government of Canada and the Government of Yukon have committed to contributing \$468 million in infrastructure investment for the Resource Gateway Project. The aim is to increase access to the resource-rich territory and promote private investment. Construction was planned to occur between 2018 and 2024; however, due to prolonged delays regarding the start of construction, the Yukon government now hopes to complete the project by 2025.

Brewery Creek, Yukon Territories

The Brewery Creek property is located within the foothills of the Ogilvie Mountains along the northeastern boundary of the Tintina Trench. The property is owned by Golden Predator Mining Corp. It is a past-producing heap leach gold mine. The company conducted a Preliminary Economic Assessment stating estimated capital costs of \$89 million over a two-year period. In July 2019, the company announced the approval of a quartz mining license and water license and have undergone additional drilling with the hopes of expanding and upgrading current resources. A feasibility study for the initial phase of the mine redevelopment is expected in the first quarter of 2020.

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 (2016) estimated pre-production capital

costs at \$263.6 million, with construction to extend over a two-year period. The mine is expected to have an operating life 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 (construction completed in 2019), 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 has a proven and probable reserve of 3.8 million ounces, with an expected mine life of 14 years. Commercial production began in May 2019. Agnico Eagle expected the mine to produce 230,000 ounces of gold in 2019 and estimates 385,000 ounces in 2020.

Amaruq mine (construction completed in 2019), Nunavut Territory

The Amaruq satellite deposit uses a conventional open-pit operation, with ore being shipped to the mill at the nearby Meadowbank mine for processing. The deposit holds proven and probable mineral reserves of 2.9 million ounces of gold and will extend the life of the Meadowbank facility by seven years, with an anticipated shutdown in 2025. Commercial production was declared on September 30, 2019, with pre-production capital expenditures of \$424 million between 2017 and 2019 and sustaining capital expenditures of \$108 million. Full production is expected to be reached in 2021, with a total of 950 employees working at the Meadowbank complex.

Black River Project (construction completed in 2019), Nunavut Territory

The Black River Project is owned by Sabina Gold & Silver Corp. and holds proven resources of 1.34 million ounces of gold. Sabina will employ both shovel-and-truck open-pit and underground mining methods. Expected life of the mine is 11.8 years with an average production of 198,000 ounces of gold. Pre-production capital expenditures are expected to total \$475 million; \$55 million of which was spent in 2018 on port construction, pre-development, earthworks, and the purchase of heavy equipment. Sabina has already acquired various permits for the mine; however, the permitting process is ongoing.

Grays Bay Road and Port Project, Nunavut Territory

The Grays Bay Road and Port Project consists of a 227-kilometre all-season road linking the northern terminus of the Tibbitt-Contwoyto Winter Road to a deep-water port at Grays Bay on the Northwest Passage. The road will encourage the development of resource projects by increasing the ease in which companies can export products from remote locations in the territory. In August 2019, it was announced the project will receive funding from Transport Canada's National Trade Corridor Fund to carry out pre-construction work. Capital expenditures are expected to total around \$500 million, with construction from 2020 through 2023.

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
- 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 will 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 3,595 workers. The largest number of requirements is for construction trades helpers and labourers at 1,266, followed by 703 heavy equipment operators, and 563 construction managers.

Table 3: Construction trades demand by territory

	Northwest Territories	Yukon	Nunavut	Total
Boilermakers	5	6	3	14
Construction estimators	26	37	39	102
Construction managers	124	190	225	539
Construction millwrights and industrial mechanics (except textile)	3	3	3	9
Contractors and supervisors	80	119	135	334
Crane operators	11	11	3	25
Drillers and blasters – surface mining, quarrying, and construction	20	27	22	69
Electricians	34	52	62	148
Heavy equipment operators (except crane)	196	258	225	679
Heavy-duty equipment mechanics	40	59	65	164
Ironworkers and structural metal and platework fabricators and fitters	18	25	25	68
Sheet metal workers	N/A	N/A	N/A	N/A
Steamfitters, pipefitters, and sprinkler system installers	2	3	2	7
Trades helpers and labourers	290	433	491	1,214
Truck drivers	23	27	16	66
Welders and related machine operators	8	8	2	18
Total	880	1,258	1,318	3,456

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

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% of the full construction workforce. Excluded from this group are office workers, engineers, office managers, etc.

Table 4: Construction trades demand (all projects)

All projects	2019	2020	2021	2022	2023
Boilermakers	4	2	3	3	2
Construction estimators	15	24	23	23	17
Construction managers	61	137	126	122	91
Construction millwrights and industrial mechanics (except textile)	2	2	2	2	1
Contractors and supervisors	42	82	78	76	56
Crane operators	9	2	5	5	4
Drillers and blasters – surface mining, quarrying, and construction	14	14	15	14	12
Electricians	17	38	34	34	25
Heavy equipment operators (except crane)	130	137	150	148	114
Heavy-duty equipment mechanics	22	40	38	37	28
Ironworkers and structural metal and platework fabricators and fitters	11	15	15	15	12
Sheet metal workers	N/A	N/A	N/A	N/A	N/A
Steamfitters, pipefitters, and sprinkler system installers	1	2	2	1	1
Trades helpers and labourers	152	300	281	277	204
Truck drivers	18	10	15	14	11
Welders and related machine operators	8	1	3	3	3
Total	506	805	790	774	581

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 labour force. 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 Northwest Territories, Yukon, and Nunavut will likely face increased competition for qualified workers through the 2020–2021 period due to strong labour demand in British Columbia and peak maintenance demands in Alberta.

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 present risks and potentially alters anticipated market conditions.

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