



Industrial Lands Strategy

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Table of Contents

Introduction	2
City of Fort St. John Planning Context	4
Role of Industrial Lands in Fort St. John	7
Characteristics of Industrial Lands	10
Local and Regional Context and Trends	13
Industrial Land Supply	28
Industrial Land Needs Projections	39
Input from Industry Stakeholders	49
Industrial Potential Modelling and Implications	54
Conclusions and Action Items	60
Industrial Clustering Case Study	62
Appendix A: Major Project Profiles	63
Appendix B: Summary Demand Tables	67

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Introduction

Objectives

Urban Systems (USL) was retained to prepare an Industrial Lands Strategy for the City of Fort St. John. This strategy has been created by:

- Investigating current uses, and levels of utilization, of industrial land in Fort St. John
- Investigating economic competitiveness and market readiness in the context of current and emerging trends for industrial land utilization
- Investigating various approaches to industrial land management
- Projecting future industrial land needs
- Identifying industrial user location requirements
- Conducting survey-based outreach to local industrial land users to gather feedback on and refine options and recommendations

This document is the culmination of this work, summarizing findings from research, projections and GIS-based analyses.

Definition of “Industrial”

If the objective of this strategy is to ensure that the City of Fort St. John has appropriate amounts of industrial lands allocated in appropriate locations to support economic growth in the coming years, the first step is to understand what the strategy is seeking to use lands for – i.e., how is “industrial” defined. Across British Columbia, municipal policies and bylaws vary in terms of what uses are permitted within industrial and employment zoning. For example, some bylaws limit permitted uses to traditional industrial activities, such as manufacturing, warehousing, distribution, and logistics. Others provide more flexibility to accommodate a range of uses, such as commercial, places of worship, and indoor recreation. Such flexibility can be beneficial towards realizing opportunities connected to the changing nature of industry and innovation but can also result in displacement of (or negation of opportunity for) traditional industrial activities.

Fort St. John segments industrial zoning into two classifications – Light Industrial (M-1) and Heavy Industrial (M-2)¹. Most principle uses in both classifications align with what might be considered “typical” industrial uses; the only exception is the allowance for “automobile, marine, skidoo and recreational vehicle sales and servicing”, which is more of a commercial land use. There is no allowance for recreational facilities, large-format retail, or institutional uses.

The definitions of ‘industrial’ for the purposes of this report are aligned with current understandings and permitted industrial uses. Going forward, Fort St. John should continue to review its allowable principle uses to ensure that industrial zoning is striking the right balance between protecting industrial lands for truly industrial uses, while also having flexibility to allow for innovation in appropriate locations. Applicable industrial use categories will therefore include:

- Light and heavy industrial production
- Oil field services
- Repair / Heavy vehicle service
- Distribution
- Construction materials and equipment
- Infrastructure
- Outdoor and indoor storage
- Wholesale

Changing Nature of Industrial Activity

The changing nature of the economy in Canada, and the potential acceleration of some of those changes as a result of the ongoing COVID-19 pandemic, means that business and industrial activities are quickly evolving. Desired space needs and location preferences, and associated employment and transportation impacts are evolving. This may include new types of manufacturing, advanced technology, integrated workspaces, and a further blurring of the line between commercial and industrial activity in sectors such as wholesale, retail and logistics.

¹ The last zoning bylaw update (2019) saw some H-1 (Home Industrial) parcels re-classified as M-1.

New business models may not neatly fit within traditional categories of ‘heavy’ and ‘light’ industry. The types of industrial activity are evolving quickly and are becoming more diverse. Here are some of these new and emerging forms of industrial activity:

- Industrial clusters or co-locations related to operations that can support ‘eco-industrial’ networks and circular systems
 - » Companies may collaborate to use each other’s by-products (materials, energy, water) as feedstock for their production process
 - » Companies may also share resources to increase efficiencies
 - » These industrial clusters can include emerging industrial sectors such as green / clean tech, but also more traditional operators in various manufacturing and production sub-sectors²
 - » Local ‘maker movements’ and localized production / distribution are re-emerging, and the pace of this is likely to accelerate in the coming years as many regions and localities look to become more self-sufficient in the face of supply chain uncertainties and less (or more expensive) global movements of goods and people
- High tech and other new forms of industry are going to accelerate, including rapid growth in e-commerce, direct-to-consumer deliveries and co-facilities pushing demand for logistics / distribution hubs in places where they may not have previously been needed.

Roles of Industrial Land

- Industrial lands will play a key role for local employment and the North Peace regional economy.
- There is a broad spectrum of employment activity that occurs on industrial lands, many of which are unable to locate elsewhere.
- Industrial land users have specific spatial and infrastructure requirements that must be considered when designating industrial land and envisioning how industrial clusters may evolve.
- Many users of industrial lands rely on dependable access to goods movement networks between suppliers and clients. For some, this will mean rail access. For others, proximity to major highways. For others still, ability to quickly access the regional airport.
- While industrial areas can benefit from a mix of complementary or secondary uses, many industrial uses struggle to compete when non-industrial uses are permitted to encroach upon and develop on industrial lands.
 - » Presently, the Fort St. John zoning bylaw does not permit significant encroachment from non-industrial uses on industrial lands.
 - » If there is encroachment of sensitive uses proximate to industrial areas (such as residential), this can create serious conflicts with certain types of industrial activity. Without sufficient buffering to separate uses, or other mitigation measures, encroachment can threaten operational and growth outlooks for industrial operators and clusters.
- Innovation and the changing nature of work in industrial businesses will require careful balancing between allowable uses and flexibility in the face of emerging economic opportunities.

² It is important to keep in mind that studies show environmental limits beyond which it is environmentally preferable to avoid recycling of some types of waste, and to simply use them as fuels or to dispose of them directly to the natural environment as-is, rather than attempt to recover useful materials from them. Considerable energy consumption and emissions can occur in the process of extracting materials. See: “Environmental Limits of Industrial Symbiosis: The Case of Aluminum eco-industrial Network” (Fesenius Environmental Bulletin, January 2013).

Fort St. John Planning Context

Our Vision, Our Future – Official Community Plan (OCP)

The current Fort St. John OCP “Our Vision, Our Future” was completed and adopted in 2017. It is a community-driven vision for future land use in the City. The plan includes objectives and policies that help decision-makers deliver on the community’s goals.

The plan acknowledges that industrial lands in the City are constrained as there are few large parcels available for heavy industrial activity. The plan has three main objectives for industrial lands:

1. Ensure that industrial development takes advantage of co-locating with commercial developments and convenient highway access
2. Maximize use of the industrial land base before new industrial lands are sought
3. Ensure a good mix of small and large industrial parcels available to accommodate a variety of industrial tenants

The OCP also describes the City’s approach to boundary extensions and development on its periphery. As these areas tend to have the most available land, they may be attractive candidates for future industrial lands. However, development on the periphery is challenged by a lack of servicing and associated costs of development. Industrial development at the periphery must be carefully coordinated with the Peace River Regional District (PRRD).

Zoning Bylaw

The Fort St. John Zoning Bylaw was adopted in 2019 and provides clear direction on the form of development and allowable uses in the City. The bylaw lists two industrial zones: M-1 Light Industrial and M-2 Heavy Industrial. Light industrial areas are intended to serve a wide variety of uses and to have convenient highway access. Allowable uses include print shops, industrial training facilities, storage and processing facilities, bulk fuel sales and other uses. Heavy industrial areas are suitable for large scale industrial uses including freight yards, industrial storage and processing, rail yards, aggregate processing, breweries, and other uses.

The zoning bylaw also includes several Development Permit Areas which provide detail on form and character for these sub-areas. Each development permit has special provisions intended to provide direction on the design of the interface between conflicting or different land uses.

Community Energy & Emissions Plan (2010)

As part of the City’s efforts to address sustainability and climate change, a Community Energy and Emissions Plan was commissioned and completed in early 2010. The plan proposed a GHG emissions reduction target of 12% below 2007 by 2030, requiring a reduction of approximately 34% relative to the projected emissions in 2030 in a ‘business-as-usual’ scenario. Further, an electricity reduction target of 48% from the 2030 business-as-usual scenario (or 18% from the baseline 2007 year) was proposed, which would bring electricity consumption to 126 GWh by 2030.

The following goals and strategies are directly relevant to the building and operation of industrial buildings and businesses:

- **Emissions Targets:** Industrial buildings emitted 279 tonnes of CO₂e in 2007. In a status-quo scenario, projected emissions from industrial buildings are 518 tonnes of CO₂e by 2030. The 2030 “achievable emissions” target for industrial buildings, as part of the overall emissions reduction target of 12% below baseline, is 279 tonnes of CO₂e. In other words, the sum total of industrial buildings in 2030 should have the equivalent emissions of all industrial buildings in 2007.
- **Development Areas:** The plan notes that there are “large scale areas that will be developed in the future [which] offer opportunities for demonstration of energy efficient construction practices, opportunities for larger scale renewable systems and resource sharing. From an industrial standpoint, these areas include: (1) light industrial lands to the southwest, and (2) BC Rail industrial lands to the southeast.

Figure 1: Future development areas (yellow) for demonstrating energy and emissions strategies



Industrial areas identified for demonstration of energy efficient construction, renewable systems, and resource sharing,

- **District Energy:** Facilities with significant on-site heat generation, like industrial plants, are noted as potential contributors to district energy systems. The Canfor pellet facility (opened in 2016), which was in the early planning stages in 2010, was identified as one notable opportunity for heat and power integration with the local infrastructure by way of a district heating loop.

since then to keep up to date. It includes the following industrial zones: Light industrial, General Industrial and Agricultural, Oil Production Areas and an Airport Industrial Zone. Each zone is intended to be flexible to accommodate a range of appropriate uses.

Peace River Regional District Development Permit Areas

The North Peace Fringe Area OCP has seven development permit areas which are intended to provide specific direction and clarity for proposed developments in specific areas. The Industrial Development Permit area largely applies to areas that border industrial areas within the City of Fort St. John, and primary apply to industrial lands located along the Alaska Highway. The permit areas provide direction on siting, landscaping, appearance, and lighting for industrial developments.

Zoning Bylaw - Fringe Areas Surrounding Chetwynd, Dawson Creek and Fort St. John

The PRRD Zoning Bylaw for fringe areas surrounding Chetwynd, Dawson Creek and Fort St. John is intended to provide direction on the form and allowable use of lands within these areas. The bylaw was originally adopted in 2001 and has seen several amendments

Peace River Regional District Community Energy Plan

The PRRD Community Energy Plan was developed in 2010 and details climate action and energy policies for the community. The plan was developed in partnership with four area municipalities including the District of Chetwynd, District of Taylor, District of Tumbler Ridge, and the Village of Pouce Coupe. The City of Fort St. John was not a partner. The plan sets ambitious emission reduction targets for the regional district: 15% by 2030 and 80% by 2050.

The plan's principal objectives for planning a sustainable energy future include reducing energy demand, finding alternative sources of energy and making decisions in an energy-conscious way. The Community Energy Plan also highlights opportunities to diversify energy production in the PRRD by prioritizing and supporting technologies such as wind energy, biomass, micro-hydro and several other technologies. The plan influences current industrial development mainly from a building energy efficiency standpoint and emphasizes sustainable building practices and design.

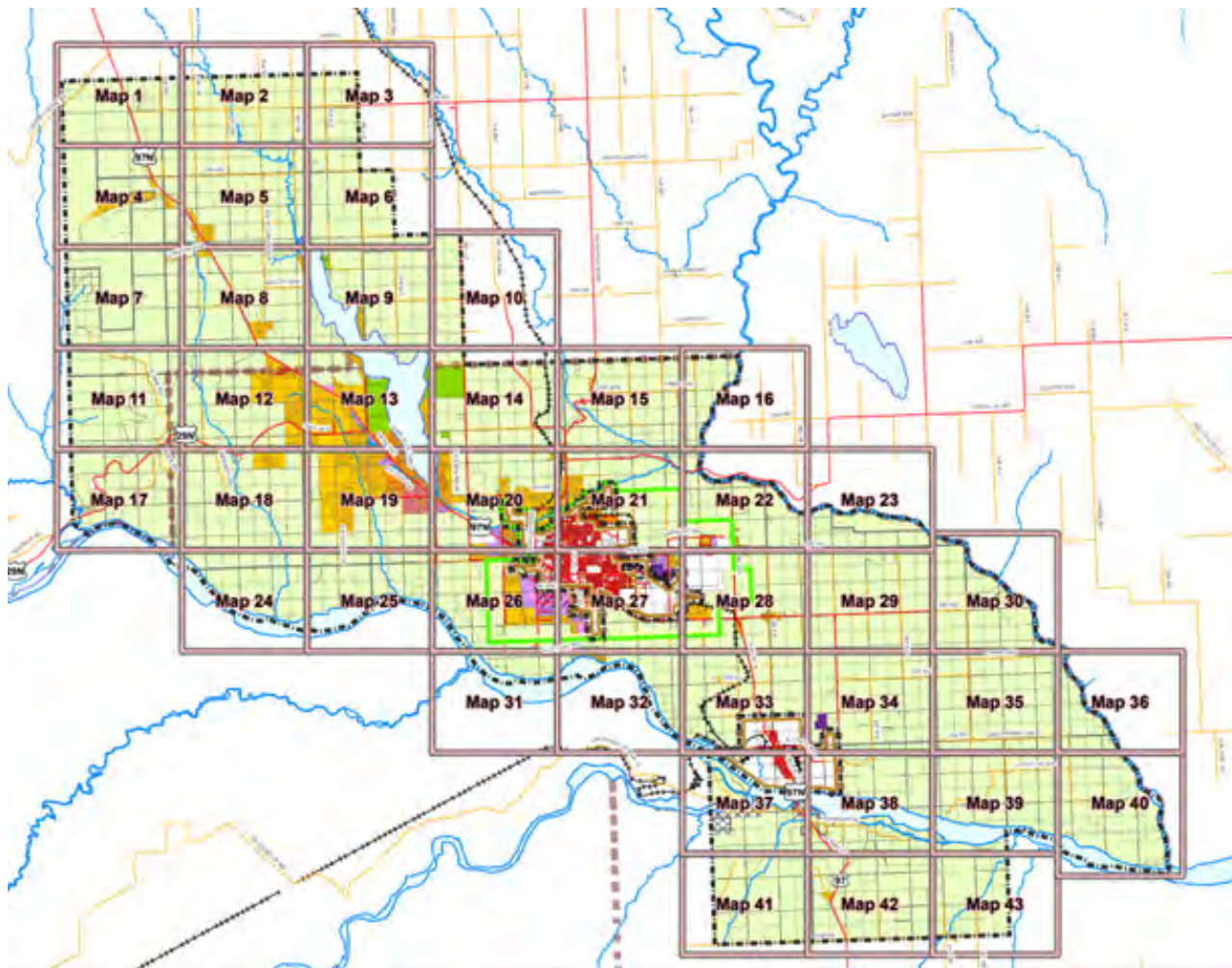
North Peace Fringe Area Official Community Plan (OCP)

The Peace River Regional District (PRRD) encompasses a large area of Northeast BC and several distinct communities. As a result, the PRRD has developed an OCP for each area within its jurisdiction. The North Peace Fringe Area OCP is used to make planning decisions for development in the north peace region (see Figure 1) outside of Fort St. John and Taylor. The document was updated in 2018 and is intended to guide land use to 2041. It includes designations for Light Industrial (LI), Heavy Industrial (HI), Service Industrial (SI) and Industrial Reserve lands. The latter are intended to be used for agricultural purposes until deemed necessary for expansion of the industrial land base.

The OCP recognizes that nearly all employment growth will occur at or near the boundary with Fort St. John, and that there are constraints on the supply of industrial land in the area. The plan recognizes the importance of inter-jurisdictional collaboration and signals the need for additional study of the future industrial land supply in partnership with the District of Taylor and the City of Fort St. John.

The economy of northeast BC is heavily tied to natural resource extraction and associated industrial activities. These types of projects are typically large-scale and are planned and permitted in conjunction with senior levels of government. The PRRD emphasizes the importance of an approach to development that is collaborative and does not compromise the health and safety of residents and is balanced between economic benefit and environmental stewardship.

Figure 2: North Peace Fringe Area OCP Extent



Role of Industrial Lands in Fort St. John

This section assesses the current state of industrial lands in Fort St. John and provides information on trends, issues, context, and challenges that frame and guide the forecasts and recommendations to follow. Research was compiled through a review of various market, professional and academic sources, including other industrial and employment-related studies completed for jurisdictions in British Columbia and across Canada.

Economic Contributions of Industrial Lands

Industrial lands are a key foundation for economic activity in the City of Fort St. John and the surrounding region. The industries that operate on these lands represent a sizeable portion of the city's economic activity.

- Zoned industrial (M1 and M2) lands account for approximately 591.5 hectares of the city's land base, or nearly 26% of the city's total land area.
- In 2016, there were 9,755 jobs located in the City of Fort St. John with a 'usual place of work'.³ Of those, an estimated 28% (nearly 2,800) occurred on industrial land.⁴
- Jobs with usual places of work, in sectors that are primarily located on industrial land, tend to be higher paying. Those with a usual place of work in Fort St. John, across all sectors, earned an aggregate income (wages, salaries, commissions) of \$597.2 million in 2016. Of that, an estimated 40% (\$236 million) was earned at jobs occurring on industrial land.

- The average earning per worker with a usual place of work in Fort St. John in 2016 was \$62,730. Most sectors operating on industrial and had incomes well in excess of this.

Demand for industrial land in Fort St. John ebbs and flows with changes to the economic fortunes of the region. Based on a limited sample set of survey data received from active industrial users in the City, and information from the City on industrial land-related enquiries and development permits, there does appear to be a steady pace of activity in the City, despite recent macro-economic struggles.

- Between January 2015 and December 2019, there were 32 industrial permits and inquiries for permits logged by City staff.
- The level of permitting activities, along with enquiries received by Economic Development, have remained relatively steady for the last 4 years.

³ 'Place of work status' refers to whether a person worked at home, worked outside of Canada, had no fixed workplace, or worked at a specific address (usual place of work). A custom data set from Statistics Canada was used for this study. That data shows the number of people at a usual place of work in Fort St. John, by industry sector, including both Fort St. John residents (i.e. the city's labour force) and inbound commuters from all locations.

⁴ Note: custom employment tabulations from Statistics Canada locate employment at usual place of work within the Fort St. John CSD, but do not geo-locate each employee to a parcel or an address. Urban Systems has estimated employment proportions on industrial land by sector using proxy data points and anecdotal information.

Employment and Economic Activity

Industrial businesses operating on Fort St John's industrial lands accounted for an estimated 2,800 jobs and \$236 million in aggregate income (wages, salaries, commission) in 2016.

Table 1 presents USL estimates for the proportion of jobs, by industry sector, that are occurring on industrial land, and associated income earned. Note that these allocation proportions are used in the subsequent employment and land needs forecasts presented in later sections of this document.

Table 1: Jobs and Wages on Industrial Lands in Fort St. John, 2016

Sector	% of 'usual place of work' jobs on industrial lands (1)	Est. Jobs on industrial land, 2016	Aggregate Wages, Salaries, Commissions (2)	
Agriculture, Forestry, Fishing, Hunting	85%	89	\$	6,161,552
Mining, Quarrying, Oil and Gas Extraction	85%	570	\$	75,387,847
Utilities	50%	38	\$	4,763,700
Construction	85%	455	\$	38,896,442
Manufacturing	85%	353	\$	30,586,451
Wholesale Trade	85%	315	\$	24,730,393
Transportation and Warehousing	85%	264	\$	17,414,460
Professional, Scientific, Technical Services	25%	165	\$	11,576,368
Waste Management and Remediation Services	90%	59	\$	4,231,071
Accommodation and Food Service	5%	49	\$	1,365,661
Repair and Maintenance	75%	221	\$	13,900,208
Laundry Services	85%	149	\$	3,445,314
Public Administration	10%	53	\$	3,805,241
Total		2,777		\$236,264,707
As % of Total		28%		40%

Source: Statistics Canada, Custom Tabulations; Urban Systems Ltd. Estimates

1. USL estimates, based on review of Fort St. John Economic Development business location data, spot reviews of business locations with zoning overlays, and discussion with staff
2. Aggregate income X proportion of job activity on industrial land

Amongst the sectors operating primary on industrial lands, the wages, salaries, and commissions earned are higher than average earnings amongst employees in the city.

Table 2: Wage Differentials between Industrial Lands and City Average

Sector	Average Wages, Salaries, Commissions per worker	% difference from average wage in Fort St. John
Agriculture, Forestry, Fishing, Hunting	\$69,730	+10%
Mining, Quarrying, Oil and Gas Extraction	\$135,407	+116%
Utilities	\$127,032	+103%
Construction	\$88,000	+40%
Manufacturing	\$87,766	+40%
Wholesale Trade	\$78,634	+25%
Transportation and Warehousing	\$68,292	+9%
Waste Management and Remediation Services	\$72,326	+15%
Repair and Maintenance	\$63,909	+2%
Professional, Scientific and Technical Services	\$72,922	+16%

Source: Statistics Canada, Custom Tabulations

Beyond direct wages to employees working in these sectors, industrial activities are significant contributors to the local economy. The following table shows the direct, indirect and induced impacts on job creation across the whole provincial economy of one job in each of the sectors listed:

Table 3: Job Multiplier by Industry Sector – Within Province

Industry	Jobs multiplier per 1 job in sector (within province)
Mining, Quarrying, Oil and Gas	3.27
Engineering Construction	1.93
Manufacturing	2.26
Wholesale Trade	1.63
Transportation and Warehousing	1.89
Support activities for agriculture and forestry	1.34
Residential building construction	1.80
Non-residential building construction	1.84

Source: Statistics Canada Table 36-10-0113-01

Characteristics of Industrial Lands

Whether within or beyond the borders of Fort St. John, industrial lands are crucial to supporting a prosperous economy and for providing space to accommodate the industrial businesses and services that are needed in the area to generate jobs and bring income to the community. Industrial lands serve an important role in the economy, as a key piece of ‘trade enabling’ activities which play a role in the wider economy. Industrial lands typically generate an outsized proportion of jobs and wages (as in Fort St. John), and contribute to economic well-being by way of linkages (inputs and outputs) throughout the provincial and national economy.

Industrial Intensity and Density Measures

Industrial lands represent a spectrum of uses, densities and intensities. Some lands that are built to a relatively low density (or which may have no structures at all) can still have a high intensity of industrial use when measured in terms of employment, revenue, goods volumes, or other metrics. Examples could include lands primarily dedicated to outdoor storage for heavy machinery, or a tank farm. Other sites are more densely developed, with facilities such as warehouses, manufacturing, processing, or machine shops. Industrial businesses all have different needs to ensure they can operate efficiently and will have their own requirements in terms of location, property size and configuration, and use proximities or adjacencies.

Intensity Measures	Density Measures
• Employment per acre or per sq. ft. • Revenue per unit of land or building • Volume of goods produced, processed, stored per unit of land or floor space • Vehicle or equipment movements • Quality of jobs (wages) • Job multipliers • Values of land and improvements • Transportation infrastructure utilization rates (e.g. goods / trips per unit)	• Building floor area or floor space ratio • Site coverage • Number of floors • Building height or volume

These concepts of intensity and density are revisited in the subsequent discussion of the industrial land supply in Fort St. John, particularly when identifying which sites are ‘underutilized’ (i.e. low intensity of use) and thus of higher potential for re-use or intensification of use in the future.

Industrial Land Requirements by Sector

There are typical sector-based uses and characteristics that should be considered when looking at industrial lands policy and availability, including alignment of land use regulations with those uses and characteristics. Sector needs are always changing, so it will be important to review the needs of different industrial sectors over time (possibly through periodic surveys) to ensure there is continued alignment between land use regulations and sector needs.

Table 4 below provides a brief, simplified overview of typical land and building needs of industry sectors that are heavily industrial land dependent.

Table 4: Industrial Land Needs by Sector

Sector (or sector cluster)	Common Development Characteristics
Construction, maintenance and repair - Residential or non-residential construction, civil construction and trades, contractor offices / shops - Construction equipment storage and rental - Industrial equipment maintenance and repair - Equipment testing, repair, maintenance	- Light or 'general' industrial in nature 2 to 10-acre (1-4 ha) parcel sizes - Outdoor storage required - Low urban design threshold - Low site coverage - Often stand-alone, potential for multi-tenant
Manufacturing - Food and beverage manufacturing - Metal fabrication - Veneer, plywood, engineered wood products - Paper manufacturing - Petroleum and chemical manufacturing - Food and beverage manufacturing - Byproduct manufacturing - Machinery, electronics, transportation fabrication	- Some sub-sectors can operate on 2-10-acre parcels. Others require larger parcels (e.g. 30+ acres) - Outdoor storage likely required - Proximity to highways and rail
Transportation and Warehousing - Warehouses and storage - Wholesale distribution - Freight - Logistics - Integrated office uses	- Outdoor storage for equipment - Loading / unloading areas - Land extensive, large building footprints - Highway and rail access 5 to 75-acre parcels (2-30 ha)
Professional, Scientific and Technical Services - Engineering and design - Scientific and technical consulting services - Scientific research and development	- Standalone or multi-tenant units - High site coverage - Proximity to complementary uses, transportation networks 1-5-acre (0.5 to 2ha) parcels

Mining, Quarrying and Oil and Gas

- Standalone or multi-tenant
 - Large lots for storage
-

Cannabis producers

- Minimum 10 acre sites
 - Significant power requirements
 - Access to skilled labour
-

While some sectors can operate on relatively small parcels (e.g. 1 or 2 acres), others require much larger sites (30+ acres). Further, there can be marked variability within sectors in terms of land requirements. This variability within sectors is also reflected in the City's zoning bylaw, where there is significant overlap in principle uses between "heavy" and "light" industrial land classifications. Each user will have its own specific requirements. However, the above table is useful in understanding that certain types of industrial land are more likely to attract certain user groups than others.

For the purpose of this document, we classify industrial land sizes as follows:

- Small lots: 5 acres or less
- Medium lots: 5.1 to 20 acres
- Large lots: 20.1+ acres

Local and Regional Context and Trends

This section provides an overview of recent industrial lands activity in Fort St. John, along with notable industrial activity trends in the broader region, province, and around the world. The discussion of local activity is intended to provide a snapshot of what has been transpiring in the City's industrial lands market in recent years, under different sets of macro-economic conditions. The broader regional, provincial, and global overview of trends is presented to paint a broader picture of trends amongst some industry sectors that are most typically tied to industrial land demand. Data collected through this research also informs the employment and land needs forecasts which are presented later in this document.

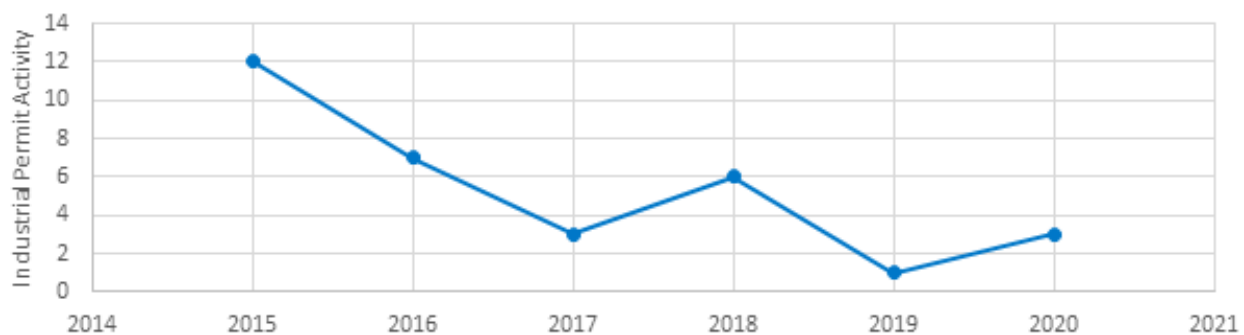
Local Industrial Activity and Absorption Trends

Activity on industrial lands in Fort St. John ebbs and flows with the regional economy. Urban Systems received and reviewed data provided by the City of Fort St. John on building permits, development applications, and development-related enquiries tied to industrial lands activities, for the period from January 2015 through to the first quarter (Q1) of 2020.⁵ This data provides a snapshot of the general activity levels experienced over a 5-year period. Note that over this period, the economic conditions in British Columbia's northeast have seen both growth and contraction:

- WorkBC reports northeast BC unemployment increasing from under 6% in 2015, to a high of nearly 10% in 2016, before dropping back to 5.7% in 2018, 5.1% in 2019, and as low as 4.2% in January 2020.
 - » There will likely be a significant upward spike through the second and third quarters of 2020 (and possibly beyond) due to COVID-19
- The BC Oil and Gas Commission shows a significant ramp-up of drilling activity in the 2015-17 period, followed by a significant drop-off in 2018 and 2019.⁶

Figure 3 below shows industrial permitting and tracked enquiry activity in Fort St. John from 2016 through to the first quarter of 2020. There was a downturn in activity from 2015 to 2017, an uptick in 2018, and a drop again in 2019.

Figure 3: Industrial Permitting and Enquiry Activity in Fort St. John, 2015 to 2019



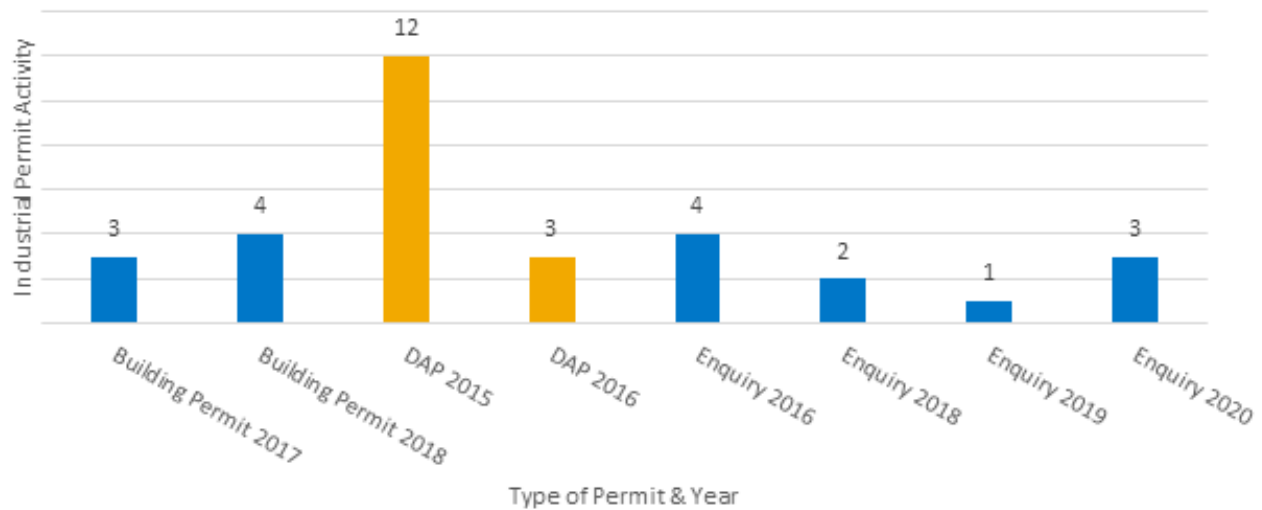
Source: City of Fort St. John

Figure 4 breaks out Fort St. John industrial permitting and enquiry activity from 2015 to 2019 (plus Q1 2020), by the type of activity.

⁵ Note that this may not be a complete picture of all activity. City staff noted that not all data is consistently tracked (particularly enquiries), and therefore there may be some gaps or omissions.

⁶ Wells drilled: 546 (2015), 356 (2016), 621 (2017), 446 (2018), 365 (2019)

Figure 4: Breakdown of Fort St. John Industrial Permitting and Enquiry Activity, 2015 to Q1 2020



Of the 32 industrial permits and enquiries logged by City staff between 2015 and 2019, 7 were building permits, 15 were development permits, and 10 were other enquiries or applications. Aside from a sizeable drop after 2015, the levels of activity have remained relatively consistent since 2016.

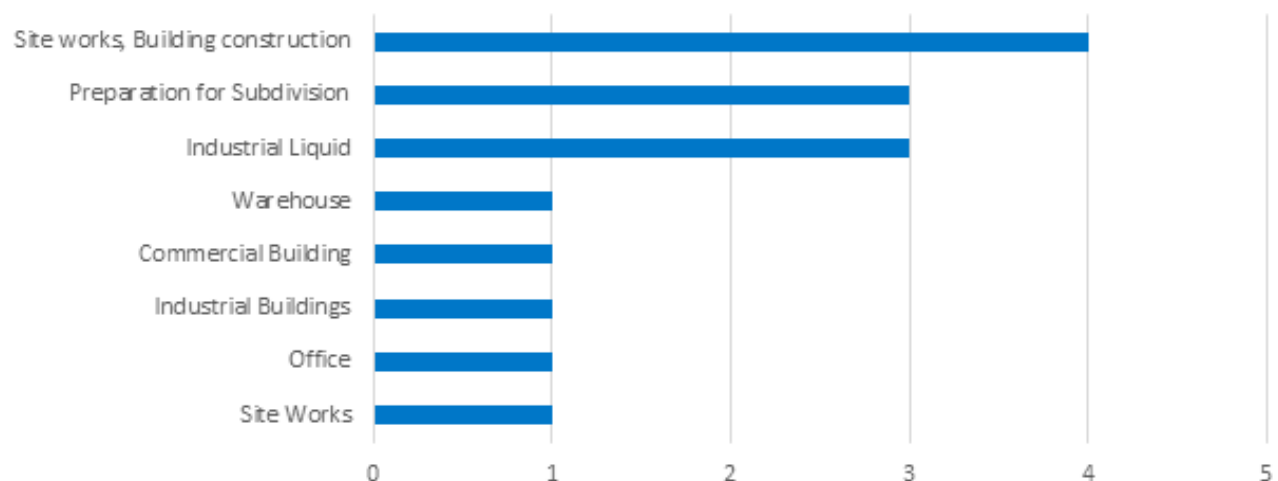
As a large portion of the industrial activity in Fort St. John is tied (either directly or indirectly) to the exploration, production and shipment of oil and gas, the relative downward trend in industrial activity after 2016 is likely tied to larger commodity price trends. Despite this downward trend in recent years, projects like LNG Canada, plus relatively strong levels of activity in the Montney around Dawson Creek, are signals that the economic conditions may improve in the coming years.

Development Permit Activity

Between 2015 and 2019 there were a total of 85 development permits received at the City of Fort St. John. Of these, 15 (18%) were for industrial projects.

The land area of development parcels with development permit applications during that time totaled just over 22 hectares (54 acres). The most recent development permit activity occurred in 2015 and 2016. According to records from the City, there have been none since. Some of the properties have proceeded to subsequent development stages (building permits etc.). The types of development permits are shown in the figure below. The most common development permits are issued for full site works and building construction, preparation for subdivision, or developments related to the storage or movement of industrial liquids or petrochemicals.

Figure 5: Industrial Development Permits in Fort St. John, 2015 to 2019



Building Permit Activity

Building permits for the years 2017 and 2018 showed a total of seven industrial projects in the city. Of those, six were new builds, and one was a renovation. The total area of all lots with approved building permits during that period was 103 hectares.

Building permit records for the years beyond 2017 and 2018 did not show any industrial activity.

Industrial Enquiries

At Urban Systems' request, Fort St. John staff in the planning and engineering departments completed an internal review of all recorded enquiries and applications related to industrial lands over the past five years. The City does not have a formal protocol for tracking enquiries, therefore the information provided was a combination of those enquiries that were documented, alongside staff memories and notes of enquiries. The relatively long length of tenure for many of the senior staff at the city lends a degree of comfort that the vast majority of enquiry activity has been captured and reported.

Of the total list of development enquiries compiled, fifteen were related to industrial properties in the 2015 to Q1 2020 period. Most enquiries were related to subdivisions, re-zoning, temporary use permits, and development variances.

Staff also noted several common themes that are raised concerning industrial properties:

- Illegal placement of industrial vehicles or buildings on residential lands, or otherwise non-industrial properties
- Cannabis production and its externalities
- Externalities related to towing yards
- Placement of work camps
- Servicing and road paving; some landowners are frustrated by servicing requirements related to their lands in undeveloped parts of the city.

Provincial Economic Outlook

As late as January 2020, the provincial economic outlook remained positive, driven forward by strong business investment, a renewed outlook for LNG, and a strong construction sector.

RBC identified the outlook for BC being a "construction story", with several large-scale projects driving the economy forward. Three of the most important large-scale projects – Site C Dam, LNG terminal in Kitimat, and Coastal Gaslink pipeline – all have direct implications for the Peace Region's economy, and the use of industrial land in and around Fort St. John

Some of the key highlights of the provincial economic outlook included in the first quarter of this year included:

- Continued growth in non-residential construction investment
- Canada-leading employment and labour force growth
- Strong population growth
- Continued pressure on the forestry sector due to forest fires, pine beetle and weakened demand in the United States
- Some growth in the housing market (with variability by market)

COVID-19 has disrupted this positive outlook, at least in the near-term. With major job losses across the country driven by public health-ordered (or recommended) economic shutdowns across sectors and global economic disruption, there is now significant uncertainty for the remainder of 2020 and beyond. Weakness in global demand and low commodity prices have taken a toll on BC's crucial export industries. Some key commodity exports were down 11% (mining products) to nearly 40% (energy products) in February 2020 compared to the same month last year. The Canadian dollar has weakened against the US dollar, trading at \$0.73 CAD per USD as of June 26th, down \$0.04 since the start of the year.

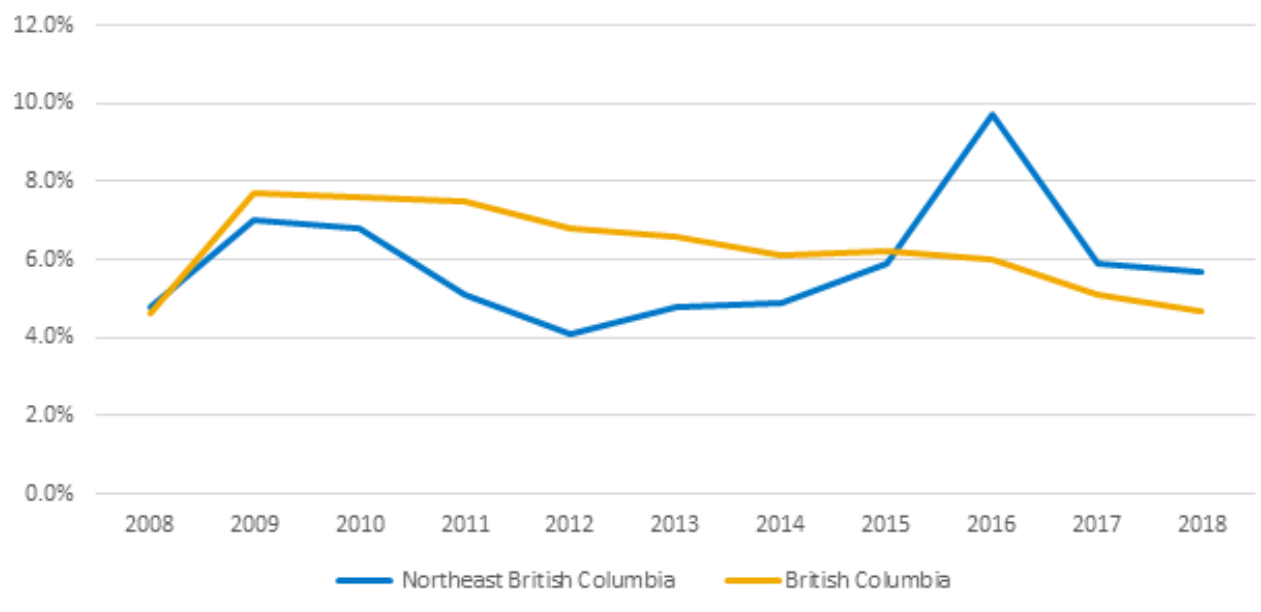
This new economic reality has resulted in many organizations downgrading their economic forecasts. Most now expect a marked downturn through to at least September 2020, and likely until the end of the year, with corresponding negative GDP growth and spikes in unemployment for the year.

There is an expectation among many analysts that pent-up consumer demand, and significant government supports to consumers and businesses, will help return the economy to some semblance of normal into 2021. These forecasts are all predicated however on a major assumption: the successful and ongoing containment of COVID-19.

Employment

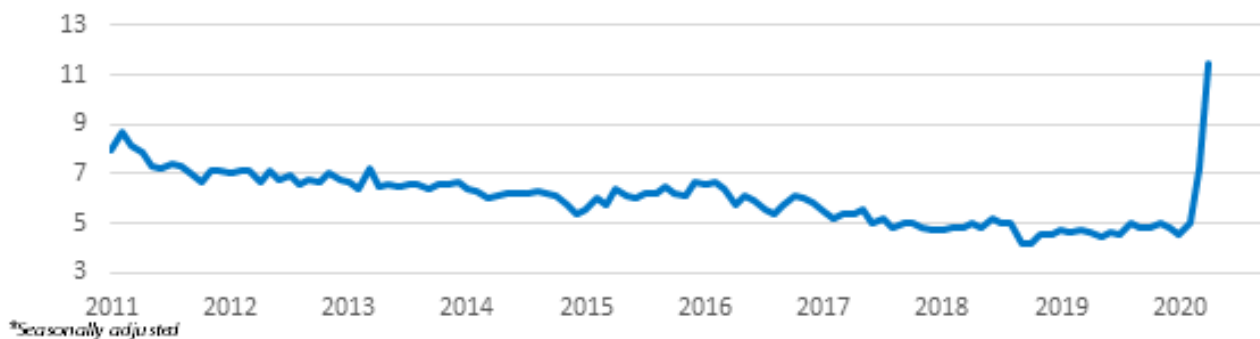
Figure 6 below illustrates the fluctuations in the unemployment rate in both British Columbia overall and the northeast economic region from 2008 through 2018. Since 2009, British Columbia saw a steady decline in the rate of unemployment, from a high of 7.7% in 2009 to a low of 4.7% in 2018. The story of unemployment in the northeast was more volatile, falling from 7.0% in 2009 to 4.1% in 2012, then climbing to 4.9% by 2014, spiking to 9.7% in 2016, before falling back to 5.7% in 2018. Reports indicate a 5.1% unemployment rate in the northeast in 2019.

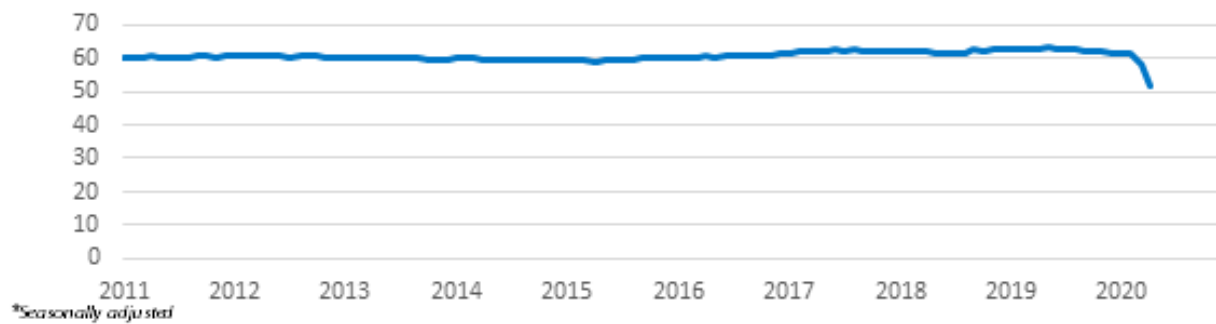
Figure 6: Unemployment Rates, British Columbia and NE BC, 2008 to 2018



COVID-19 has caused a spike in unemployment across the province. Data from BC Stats suggests that the provincial unemployment rate jumped to 11.5% in April 2020, after the BC economy shed 132,000 jobs in March. This is equivalent to three years of typical job growth being reversed in a single month. By comparison, the largest monthly employment decline in BC during 2009 was 10,000, with cumulative job losses of 58,000. There are likely further job losses ahead, with the full picture not emerging until late summer. Further, the unemployment rate does not capture the full extent of job loss, as the labour force participation rate in BC itself dipped from 64.4% in January to 58.2% in April.

BC Unemployment Rate*:



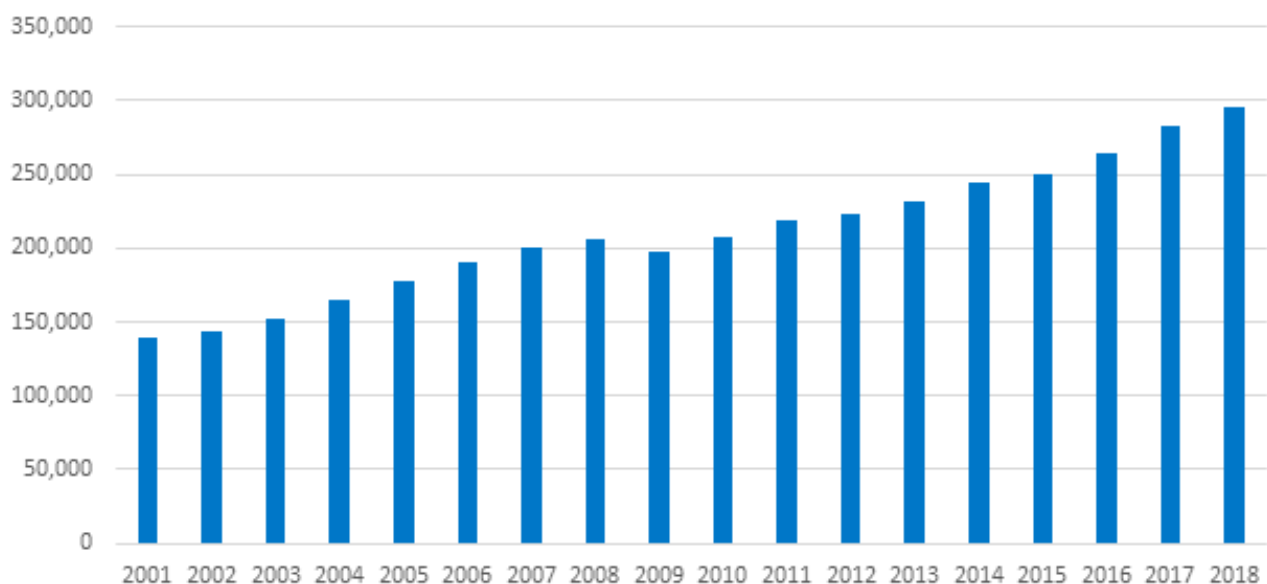
BC Employment¹ Rate*:

With the phased reopening of the BC economy, employment is expected to slowly rebound, with some forecasts calling for unemployment in the 8-percent range by year-end. The BC Labour Ministry has indicated that BC is in a “relatively good position” to rebound from the pandemic, as BC was leading the country in economic growth prior to the sudden shutdown.

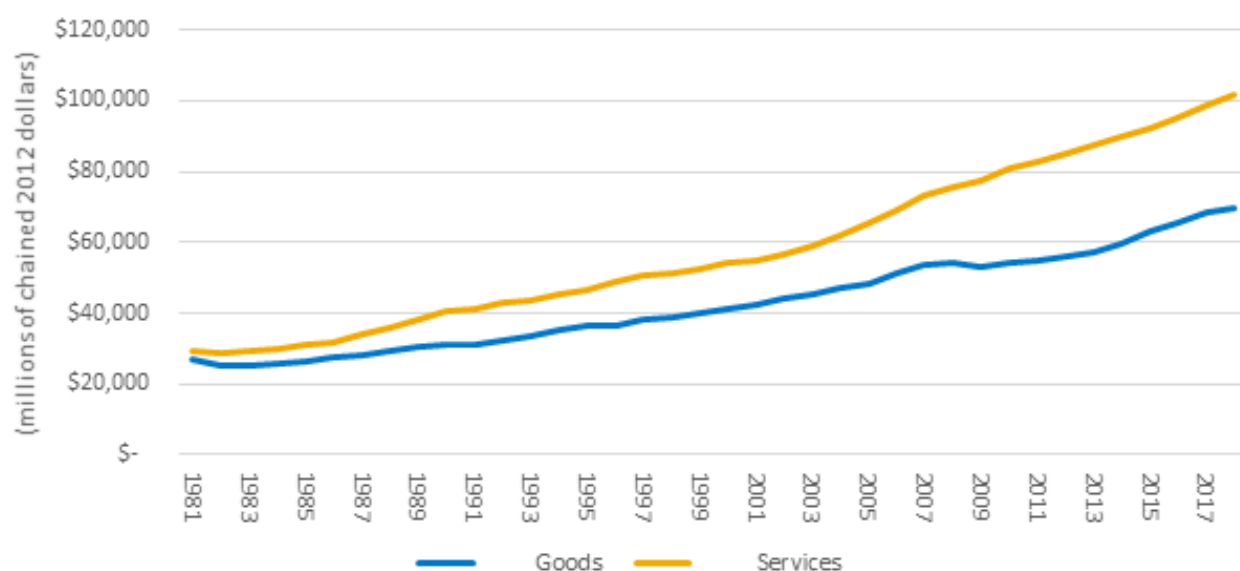
Gross Domestic Product

The province’s economy (real GDP) grew steadily over the last 8 years, up to the beginning of the COVID-19 shutdown. There was a contraction through the 2008-09 recession (-4.0%), however growth rebounded shortly thereafter, with 2010 GDP figures exceeding those of 2008. From 2001 to 2018, average annual GDP growth in British Columbia (in 2012 chained dollars) was 2.8%.

Figure 7: Gross Domestic Product, Expenditure-Based, British Columbia (\$ millions)



GDP can be broken out further to display broad contributions of goods versus service-producing industries, along with more fine-grained industry-specific information. The chart below illustrates the growth trajectories of goods versus services in British Columbia over a nearly 40-year period. Since 1981, growth in the service sector outpaced that of goods production. It is also possible to see the differential impacts the 2008 recession had on the different sector clusters, with goods-producing industries seeing a downturn from 2007 to 2011, while services did not. We are likely to see an inverse of this through the long process of recovery from the COVID-19 shutdown-induced recession, which has had severe impacts on service-based businesses.

Figure 8: Gross Domestic Product, Expenditure-Based, British Columbia, 1981 to 2018

Prior to the COVID-19 pandemic, RBC Economics had projected BC's GDP to grow, in real terms, by 1.6% in 2020 and a further 1.7% in 2021. Revised provincial forecasts predict substantial economic contraction in BC through 2020, followed by varying degrees of bounce back in 2021. GDP forecasts from four institutions are presented in Table 5.

Table 5: British Columbia Real GDP Forecasts as of April 2020

	2020 GDP Outlook, BC	2021 GDP Outlook, BC
RBC Economics	-4.0%	+8.5%
Central 1 Credit Union	-7.3%	+5.1%
TD Economics	-6.0%	+7.6%
National Bank	-4.2%	+3.5%

The BC Business Council (BCBC), in a brief released late March 2020, provides two scenarios for the BC economy for the balance of 2020 and into 2021. The scenarios are presented with the noted caveat that this is an unprecedented economic situation with significant unknowns. Both scenarios recognize that prior to onset of the pandemic, growth in the provincial economy was slowing, and that the BC economy is strongly influenced by what happens outside of the province.

- The first scenario assumes slow re-opening of the economy in the second half of 2020, and no return of international travel for the balance of the year. Under this, they project contraction of 6-8% through 2020.
- The second scenario is based on business interruptions lasting longer, and a more muted and slower rebound in output. Under this scenario, the provincial economy is projected to shrink by more than 11% in 2020

The BCBC brief also documents projected real GDP growth projections by industry sector under each of the two scenarios:

Table 6: BC Real GDP Growth Projections – Two Scenarios

Industry (NAICS)	BC 2019 GDP (million chained (2012) CAD	Projected 2020 Growth, Scenario 1	Projected 2020 Growth, Scenario 2	Notes
All Industries	\$250,757.91	-7.3%	-11.4%	
Agriculture, forestry, fishing, hunting	\$5,722.73	-5.3%	-8.7%	Forestry sector challenges: parts of food production sector affected
Mining, quarrying, oil and gas extraction	\$11,074.20	-5.85%	-15.9%	Downward pressure on prices from broad economic slowdown
Utilities	\$4,857.57	-1.0%	-10.0%	Household demand higher, but industrial and business demand down sharply
Construction	\$21,718.10	-11.91%	-12.8%	Scaled back activity in residential due to uncertainty; investment scaled back in commercial; engineering and other activities will continue to operate; significant impact in repair construction.
Manufacturing	\$16,405.52	-16.0%	-35.0%	Contracted 8% in 2008, 14% in 2009.
Wholesale Trade	\$9,265.41	-10.0%	-33.0%	Fell by more than 8% during 08/09
Retail Trade	\$14,742.85	-11.0%	-33.0%	Very significant impact due to mobility restrictions and negative income and employment impact. Closure of non-essential businesses leads to large impact.
Transportation and Warehousing	\$14,964.82	-13.49%	-15.76%	Major restrictions for air travel; general slowdown affects trucking; postal service/ couriers expand due to demand for delivery.
Information and Cultural Industries	\$8,990.88	-6.5%	-8.0%	Decline driven primarily by publishing plus motion picture / sound recording industries. Expansion assumed for data processing and related services.
Finance and Insurance	\$14,304.29	-5.0%	-15.0%	Contracted 2.2% in 08/09
Real Estate and Leasing	\$45,886.60	+0.72%	-3.99%	Driven by projected fallout for offices and retail properties.
Professional, scientific and technical services	\$15,688.44	-12.66%	-10.90%	

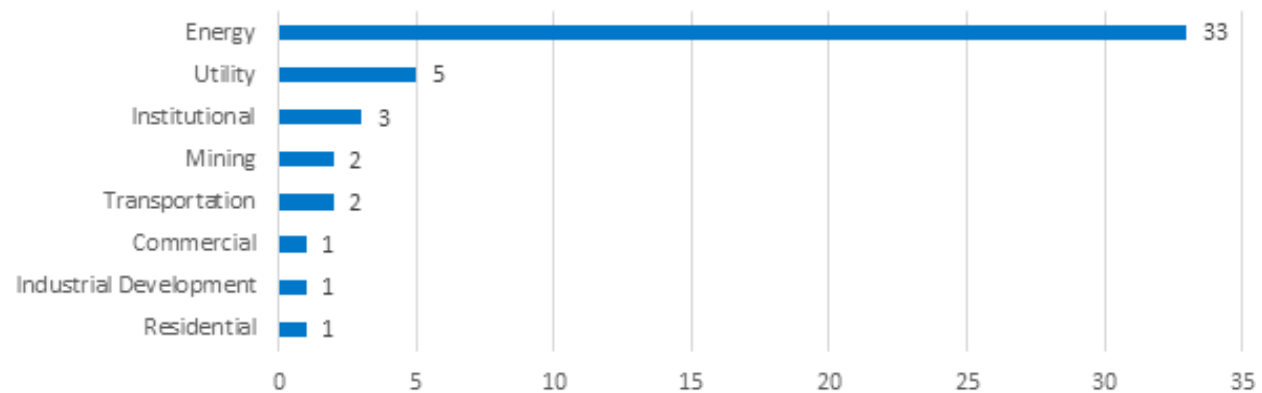
Industry (NAICS)	BC 2019 GDP (million chained (2012) CAD	Projected 2020 Growth, Scenario 1	Projected 2020 Growth, Scenario 2	Notes
Management of companies and enterprises	\$1,175.64	-6.0%	-12.0%	Fell 4% during 2009
Administating and support, waste management, remediation services	\$6,057.17	-17.96%	-20.17%	Major declines due to travel restrictions, and other domestic factors
Educational services	\$12,705.40	-6.0%	-12.0%	Contraction through school closures, declines in foreign student enrollment.
Health / social assistance	\$17,418.74	+10.0%	+13.0%	Growth through COVID-19 response
Arts, entertainment, recreation	\$2,373.64	-60.0%	-85.0%	Massive decline – professional sports leagues suspended; events postponed.
Accommodation and food services	\$7,911.28	-37.52%	-54.05%	Hard-hit sector due to public health restrictions
Other services (except public admin)	\$5,422.09	-15.0%	-40.0%	Household services decline – employment and income effect plus social distancing
Public Administration	\$14,010.25	+6.0%	+9.0%	Spending expands

Notable Economic Trends and Indicators

Major Projects in Northeast BC

The British Columbia Major Projects Inventory is a centralized database of all proposed and in-progress projects in British Columbia valued at \$15 million or greater. In the northeast region there are 48 projects listed by the inventory, ranging from residential and commercial developments to transportation and energy projects. The latter are by far the most common type of major project in the region, accounting for 33 projects in total.

Figure 9: Major Projects in Northeast BC by Type – BC Major Projects Inventory 2020



Utility projects are the second-most common project type, with five in progress. Many of the energy and utility projects in the region are closely linked, as there are both public energy projects (e.g. Site C and transmission lines) and private energy projects (wind farms, gas plants and refineries). A more detailed breakdown of the energy and major utility projects are presented in Table 7 below, which illustrates the diverse nature of the energy sector in the northeast. Wind energy projects are the most common type of energy project in the region by number, followed by coal and gas plants / refineries.

Table 7: Major Projects in Fort St. John (BC Major Projects Inventory, February 2020)

Project ID	Project Name	Project Description	Estimated cost (millions)	Status	Estimated Start Date	Estimated Completion Date	Developer
4142	Cambridge Estates	Proposed development to include 95 townhomes and seven coach homes located at 102 St and 117 Ave.	\$20	Proposed			Western Canadian Properties Group
4037	RCMP Detachment Building	Proposed construction of a facility that will accommodate the municipal and provincial post-detachment on an expanded site.	\$43	Proposed	2019-Q2	2022-Q2	RCMP
3981	Spruce Ridge Expansion Project	Proposal for two sections of natural gas pipeline parallel to the existing pipeline system that would increase capacity by up to 402 MMcf/d. The Aiken Creek Loop includes 13 km of 24" pipe, and the Chetwynd Loop includes 25 km of 36" pipe. Compressor units will be added to Station N5 and Compressor Station 2. The project received regulatory approval in Dec 2018.		Proposed	2019-Q4	2020-Q4	Enbridge Inc.
3946	Anne Roberts Young (NE) Elementary School	K to grade 6 elementary school will accommodate 505 students and a neighbourhood learning centre. The Province of BC will contribute \$30.8 million, with \$300,000 from the school district.	\$31	Construction started	2018-Q4	2020-Q3	School District 60
3581	Fort St. John and Taylor Electric Supply	This project will maintain adequate supply capability, reduce line losses and improve reliability to the loads in the Fort St. John and Taylor areas by re-terminating 138kV transmission lines at the new Site C switchyard, and the addition of a 75 MVA transformer and new feeder positions.	\$53	Construction started	2015-Q4	2020-Q4	BC Hydro
2037	Hackney Hills Wind Park	Proposed 370 MW wind park project located east of Fort St. John. Project is in the pre-application phase under the Environmental Assessment Act.	\$400	Proposed			Aeolis Wind Power Corporation

Project ID	Project Name	Project Description	Estimated cost (millions)	Status	Estimated Start Date	Estimated Completion Date	Developer
1103	Site C Project	This project will construct a third dam and hydroelectric generating station on the Peace River approximately seven kilometres southwest of Fort St. John. It will be capable of producing approximately 5,100 gigawatt-hours of electricity annually and 1,100 megawatts of capacity. Site C will provide clean, renewable and cost-effective power in BC for more than 100 years. *Planned in-service date for all units. **Site C forecast and life-to-date amounts include both capital costs and expenditures subject to regulatory deferral. The amount includes a reserve of \$708 million.	\$10,700	Construction started	2015-Q3	2024-Q4	BC Hydro
1894	The Station Town Centre	Proposed development on 220 acres located on the Alaska Hwy near Fort St. John. The project includes a power centre with big box stores over 80 acres. A hotel, truck centre and mixed density residential will comprise the remainder of the development. Estimated cost shown is for phase 1, commercial development portion of project. Phase 1 is fully serviced.	\$500	Construction started	2016-Q4	2023-Q4	G8 Properties

Oil and Gas

The oil and gas sector, including extraction, processing and transport of products, is expected to see modest growth through the next decade, following the post-COVID economic recovery. In addition to direct oil and gas industry activity, support services for the industry are expected to grow. Employment in the sector is expected to grow in the northeast.

The LNG sector saw a boost in 2018 with the final investment decision from LNG Canada. Several other projects have advanced to final stages to obtain the FID including Kitimat LNG. The latter has also applied to the NEB to expand its capacity. In total, there are three LNG projects that will source gas from British Columbia's northeast:

- Woodfibre LNG (expected to start in 2024)
- LNG Canada (expected to start in 2025)
- Kitimat LNG (expected to start in 2029)

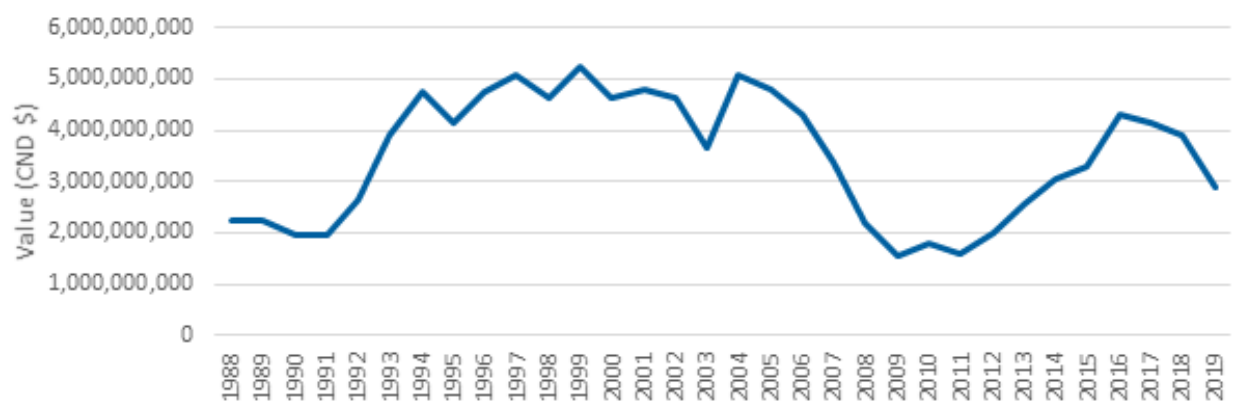
Even with recent challenges to sustaining exports to the United States, the natural gas industry has been able to continue adding capacity. British Columbia's national share of natural gas production increased from 26% in 2014 to 30% by 2018, growing at 6% annually.

BC's natural gas well additions are driven to sustain its production for local demand and exports. The fall of exports to the US has outpaced domestic demand growth in recent years; however, wells drilled for LNG purposes will help to offset this decline.

Forestry and Bio-Energy

Prior to COVID-19, the forecast for forestry was one of continued decline due to reductions in annual allowable harvest and consolidation / efficiencies in the sector. Figure 10 below shows total annual value of softwood lumber exports to the United States between 1988 and 2019. Exports decreased dramatically during the 2008-09 recession. Export values increased steadily from 2009 until 2017/18, when measures to reduce the amount of standing deadwood from the Mountain Pine beetle epidemic were curtailed, causing subsequent decline in harvest and exports.

Figure 10: Value of Softwood Lumber Exports to the United States, BC Stats, 2019



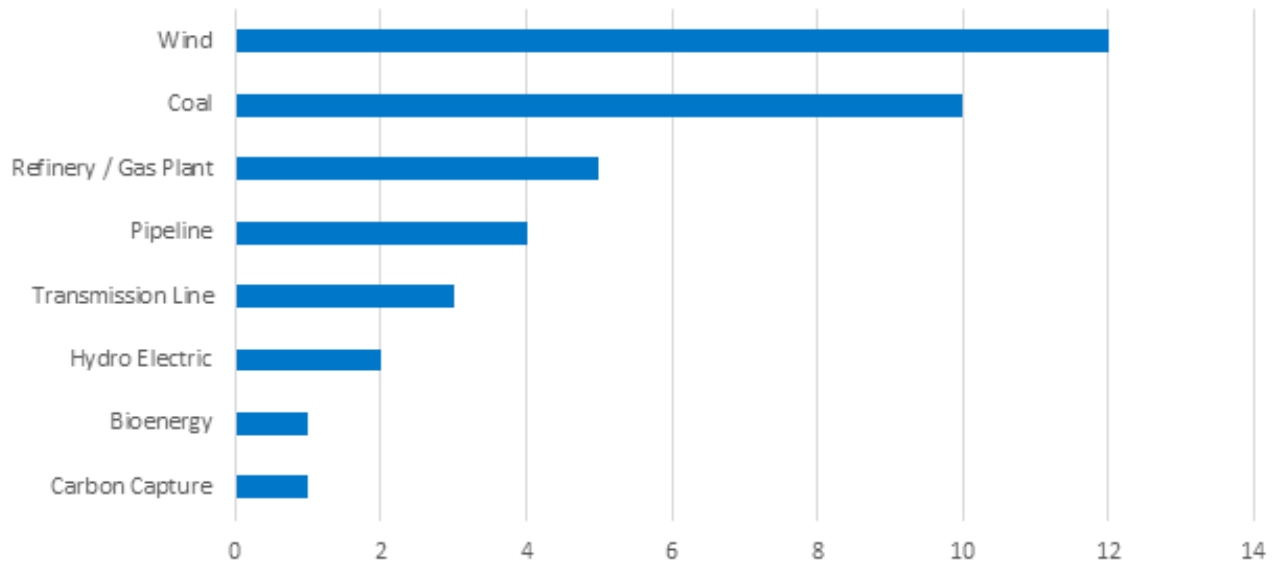
Forecasts in the early part of this year called for a long-term decrease in export values of 1.0% per year until 2029. Within the northeast part of the province however, the forestry sector was projected to show increases in the number of people employed by 0.7% by 2029 driven in part by the bio-energy sector.

Waste from wood processing plants has long been a source of energy for the forestry industry. BC's forestry sector is North America's number one producer and consumer of bioenergy. Clean Energy BC's Bioenergy Strategy seeks to develop the province's bioenergy network and to increase the amount of biofuel production. Clean BC anticipates that bioenergy may make up more than 50% of the province's renewable fuel requirements in the near future, signalling that this sector is poised for growth in the coming years.

It has been suggested by some that the pandemic could pose an opportunity for BC's forestry industry in a number of ways:

- There is revived demand for single-use products, which require pulp and fibre board
- There is now a push for more domestic sourcing, particularly in the fabrication of personal protective equipment (PPE)
- There is likely to be a longer-term push for locally made materials in light of supply chain disruptions and domestic security considerations.

Figure 11: Major Energy and Utility Projects in Northeast BC by Subtype

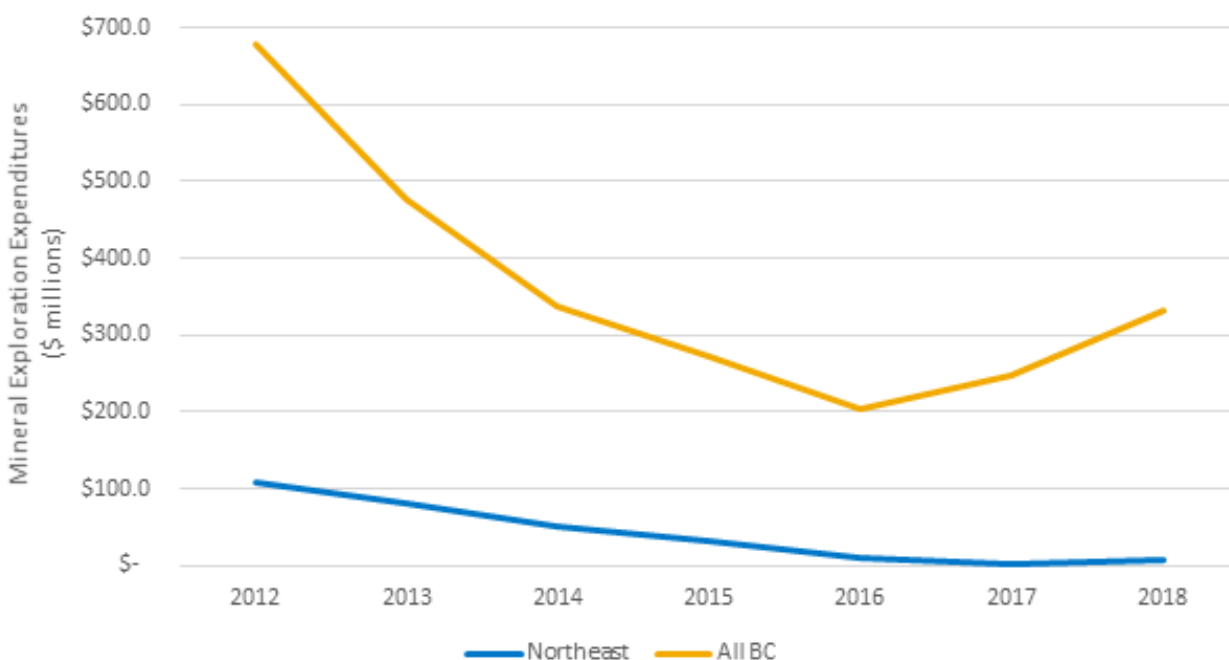


Of the major projects underway in the northeast, eight are within Fort St. John.

Mining

This industry is expected to see modest growth in the coming years; however, employment is not expected to increase dramatically. As processing techniques and technology improve, the growth in the number of positions is expected to decline by 0.2% annually until 2029 provincially. In the Northeast, this decline in employment is expected to average 6.9% per year over the same period, the largest decline in the province. However, the average annual earnings have shown variability since 2009 but have seen moderate gains since 2017.

Much of the growth in the mining industry is dependent on successful exploration activity. The chart below illustrates the total exploration expenditures for BC and the Northeast between 2012 and 2018. The province has seen a dramatic decline in exploration expenditures. The decline in the Northeast has been consistent. However, the provincial expenditures have shown an increase since 2016.

Figure 12: Mineral Exploration Expenditures (\$ millions)

Transportation and Warehousing

British Columbia is Canada's Gateway to the Pacific and the transportation and warehousing sector is anticipated to grow at a faster than normal rate until 2029 as the importance of trade with Asia and the United States through west coast ports continues to grow. The transportation and warehousing sector includes a multitude of activities that support and facilitate the import and export of goods across the country. This sector is a complex network of supply lines and includes several subsectors that include storage and warehousing, rail and truck transport and others. Compared to other sectors, employment is projected to make steady growth in all areas of the province with 1.0% average annual growth in BC until 2029 and 2.1% average annual employment growth until 2029 in Northeast BC.

Subsectors to transportation and warehousing are anticipated to make large employment gains in the Northeast between 2019 and 2024. Rail transportation is anticipated to grow annually at 7.7%, and warehousing and storage are anticipated to grow annually at 5.0%. Overall, many of the new positions required for this industry will be to replace existing workers as they retire (75%), however, this industry will still play an important role to the future of British Columbia's economy.

Table 8: Average Annual Employment Growth in the Transportation and Warehouse Industry, BC

Growth Sector	Employment Growth (Average Annual Rate)		
	2019-2024	2024-2029	2019-2029
Transportation and Warehousing	2.6%	1.5%	2.1%
Warehousing and Storage	5.0%	1.5%	3.2%
Rail Transportation	7.7%	1.6%	4.6%
Truck Transportation	2.8%	1.5%	2.1%

Source: Work BC, 2020

Agriculture

The Peace River region is a critical agricultural production centre for the province. There are some 825,000 hectares (2.04 million acres) of land farmed in the region, accounting for 31% of the land farmed in BC. In 2016, the 1,335 farms in the region generated \$195.5 million in sales, from a capital investment of \$2.6 billion in land, livestock, buildings and machinery. The majority of gross farm receipts were from oilseeds, grain, and wheat (42%), followed by beef cattle and hay farming (39%). About 41% of the farmland in the region is seeded / improved pasture, 34% is planted for cereal crops and hay, and the remainder is used for other agricultural purposes.

The Peace River region produces 98% of the province's canola crop and 75% of the grain crop. There is also a well-established cattle industry. Game farm production is growing in production, and the region has four slaughter facilities.

There are many opportunities in the Peace for new / expanded agri-business operations. Sub-sectors with future potential include:

- Expansion of the game farming and cow-calf and beef finishing industries
- Further production of hogs, forage seed, pulse crops and other oilseed
- Organic products
- Secondary processing of primary products
- Local production of fresh in-season fruits and vegetables

Industrial Land Supply

This section presents a detailed review of the industrial land supply in Fort St. John as of early 2020. This includes not only the extent of zoned and designated industrial land, but a comprehensive review of the extent of industrial land utilization, the amount and types of vacant land available, a quantification of potentially ‘under-utilized’ industrial sites, and information on the levels of usability of both vacant and under-utilized lands for different economic sectors. The latter is premised on an understanding of variables such as:

- Parcel sizes
- Parcel topography
- Adjacent or proximate uses
- Proximity or access to key elements such as transportation networks (road and rail)

The industrial land supply analysis was prepared through GIS analysis of multiple data sets (provincial and municipal), plus visual analysis through ortho-photos.

Establishing the Universe of Inventory Lands

The types of lands included in this industrial land supply review were based on City of Fort St. John land use designation and zoning. This definition of the ‘universe’ of the inventory is both logical and consistent with the approach used in other BC jurisdictions. The universe includes all ‘developed’ or ‘utilized’ industrial lands, quasi-industrial lands, and non-market industrial lands, alongside industrial lands that are currently vacant (i.e. no use), or vacant of industrial uses (i.e. used for non-industrial purposes).

Excluded from the inventory are:

- Any lands that are both zoned and designated for non-industrial uses
- Vacant lands that are zoned and designated non-industrial
- First nations reserve lands
- YXJ airport lands

Defining “Developed”, “Vacant,” and “Underutilized”

The definitions of ‘developed’ and ‘vacant’ and underutilized lands in this supply review are as follows:

- Developed: lands with industrial or quasi-industrial uses. These may include lands with some non-industrial uses that are developed or actively used in a way that makes redevelopment unlikely.
- Vacant: lands that were flagged as ‘vacant’ by BC Assessment’s Actual Use codes, followed by a cross-check for vacancy through ortho-photo review.
- Underutilized: lands that, through visual review, were deemed to have under a 25% level of utilization⁷
 - » lands that are zoned for industrial, but currently have non-industrial uses

Supply Review Approach

This analysis provides parcel-level information on lands that are developed for industrial activities, industrial lands that are vacant, and the degree of utilization for non-vacant industrial lands. The analysis also provides details on characteristics of available industrial parcels (i.e. those that are vacant or underutilized), in terms of parcel sizes (minimum, maximum and average), usable areas (based on topography), and other notable elements such as adjacent or proximate land uses.

This methodological approach is designed to provide not only a picture of gross industrial land availability in Fort St. John, but a more in-depth understanding of true usable inventory, accounting for critical factors that shape or limit industrial land utilization.

⁷ This classification does not define utilization by the presence of built structures, but rather the clear use of the parcel for some type of industrial activity (e.g. vehicle storage, tank storage, etc.). Many parcels with low lot coverage are still fully utilized from an economic perspective.

Our approach employs data from multiple sources, linked together using GIS to create a detailed lands database. The analysis gives consideration to land zoning and OCP designation, and classifies parcels using data from BC Assessment and the City. It also relies on due diligence through desktop analysis. Consideration is also given to factors that may impact utilization, developability, and intensification of parcels.

Inventory Data Sources

Information used in this analysis include:

- Cadastral GIS data
- City of Fort St. John land parcel GIS layer, with built-in BC Assessment Authority data
- Ortho-photos (2019)
- City of Fort St. John GIS data layers
- Data layers for zoning and land designation in the Peace River Regional District
- Information received from City of Fort St. John staff

Land Use Classifications and Definitions

Classifications of industrial land are based on BC Assessment's Actual Use codes, which have been grouped into amalgamated categories for the purpose of reporting. In all cases, land use classifications reference the predominant or primary use of a given site. If properties include multiple or overlapping non-discrete uses, the primary or predominant use takes precedence for classification.

The process of classifying lands for the inventory was as follows:

- Performed spatial overlay of land parcels classified as "industrial" in the City's GIS zoning layer
- Examined BC Assessment 'actual use' codes within the parcel layer, and classified actual use into consolidated overarching categories
- Used ortho-photos, Google Streetview and knowledge of City staff to refine classifications

Land Utilization

Recognizing that 'developed' and 'vacant' can miss important nuance in painting the picture of actual land availability, this analysis also considers levels of parcel use.

"Utilization" or intensity of use is defined as the approximate percentage (or in this case, percentage quartile) of a given site that is covered either by permanent improvements, or is clearly utilized by some activity that is core to the site users' business functionality. Utilization is therefore defined by the presence or combination of:

- Permanent buildings or structures
- Surface parking / loading areas
- Outdoor storage

The levels of utilization were determined through site-by-site analysis using ortho-photos and Google Streetview, plus knowledge of City staff.

Other Considerations

- If lands were undeveloped at the time of the inventory, they were classified as either "vacant" or as non-industrial use.
- Quality and reliability of the BC Assessment actual use codes varies from parcel to parcel. Visual parcel verifications were performed for the purpose of determining which of the parcels that were flagged as 'vacant' were actually vacant.

Lands Inventory Results

Industrial Lands Universe

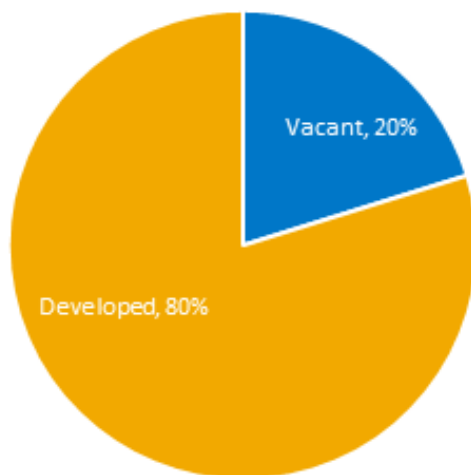
The total City of Fort St. John industrial lands inventory consists of 600 hectares (1,483 acres) of land, across 545 parcels. Of that land base:

- 95% (568 hectares) is both zoned and designated industrial (i.e. OCP land designation matches zoning entitlement)
 - » The average parcel size is 1.2 hectares (2.86 acres)
 - » The maximum parcel size is 92 hectares (227 acres)
- 3% (17.4 hectares) is zoned for industrial but is designated for other uses in the OCP
 - » This sub-set is comprised of 34 parcels, with an average parcel size of 0.5 hectares and a maximum parcel size of 4 hectares (10 acres)
- 2% (10.7 hectares) is designated for industrial use in the OCP, but is currently zoned for other uses
 - » This sub-set is comprised of 19 parcels, with an average parcel size of 0.6 hectares and a maximum parcel size of 2.1 hectares (5.2 acres)

Altogether, there are approximately 479 hectares (1,184 acres) of industrial lands that can be broadly considered “developed”, with varying degrees of utility or intensity of use. Of those, not all are developed for industrial use.

There are 121.1 hectares (299.2 acres) of land that are vacant. The latter is based on a combination of BC Assessment information, visual orthophoto review, and staff confirmation.

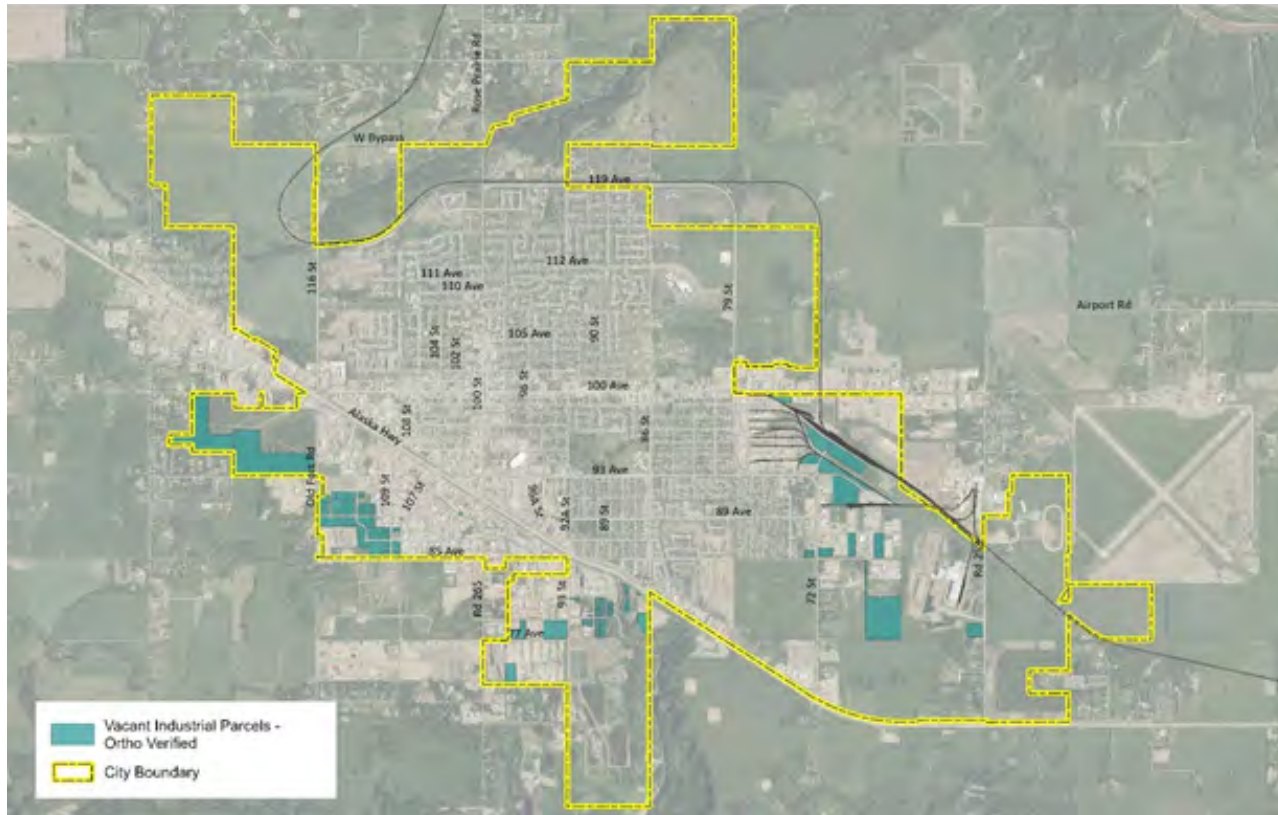
Figure 13: Developed and Vacant Industrial Lands



Vacant Industrial Lands Inventory

The 121.1 hectares (299.2 acres) of vacant lands are distributed across 149 parcels. The average parcel size is 0.8 hectares (2 acres) and the minimum is under 0.07 hectares (0.2 acres). The largest single vacant parcel is 23 hectares (57 acres). Figure 14 below shows the distribution of vacant land parcels.

Figure 14: Vacant Industrial Parcels



- There are clusters of small industrial lots located east of 90th Street, south of 81st Avenue. These lots could theoretically be assembled to allow for larger industrial activities, but that would require cooperation and coordination amongst landowners.
- There is a large vacant industrial parcel just west of the Louisiana Pacific oriented strand board (OSB) plant
- There are vacant parcels northwest of the OSB plant, along the rail corridor
- There is a significant cluster of vacant parcels to the east of Old Fort Road, north of 85 Avenue

Table 9 breaks out the vacant industrial inventory in terms of land zoning or OCP designation status. As shown, most vacant lands (94%) are both designated and zoned for industrial use.

Table 9: Vacant Industrial Land Inventory by Zoning and OCP Classification

Zoning / OCP Status	Total Land Area (ha)	Total Land Area (ac)	% of Total Vacant
Zoned and Designated Industrial	115.0	284.2	94.9%
Designated Only	5.46	13.5	4.5%
Zoned Only	0.68	1.7	0.6%
TOTAL	121.14	299.4	

Table 10 shows the vacant industrial lands in terms of their minimum, maximum and average parcel sizes.

Table 10: Vacant Industrial Land Inventory by Parcel Size Min, Max, Median

	Hectares	Acres
Minimum parcel size	0.07	0.17
Maximum parcel size	22.99	56.80
Mean parcel size	0.81	2.01

Table 11 shows the breakdown of the number of vacant land parcels, by parcel size range. Nearly 91% of the vacant lands are 5 acres or less, and 97% are 10 acres or less. There is one parcel in the 10.1-to-20-acre range, and 3 parcels that are greater than 30 acres. One is located south of the OSB Plant. The others are located west of Old Fort Road at the city's western edge.

Parcel Size Classification	Parcel Size	Number of Vacant Parcels	% of Vacant Parcels
Small	Less than 1 Acre	99	66.4%
Small	1 to 5 Acres	36	24.2%
Medium	5.1 to 10 Acres	10	6.7%
Medium	10.1 to 20 Acres	1	0.7%
Large	20.1 to 30 Acres	0	0.0%
Large	30+ Acres	3	2.0%
TOTAL		149	

It is also worth noting that many of the sub-1 acre parcels are well below 1 acre in size. There are many instances of lots that are no larger than a well-sized residential parcel (approximately 7,5000 square feet, or 17% of one acre. For those sites to be useful for almost any industrial activity, they will need to be assembled into larger agglomerations. This could be complex due to fragmented property ownership.

In addition to the lands that are vacant of any use (as per the tables above), there is also an additional set of lands – totaling about 25 hectares (62 acres) – that are being used, but not for industrial purposes. These uses are listed in Table 12 on the following page, including their associated total land areas. Note that these are not part of the vacant land base depicted in Figure 14 above.

Table 12: Non-Industrial Uses of Industrial Lands

Non-Industrial Uses of Industrial Lands	Land Area (Ha)	Land Area (Ac)
Residential	4.9	
Retail, Service Commercial, Office	16.0	
Civic, Institutional, Recreational	3.3	
Hotel	1.1	

Figure 15 shows the vacant industrial lands inventory further broken out by zoning type and OCP status. The lightest blue shows lands zoned for light industrial (M-1). The medium blue shows lands zoned for heavy industrial (M-2). The dark blue shows lands that are designated for industrial use in the OCP but are not currently zoned industrial.

Figure 15: Vacant Industrial Parcels by Zoning and OCP Status

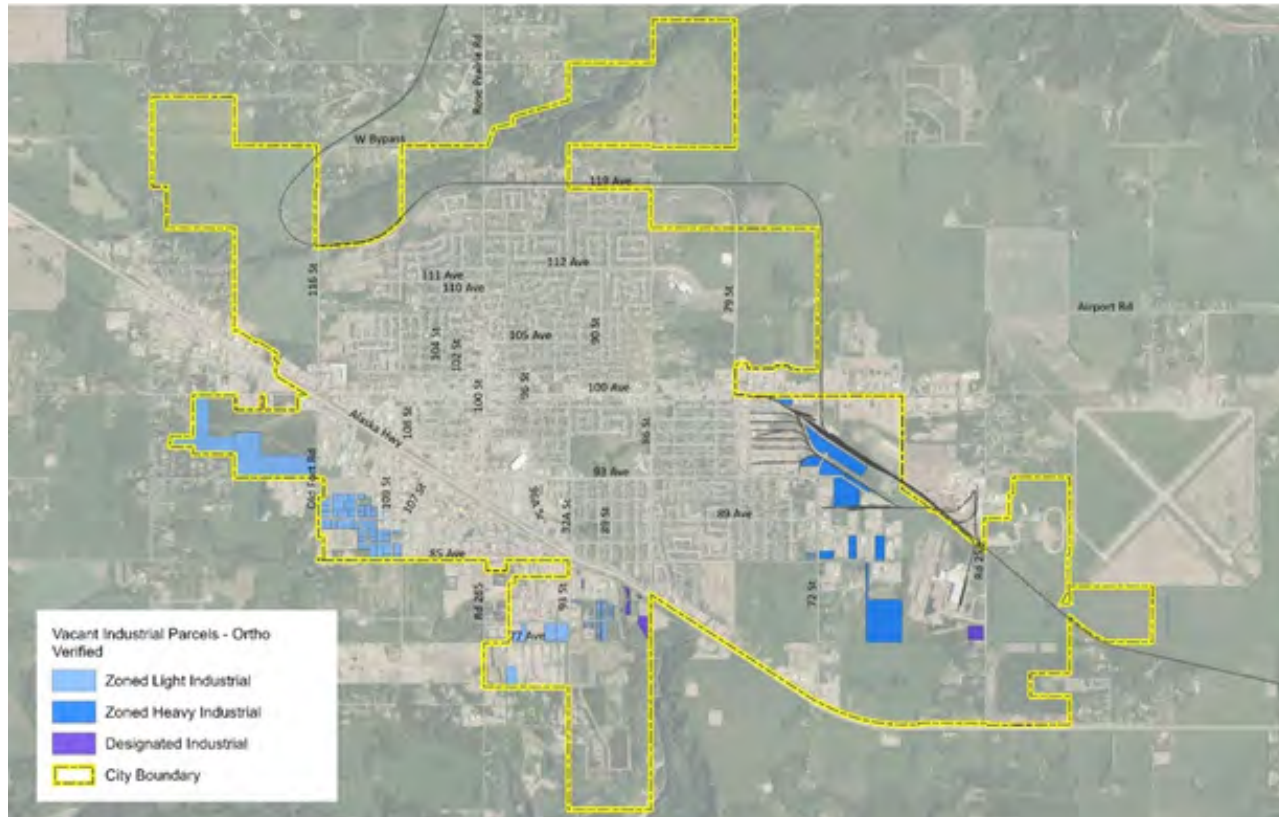


Table 13: Vacant Industrial Lands by Zoning, OCP, Min, Max and Mean Parcel Sizes

	Light Ind. Zoning	Heavy Ind. Zoning	Designated Ind., not zoned
Total Parcels	126	14	9
Total Land Area (ha)	75.9	39.8	5.5
Min. Parcel Size (ha)	0.07	0.34	0.08
Max. Parcel Size (ha)	23.0	15.5	2.1
Mean Parcel Size (ha)	0.6	2.8	0.6

Underutilized Industrial Lands

Utilization, or land use ‘intensity’, is a somewhat subjective concept. While in principle it is about determining if a site is being well used from an economic standpoint, in practice it is difficult to know whether a site is truly being used intensively without understanding the precise business needs and operating patterns of the users of each parcel. With that caveat, this analysis of land utilization is based on a visual review of ortho-photos for lands designated or zoned for industrial, and that are currently used for some industrial purpose (i.e. not including the parcels used for non-industrial purposes). Utilization is estimated through simple proxy metrics such as:

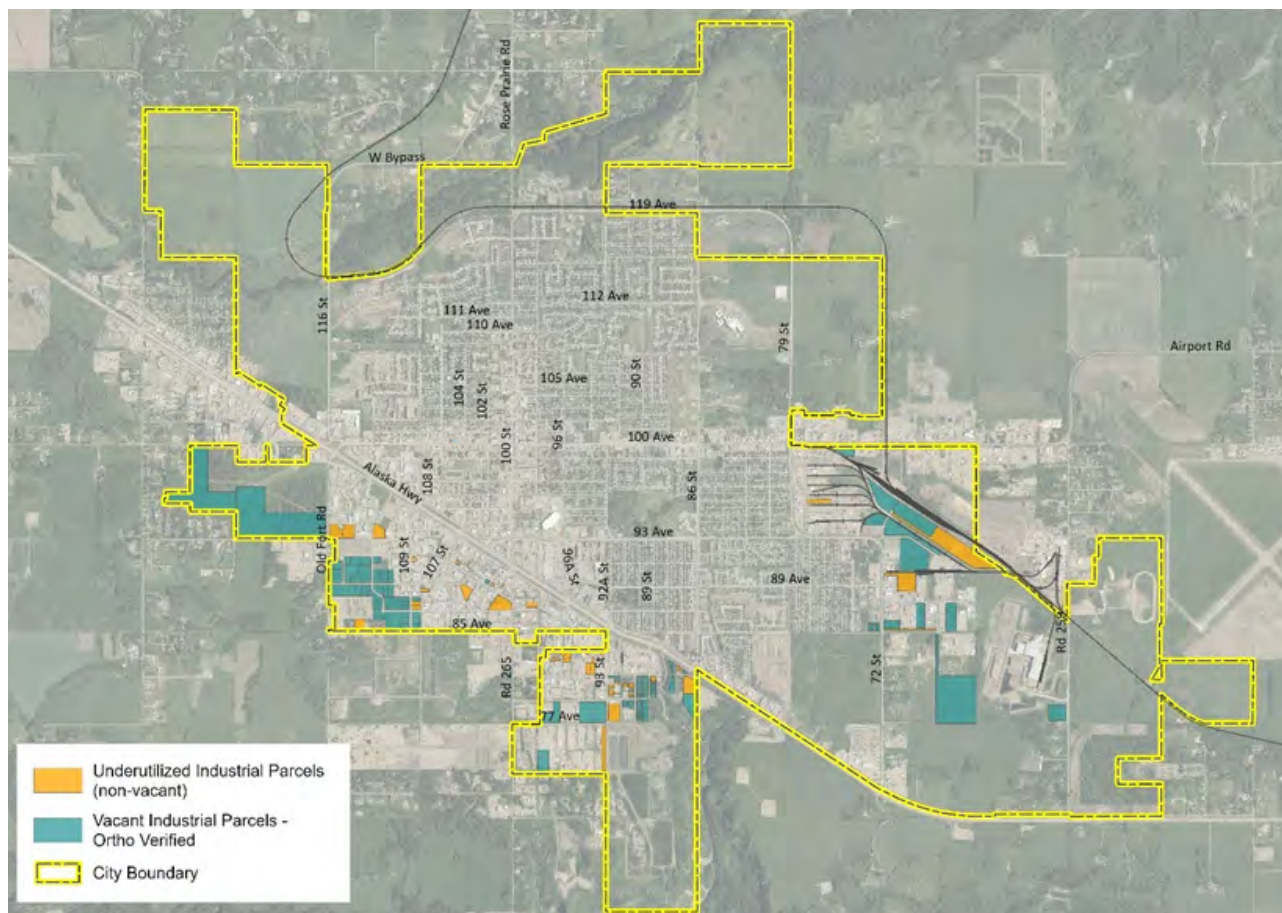
- Presence or absence of buildings
- Activity on a site such as parking or loading
- Significant use (or non-use) of a site for outdoor storage (e.g. laydown yard)

Altogether, this review identified approximately 29 hectares (72 acres) of land across 39 parcels that could be deemed “underutilized.” Eight of those parcels (1.8 total hectares) are designated for industrial use in the OCP but are currently zoned for other uses. The remaining parcels (27.06 total hectares) are both designated and zoned for industrial use.

Underutilization does not necessarily mean that a parcel will be a candidate site for redevelopment or infill. Rather, this categorization simply reflects the opinion of USL, based on the above-noted approach, of the level of economic intensity at a given site, and that these sites could, in theory, be put to a more intense use.

Figure 16 provides a snapshot of the combined “vacant” and “underutilized” inventories. Vacant parcels are identified in blue, while underutilized parcels are shown in orange. Total vacant plus underutilized lands are 150 hectares (370.1 acres).

Figure 16: Vacant and Underutilized Industrial Parcels



Land Use Classifications for Industrial Lands

The distribution of the entire 600-hectare industrial land inventory can be broken out into a variety of classification groups or schemas. USL has amalgamated BC Assessment codes into the following eight “use classification” groupings, for the purpose of reporting simplicity.

Table 14: General Land Use Classifications for Zoned and Designated Industrial Lands

Use Classification	Components	Total Area (ha)	% of Total Industrial
Building Intensive Industrial	• Auto shops, paint shops, garages • Sawmills and plywood mills • Concrete mixing • Machinery manufacturing • Grain elevators • Lumber yard or building supplies • Warehousing	288.2	48.0%
Land Intensive Industrial	• Works yards • Outdoor storage / warehousing • Vehicle parking	22.7	3.8%
Large-Scale Infrastructure / Transportation	• Petroleum bulk plants • Railway • Electrical power systems	9.3	1.5%
Retail / Office	• Stores • Office buildings	16.0	2.7%
Service Stations and “Industrial Other”		15.1	2.5%
Other Non-Industrial Uses	• Single family dwellings • Manufactured homes • Civic, institutional, recreational • Hotel	11.1	1.8%
Non-Specific Industrial*		116.6	19.4%
Vacant**		121.2	20.2%
TOTAL		600.2	

Source: Urban Systems, adapted from Metro Vancouver Industrial Land Strategy

*Many of the parcels in this category were classified by BC Assessment as either “Vacant IC&I” or did not have an assigned actual use code.

**Based on BC Assessment vacancy flag, and refined through visual ortho-photo review.

The tables below provide detailed breakdowns of the classification of all industrial lands according to BC Assessment actual use codes. Table 15 shows those classifications broken out by estimated levels of parcel utilization.⁸

Table 16 shows the classifications by BC Assessment code again, this time broken out by the designation and zoning status of the lands.

Table 15: Total Industrial Lands Inventory by BC Assessment Actual Use Classification and Level of Utilization

BC Assessment Classification	Land Area (ha) and Level of Utilization Estimate				Grand Total
	0-25%	26-50%	51-75%	76-100%	
0 - Single Family Dwelling		0.74			0.74
2 - Property Subject to Section 19(8)		1.62			1.62
200 - Store(S) And Service Commercial			0.83	1.85	2.68
201 - Vacant IC&I	110.31	24.72	12.84	2.96	150.82
204 - Store(S) And Offices		2.02	1.50		3.52
208 - Office Building (Primary Use)		3.19	6.62		9.81
224 - Self-Serve Service Station			0.61	1.55	2.16
228 - Automobile Paint Shop, Garages, Etc.		35.09	44.58	7.98	87.65
230 - Hotel			1.05		1.05
260 - Parking (Lot Only, Paved or Gravel-Com)	2.17	1.95	10.37	2.83	17.32
272 - Storage & Warehousing (Open)		0.06	2.00	0.06	2.12
273 - Storage & Warehousing (Closed)	2.05	33.08	40.54	7.74	83.41
276 - Lumber Yard or Building Supplies	0.17	0.06			0.23
401 - Industrial (Vacant)			15.82		15.82
415 - Sawmills		19.34			19.34
417 - Plywood Mills			92.02		92.02
434 - Petroleum Bulk Plants		5.28			5.28
448 - Concrete Mixing Plants		0.99	0.91		1.91
466 - Machinery Manufacturing (Excluding Electrical)		1.07			1.07
474 - Miscellaneous & (Industrial Other)	0.22	12.76			12.97
476 - Grain Elevators		2.59			2.59
500 - Railway	2.81				2.81
580 - Electrical Power Systems (Including Non-Utility)	1.25				1.25
60 - 2 Acres or More (Single Family Dwelling, Duplex)		4.17			4.17

⁸ Note the 0-25% utilization column is the combination of the 121.2 hectares of vacant lands and the 29 hectares of underutilized lands.

BC Assessment Classification	Land Area (ha) and Level of Utilization Estimate				Grand Total
	0-25%	26-50%	51-75%	76-100%	
601 - Civic, Institutional & Recreational (Vacant)	2.26	1.03			3.29
61 - 2 Acres or More (Vacant)	17.63				17.63
63 - 2 Acres or More (Manufactured Home)		1.83			1.83
630 - Works Yards		4.04	1.22		5.26
(blank)	11.73	1.78	35.35	0.96	49.82
Grand Total	150.59	157.43	266.26	25.92	600.21

Table 16: Total Industrial Lands Inventory by BC Assessment Actual Use Classification, OCP and Zoning Status

BC Assessment Classification	Designation and Zoning			Total
	Zoned & Designated	Designated Only	Zoning Only	
0 - Single Family Dwelling		0.74		0.74
2 - Property Subject to Section 19(8)	1.62			1.62
200 - Store(S) And Service Commercial	2.68			2.68
201 - Vacant IC&I	143.48	5.71	1.64	150.82
204 - Store(S) And Offices	2.02		1.50	3.52
208 - Office Building (Primary Use)	9.00	0.81		9.81
224 - Self-Serve Service Station	2.16			2.16
228 - Automobile Paint Shop, Garages, Etc.	84.95		2.69	87.65
230 - Hotel		1.05		1.05
260 - Parking (Lot Only, Paved or Gravel-Com)	17.32			17.32
272 - Storage & Warehousing (Open)	2.12			2.12
273 - Storage & Warehousing (Closed)	83.02		0.39	83.41
276 - Lumber Yard or Building Supplies		0.23		0.23
401 - Industrial (Vacant)	15.82			15.82
415 - Sawmills	19.34			19.34
417 - Plywood Mills	92.02			92.02
434 - Petroleum Bulk Plants	5.29			5.28
448 - Concrete Mixing Plants	1.91			1.91
466 - Machinery Manufacturing (Excluding Electrical)	1.07			1.07
474 - Miscellaneous & (Industrial Other)	11.15		1.82	12.97
476 - Grain Elevators	2.59			2.59
500 - Railway	2.81			2.81

BC Assessment Classification	Designation and Zoning			Total
	Zoned & Designated	Designated Only	Zoning Only	
580 - Electrical Power Systems (Including Non-Utility)	1.25			1.25
60 - 2 Acres or More (Single Family Dwelling, Duplex)	0.81		3.36	4.17
601 - Civic, Institutional & Recreational (Vacant)	3.29			3.29
61 - 2 Acres or More (Vacant)	15.59	2.04		17.63
63 - 2 Acres or More (Manufactured Home)			1.83	1.83
630 - Works Yards	1.22		4.04	5.26
(blank)	49.53	0.16	0.13	49.82
Grand Total	567.94	10.75	17.41	600.21

Industrial Land Needs Projections

Preparing forecasts of future industrial land requirements in a market that is subject to significant economic fluctuations is challenging. This challenge is compounded by the current, near, and potentially longer-term economic uncertainty created by COVID-19 and the resultant economic shutdown and recovery period. Nevertheless, in the section below we detail our approach to, and results from, a range of possible future industrial land need scenarios based on available data and reasonable assumptions. Insofar as possible, these projections of land needs are broken out by major industry sector. This is an important component, as different user groups will have significantly different needs for their industrial lands in terms of parcel sizes, access and egress, visibility, adjacencies, and other factors.

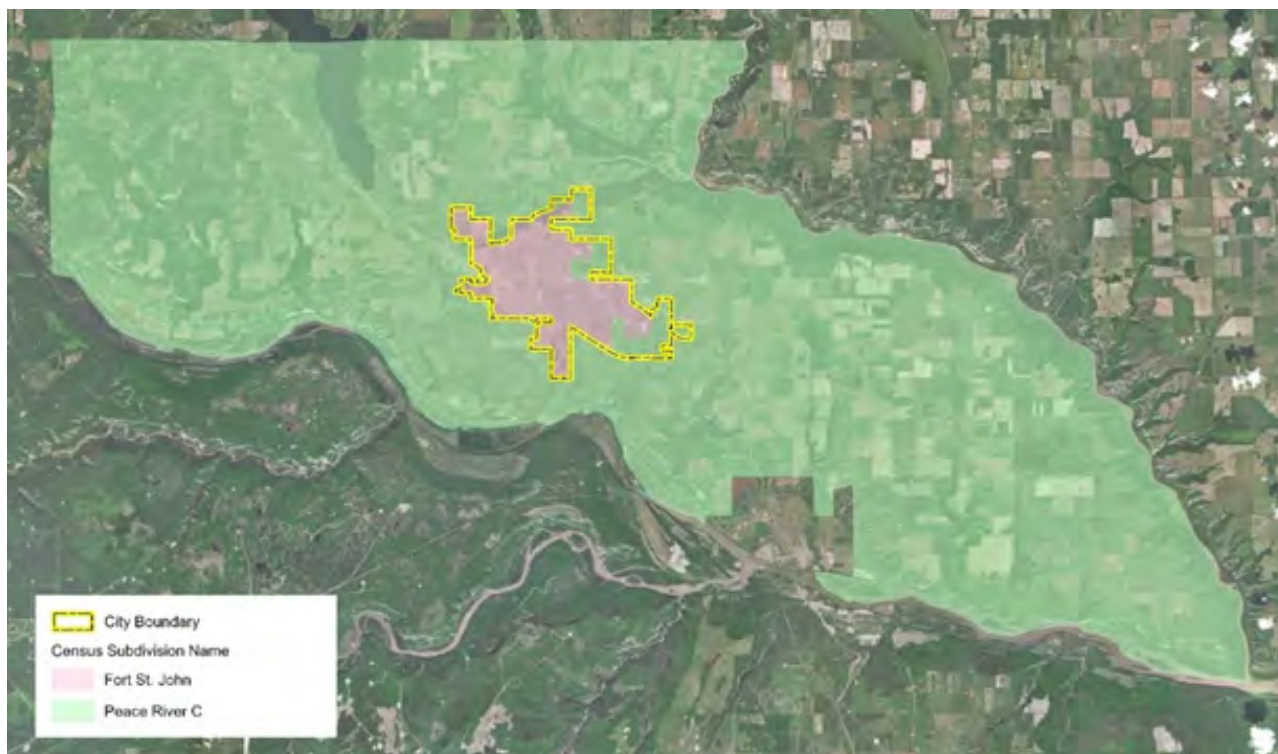
Approach

The projection approach, resulting in a range of future industrial land needs for the City, has been completed using a methodology that takes advantage of what are relatively limited available data sets. The major projection methodology is driven by a forecast of regional (defined as the Fort St. John Census Agglomeration – or PRRD Area C) employment by “Base” sector⁹, combined with:

- a capture rate (the proportion of regional growth accruing to Fort St. John)
- an allocation of the proportion of future employment, by sector, to industrial lands
- an employment density threshold (i.e. number of employees per acre of industrial land), by sector

This methodology is discussed below in further detail. Figure 17 on the following page shows the boundaries of the City of Fort St. John, the PRRD Area C, and also the areas within City boundaries that are within the ALR.

Figure 17: City of Fort St. John (Census Sub-Division) and Peace River Regional District Area C (Fort St. John Census Agglomeration) *any area in green that falls within the City boundary is in the ALR



⁹ Base or basic industry sectors are those that sustain the regional and local economy. These include agriculture and forestry, mining, oil and gas, construction, health care, public administration and education.

Regional Labour Force Projections

Regional growth projections (i.e. at the Census Agglomeration level – PRRD Area C) are based on labour force growth by North American Industry Classification System (NAICS) groupings over the 2001 to 2016 periods.¹⁰ Labour force growth, rather than employment growth, was used due to data availability constraints.¹¹ The analysis is likely not dramatically changed by the use of labour force figures. The 2001 to 2016 period was used as it is the longest period over which there exists readily available data.

Regional labour force growth is projected forward by assuming that observed changes in labour force by industry over the 2001 to 2016 period will continue into the future. That is, each industry will change by the same number of labour force participants as were added or lost per year between 2001 and 2016. It is readily acknowledged that this approach is a simplification; however, with so many determinants of labour force or employment growth, and with so many sources of uncertainty, this was deemed the most appropriate solution given the constraints. A modelling approach was also tested whereby rates of observed change by NAICS code for the province overall were reviewed and applied to the regional data set. However, it was ultimately determined that there was no sound basis upon which to apply this measure to project future growth in the Peace region, and therefore the results of that modelling are not reported here.

As an additional “scenario”, the Regional labour force projections also consider the impact of a return of the extractive industries (mining, quarrying and oil and gas) to their recent historical highs.

Employment in Fort St. John

The measure considered at the local (Census sub-division) level is those who work at a “usual place of work” in the City of Fort St. John, by industry sector. This includes both the local employed labour force that works in the City, and inbound commuters.¹² As the study is concerned primarily with industrial lands within the City boundaries, the relevant measure for projection purposes is employment within the City, regardless of place of residence.

Local employment is modelled in two ways:

1. First, “base” industry employment growth is modelled based on a ‘capture rate’ relating to regional labour force growth projections. This capture rate describes the proportion of labour force growth within the region that is assumed to translate to employment growth in the City.¹³
2. Second, “non-base” industry employment is based on a measure of historical non-base employment per measure of “base” labour income

These model components result in estimates of employment in the City of Fort St. John, by industry. As the City of Fort St. John’s actual “capture rate” of regional labour force could vary substantially (and be driven in part by the availability of appropriate lands vis-à-vis options elsewhere in the region), three capture rate scenarios are presented, at 50%, 60% and 70% of regional growth.

¹⁰ See Statistics Canada, 2001, 2006, and 2016 Censuses of Population, Statistics Canada Catalogue no. 97-599-XCB2006010.

¹¹ While employment totals can be inferred through the combination of labour force and commuter flows data sets, the latter only provides a breakdown by industry sector through custom tabulations from Statistics Canada.

¹² Statistics Canada custom data tables based on the 2006 and 2016 censuses were acquired for this project. This data set is for those with a usual place of work in Fort St. John; it excludes those with no fixed place of work, and those who work from home.

¹³ The application of capture rates raises a ‘chicken and egg’ phenomenon; for some sectors, the proportion of growth that lands in the city versus the region will be driven primarily by land availability. In the absence of available land, the growth demand will go elsewhere.

Industrial Land Demand

Projected employment in the City of Fort St. John by industry is converted to a measure of industrial land demand by the addition of two elements:

1. The proportion of industry employment that is likely located on industrial land; and
2. The employment density of industrial land (jobs per parcel acre)

Estimates of the share of employment by industry which is located on industrial land have been compiled as part of this study, noting that the “employment universe” from which these shares are estimated are already exclusive of jobs that have “no fixed place of work”, or are home-based. This is an important consideration, as some sectors have a majority of employees with no fixed workplace and only a minority with a fixed place of work outside the home. The latter may be mostly, or entirely, at an industrial location. If one were beginning the analysis using the entirety of the employment universe (i.e. work from home + no fixed place + usual place), the allocation of totals to industrial lands would need to be reduced. However, as this analysis begins with a data set that already eliminates all but those with a usual place of work, the allocation to industrial lands is higher.

After allocating shares of usual place of work employment to industrial lands (by sector), finally a measure of employment density is applied (jobs per parcel acre) to convert projected employment on industrial land to projected industrial land demand. The measures of employment density are based on data collected for both the Census Metropolitan Area of Vancouver and the District of North Vancouver. It is assumed that, due to the price of land and land availability, employment density in the Vancouver CMA is higher than that which could reasonably and efficiently be expected in the City of Fort St. John. As a result, a variety of “employment density scenarios” are presented. These scenarios each use as the employment density measure a percentage of the Vancouver CMA or District of North Vancouver density measure. In particular, the scenarios for employment density at 90%, 80% and 60% of Vancouver CMA employment density are considered.

Limitations

The projections presented here are the result of a relatively simplified modelling, with many assumptions. This analysis is intended to be broadly indicative, rather than predictive with a low margin of error. A summary of some of the most noteworthy limitations is presented here.

- This analysis is limited by the availability of detailed, high-frequency, and compatible data. Detailed employment and labour force data are not presented regularly for smaller geographies. This limitation is the cause of the mixing of measures, most notably the use of labour force at the regional level, and employment at usual place of work at the local level.
- Secondly, this analysis is substantially limited by the absence of strong economic underpinnings. This model relies on trends over the time period for which data is available. The economic reality as it evolves in the City of Fort St. John (or the region) may lead to substantially different results.
- Finally, the use of speculative “capture rates”, industrial land shares of employment, and employment densities, add to the limitations of the analysis, and to the margin of error.

Employment Change and Projections

Table 17 compares the labour force and employed labour force metrics for the City and Census Agglomeration (PRRD Area C) in 2006 and 2016. It shows that, over the 10-year period, the City increased its proportion of the region’s employed labour force from 69% to 73%; while the City added nearly 600 people to its employed labour force over that time, the region added only 40 people.

Table 17: Employment and Labour Force Comparison, City vs. Region, 2006 and 2016

	PRRD Area C			City of Fort St. John			FSJ as % PRRD Area C		
	2006	2016	Δ	2006	2016	Δ	2006	2016	Δ
In the Labour Force (Census Profile)	15,710	16,885	1,175	10,875	12,270	1,395	69%	73%	119%
Employed (Census Profile)	15,010	15,050	40	10,345	10,940	595	69%	73%	1488%
Labour Force / Local Employment (Data Tables)	15,620	17,310	1,690	9,870	9,780	-90	63%	56%	-5%
Basic Labour Force / Local Employment (Data Tables)	7,385	8,570	1,185	3,880	4,025	145	53%	47%	12%

Source: Statistics Canada 2006 and 2016 Census

Using the projection methodology outlined above, between 2020 and 2040 the City of Fort St. John could see employment growth across all sectors of between 3,050 and 5,300 net new employees. This would place total employment at usual places of work in the City at 31% to 55% above levels observed in 2016. The relatively wide range is a function of the variable capture rates of regional labour force growth, as discussed above.

Within the sectors that are primary users of industrial land, employment growth is projected as follows:

Table 18: Incremental Employment Growth Projection by Major Sector, 2020 to 2040

	Capture Scenarios				
	40%	50%	60%	60% + Ext.	70%
Mining, Quarrying, Oil and Gas	317	397	476	636	555
Construction	403	503	604	604	740
Manufacturing	227	283	340	340	397
Wholesale Trade	113	141	169	185	197
Transportation and Warehousing	93	117	140	153	164
Professional, Scientific and Technical Services	196	245	294	321	343
Repair and Maintenance	88	109	131	131	153

Source: Urban Systems Projections

The capture scenarios refer to the proportion of regional growth that is captured within the City boundaries. The “60% + Ext” scenario is a modification of the 60% capture scenario, in which an override is conducted which would see the extractive sectors (mining, quarry, oil and gas) rebound to their recent employment highs, and other sectors with direct ties to them seeing corollary benefits.

Table 19 presented below provides sector-based projections of total employment at usual places of work in Fort St. John under the 60% capture scenario, from the 2016 baseline to 2040. Under this scenario (which can be considered a reasonable mid-point or “reference” scenario), total employment is expected to reach 12,700 by 2030 and nearly 14,900 by 2040.

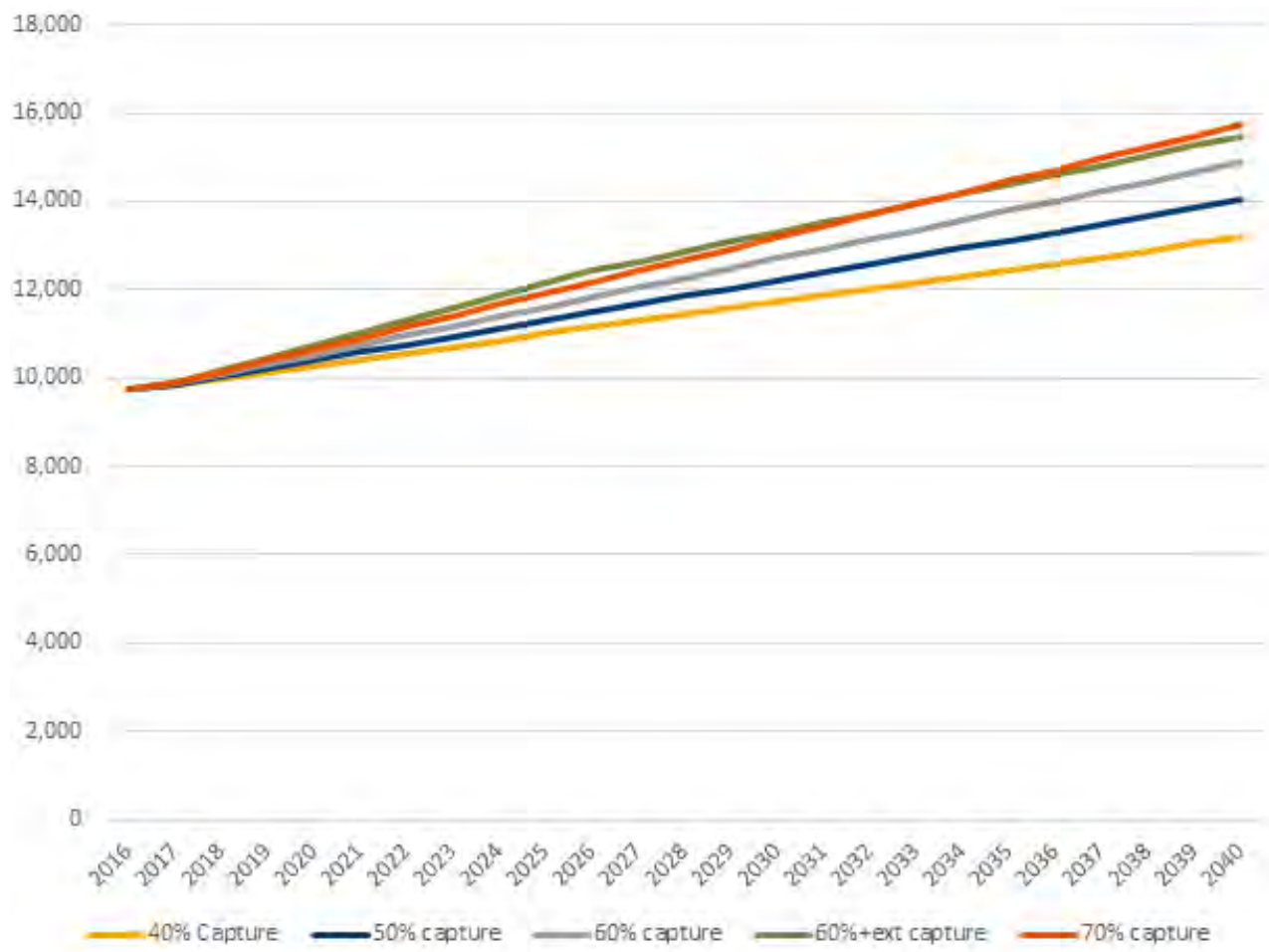
Table 19: Employment Projections, Usual Place of Work, Fort St. John, 60% Capture Rate, Annual Regional Basic Growth at 2001-2016 Levels

	2016	2020	2025	2030	2035	2040
11 Agriculture, forestry, fishing and hunting	105	109	114	119	124	129
21 Mining, quarrying, and oil and gas extraction	670	760	879	998	1,117	1,236
22 Utilities	75	85	94	103	112	121
23 Construction	535	656	807	958	1,109	1,260
31-33 Manufacturing	415	478	563	648	733	818
41 Wholesale trade	370	405	448	490	532	575
44-45 Retail trade	1,585	1,696	1,873	2,050	2,227	2,404
48-49 Transportation and warehousing	310	336	371	406	441	476
51 Information and cultural industries	80	85	94	103	112	121
52 Finance and insurance	380	400	442	484	525	567
53 Real estate and rental and leasing	260	288	318	348	378	408
54 Professional, scientific and technical services	660	704	778	851	924	998
55 Management of companies and enterprises	0	0	0	0	0	0
56 Administrative and support, waste management and remediation services	280	299	330	361	392	423
61 Educational services	780	775	769	763	757	751
62 Health care and social assistance	1,000	1,042	1,095	1,148	1,201	1,254
71 Arts, entertainment and recreation	150	165	183	200	217	234
72 Accommodation and food services	970	1,040	1,149	1,257	1,366	1,474
81 Other services (except public administration)	595	635	701	767	833	900
91 Public administration	530	563	604	645	686	727
Total	9,750	10,523	11,611	12,700	13,788	14,877

Under the low (40%) and high (70%) capture scenarios (not shown), employment at usual places of work in Fort St. John by 2040 is projected to be between 13,200 and 15,700.

Figure 18 below shows total employment projections from the 2016 baseline, to 2040, under each of the employment capture scenarios. The 40% and 70% scenarios provide reasonable upper and lower bounds.

Figure 18: Employment Projections (Totals), Fort St. John, 2016 to 2040



Employment on Industrial Lands

As discussed in the methodology, future employment projections were allocated to industrial lands based on a review of available data and discussions with city staff. While the custom data tabulations from Statistics Canada locate the number of employees working in the City by industry sector, they do not geo-locate those jobs by parcel. An attempt was made to use the City's industry mapping tool (prepared by a third-party for the Economic Development department) as a proxy indicator of the proportion of jobs in a given sector that may fall to industrial lands; however a review of the spatial allocation of some of the data points revealed questionable results. Ultimately, estimates were made based a combination of spot checks of businesses against the zoning layer, discussions with staff, and information derived from similar work in other BC markets.

Table 20 provides a projection of employment on industrial lands, by sector, based on the same 60% regional capture rate as shown in Table 18 above.

Table 20: Employment on Industrial Land, 60% Capture Rate, Annual Regional Basic Growth at 2001-2016 Levels

	2016	2020	2025	2030	2035	2040
11 Agriculture, forestry, fishing, and hunting	89	93	97	101	105	110
21 Mining, quarrying, and oil and gas extraction	570	646	747	848	950	1,051
22 Utilities	38	43	47	52	56	60
23 Construction	455	557	686	814	942	1,071
31-33 Manufacturing	353	406	479	551	623	695
41 Wholesale trade	315	345	381	416	452	488
44-45 Retail trade	0	0	0	0	0	0
48-49 Transportation and warehousing	264	286	315	345	375	405
51 Information and cultural industries	0	0	0	0	0	0
52 Finance and insurance	0	0	0	0	0	0
53 Real estate and rental and leasing	0	0	0	0	0	0
54 Professional, scientific, and technical services	165	176	194	213	231	249
55 Management of companies and enterprises	0	0	0	0	0	0
562 Waste management and remediation services	59	62	69	75	82	88
61 Educational services	0	0	0	0	0	0
62 Health care and social assistance	0	0	0	0	0	0
71 Arts, entertainment, and recreation	0	0	0	0	0	0
72 Accommodation and food services	49	52	57	63	68	74
81 Other services (except public administration)	370	395	436	477	518	560
91 Public administration	53	56	60	64	69	73
Total	2,780	3,117	3,568	4,019	4,471	4,924
Incremental Growth vs. 2016		337	788	1,239	1,691	2,144

Source: Urban Systems Projections

Industrial Land Needs

Industrial land needs vary depending on the employment density metrics used (i.e. jobs per parcel acre, by industry). A range of densities are used in this projection, both in terms of “baseline” density assumptions by industry sector, and density adjustments vs. that baseline (as discussed in the methodology).

The following table provides a simple summary of the incremental industrial land that will be required to accommodate industrial employment demand, under 5 employment projection scenarios and 3 employment density scenarios (15 scenarios in total). The figures show the net additional acres that will be required over 20 years.

Table 21: Incremental Industrial Land Need (Acres), 2020 to 2040

Incremental Industrial Lands, 2020 to 2040	Capture Scenarios				
	40%	50%	60%	60% + Ext.	70%
High Development Density	145	182	218	245	254
Medium Development Density	163	205	245	275	286
Low Development Density	218	273	327	367	381

Based on these scenario combinations, 20-year industrial land demand projections call for between 145 and 381 net additional acres (59 to 154 hectares) of industrial land in the City of Fort St. John. This equates to between 6.9 and 18.2 acres per year.

Table 22: Average Annual Industrial Land Need (Acres), 2020 to 2040

Incremental Industrial Lands, 2020 to 2040	Capture Scenarios				
	40%	50%	60%	60% + Ext.	70%
High Development Density	6.9	8.7	10.4	11.7	12.1
Medium Development Density	7.8	9.7	11.7	13.1	13.6
Low Development Density	10.4	13.0	15.6	17.5	18.2

Tables in Appendix B provide detailed breakdowns of projected land needs under each scenario, by sector. The simplified Tables 23 and 24 below show the incremental land need (acres) that are projected for 3 sectors that tend to be more likely users of larger land parcels: Manufacturing, Transportation and Warehousing, and Mining, Quarrying and Oil and Gas. The projections show incremental land need for each of these sectors over 20 and 10 years.

Table 23: Incremental Industrial Land Need (Acres) over 20 Years (2020 to 2040), Select Sectors (Larger Site Users)

	Capture Scenarios				
	40%	50%	60%	60% + Ext.	70%
Manufacturing					
High Development Density	34	43	51	51	59
Medium Development Density	38	48	57	57	67
Low Development Density	51	64	76	76	89
Transportation and Warehousing					
High Development Density	14	17	21	23	25
Medium Development Density	16	20	24	26	28
Low Development Density	21	26	31	33	37
Mining, Quarrying, Oil and Gas					
High Development Density	48	59	71	92	83
Medium Development Density	54	67	80	103	94
Low Development Density	71	89	107	138	125

Table 24: Incremental Industrial Land Need (Acres) over 10 Years (2020-2030), Select Sectors (Larger Site Users)

	Capture Scenarios				
	40%	50%	60%	60% + Ext.	70%
Manufacturing					
High Development Density	17	21	25	25	30
Medium Development Density	19	24	29	29	33
Low Development Density	26	32	38	38	45
Transportation and Warehousing					
High Development Density	7	9	10	11	12
Medium Development Density	8	10	12	13	14
Low Development Density	10	13	16	17	18
Mining, Quarrying, Oil and Gas					
High Development Density	24	30	36	46	42
Medium Development Density	27	33	40	52	47
Low Development Density	36	45	54	69	62

Looking at the 60% capture medium development density scenario in the tables above, we see that these three sectors show a combined need for over 80 acres (32 hectares) in the next 10 years, and 160 acres (65 hectares) over 20 years. This accounts for 66% of the total projected industrial land need over the period. Any users within those sectors that require larger parcels or wish to be co-located with other large parcel users, will not be able to find suitable lands within the City under current conditions.

It is unlikely that land demand will occur in a linear manner; that is not a realistic picture of how industrial land is developed and is particularly not realistic in a market that is subject to significant economic fluctuations. Rather, industrial land sales and development tend to be “lumpy”, with extreme variability in the amounts of land sold or brought online year to year. It is important to recognize that the assumed pace of demand per year are average figures, so may not be achieved in some individual years. Ongoing monitoring will be needed.

Land Needs vs. Supply

If 100% of the vacant industrial land base were equally usable for all industry sectors, then this land base would be sufficient to accommodate 100% of the 20-year demand in all but three of the demand scenarios, and 100% of the projected 10-year demand in all demand scenarios. We know, however, that the vacant industrial land base (zoned and designated) is constrained in a number of ways, and is therefore insufficient to accommodate long-term need for all industry segments:

- The average parcel sizes are relatively small (2 acres)
- 97% of the available parcels are less than 10 acres
- 91% of the available parcels are less than 5 acres
- 66% of the available parcels are less than 1 acre
- There are only 3 parcels of greater than 30 acres, and only one of them is well located vis-à-vis other heavy industry

- The opportunities to assemble small parcels into larger industrial lots are limited in many areas due to lot configuration challenges, and by fragmented property ownership
- The location of much of the vacant supply is not conducive to the emergence of a significant cluster of heavy industrial users, most of whom will require large (at least 20-acre) lots, and in some cases much larger lots (50-75 acres).

While the vacant land base may be suitable for many industrial user types who can operate easily on parcels in the 1-to-10-acre range, it will not be suitable for all sectors over the next decade. As shown in the tables above, there will be a need to bring larger land parcels online in the future if demand from large-lot users is to be captured in the City.

Input from Industry Stakeholders

To supplement the quantitative projections of future demand, outreach was conducted with existing users and owners of industrial lands in Fort St. John. This outreach took the form of an online survey, conducted in the fourth quarter of 2019. Letters were mailed out in mid-October by the City to all businesses currently operating on industrial lands, as well as to the owners of vacant industrial parcels. The mail-out directed would-be respondents to an online survey link, hosted on the City's "Let's Talk" webpage. The survey link remained live until November 10, 2019.

The survey asked a variety of questions of stakeholders around themes that included:

- Short, medium, and long-term business strategy and associated land needs
- Intended use for parcels
- Challenges with pursuing their intended plan of action
- Future land needs and opportunities

It also asked for information on current operations including:

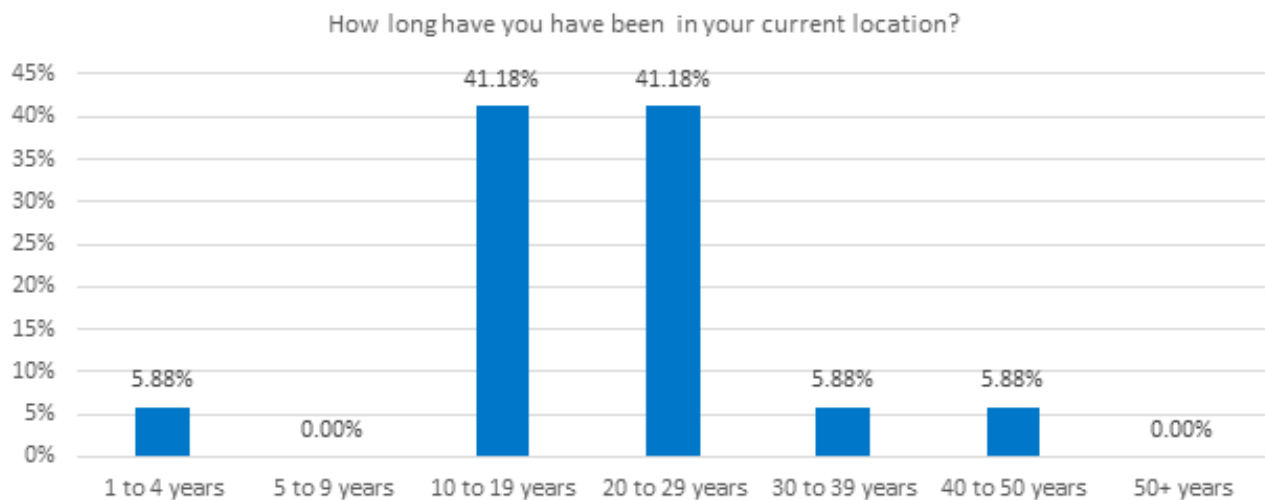
- Parcel sizes and built floor area
- Employment levels
- Length of tenure at location
- Advantages and disadvantages of their location

Questions in the survey were answered by 45 different respondents; however, most questions saw relatively low response rates. Of the 45 respondents, 67% identified as business operators, and 33% identified as owners of a vacant parcel.

Tenure, Land Area, Built Space and Staffing

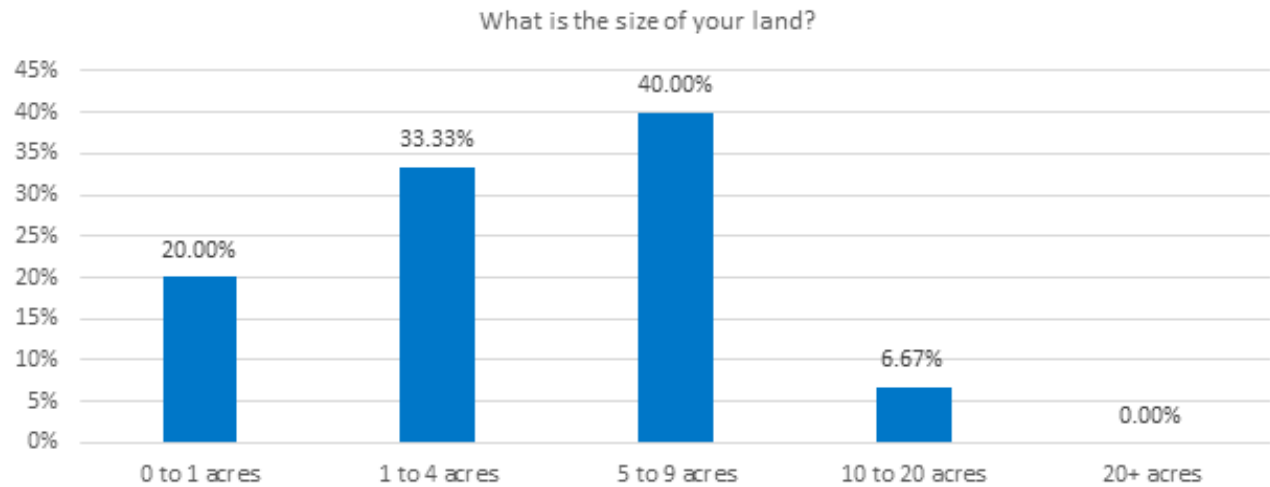
Length of Tenure at Current Location (responses = 17)

- 41% said they had been in their location for 10-19 years, and 41% for 20-29 years. One response indicated tenure in the same location for 40-50 years Current Facility Size (responses = 12)



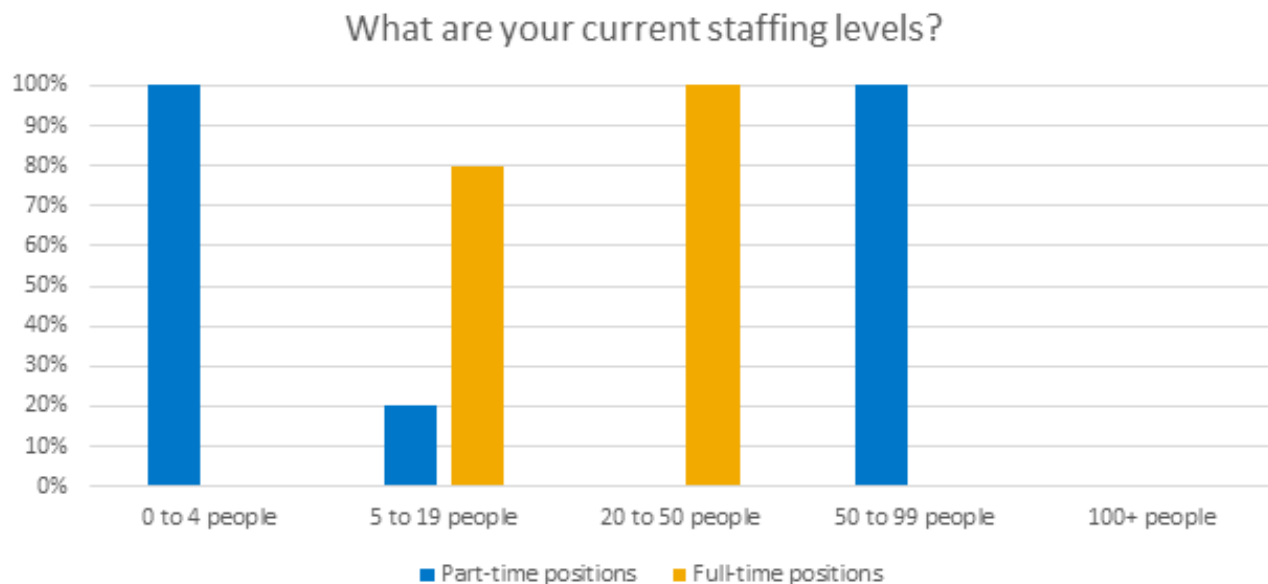
Current Facility Size (responses = 12)

- Altogether, these respondents represented nearly 200,000 square feet of built industrial space, with an average floor plate of 20,000 square feet
- 15 people responded to a question asking the size of their parcel. 40% operated on parcels of 5-9 acres, while 33% operated on parcels of 1-4 acres.



Current Staffing Levels (responses = 14)

- 65% of respondents indicated staffing levels of 20-50 people, while 35% indicated staffing of 5 to 19 people
- Altogether, respondents are representative of industrial businesses that employ an aggregate of between 256 and 648 people. This is between 8% and 21% of the estimated employment on industrial lands in the City in 2020.



Locational Advantages and Disadvantages

Questions were posed on the current locational advantages and disadvantages of active industrial land users.

Advantages of Current Location (response rate = 12)

- Respondents were asked to identify the top 3 advantages of their current location within the City of Fort St. John
 - » The most cited advantage was related to proximity to the Alaska Highway, and access / egress for heavy trucks and machinery
 - » The second most cited advantage was around the theme of industrial agglomeration. This included comments such as proximity to supplies and repair / maintenance operators, ease of access for other services, and proximity to both amenities and accommodation for workers
 - » The third-most cited advantage was a corollary of Alaska highway proximity, as it was related to exposure and visibility for marketability

Disadvantages of Current Location (response rate = 9)

- there were fewer comments on locational disadvantages
- the disadvantage cited by more than one respondent was around the theme of tax burden of a location within the City, as compared to the PRRD
- other disadvantages noted were:
 - » lack of room for expansion on-site
 - » lack of drainage
 - » lack of services (utilities)
 - » lack of road paving

Future Operational Needs

The next series of questions asked users and owners to describe their future business requirements, and how this might translate into additional need for floor space and land.

Operational Plans in Next 10 Years (response rate = 12)

- 11 of 12 respondents said they intend to remain in their current location, with little to no change in their facility and land area

Evolution of Products and Services (response rate = 7)

- Most respondents indicated that any evolution of their product / service offerings will be driven by changes to the macro-economic environment, in particular the future oil and gas
- One respondent anticipated continued growth as the city's population grows
- One respondent indicated a desire to expand to better serve clients outside of the city

Growth of Staffing Requirements (response rate = 6)

- 50% of respondents indicated a likely increase in staffing levels in the next 10-years.
 - » One cited a doubling of staff, but also noted a likely increase in the ratio of sales-to-employees driven by technological change
 - » Another indicated the addition of 2-5 staff
 - » The third identified future staffing will be "as required" to serve the market
- The other 50% of respondents cited future staffing as being dependent on the future of the oil and gas sector

Optimal Industrial Parcel Size (response rate = 10)

- 50% of respondents identified parcels of 2-4 acres in size as the optimal size to operate their business
- 30% of respondents cited a need for parcels of 1 acre or less, while another 30% identified a need for parcels of 5 to 9 acres in size
- 1 respondent cited a need for 10-to-19-acre parcels

Site-Specific Challenges (response rate = 5)

- 3 of the 5 respondents cited a lack of site servicing as a barrier to their intended plan of action for their property
- 2 respondents cited site layout or topographical challenges

Current Facility Challenges (response rate = 6)

- 5 of 6 cited the physical condition of their current facility or site as a major challenge
- 1 cited access challenges

Future Opportunities

Survey respondents were asked a series of questions pertaining to future industry sector opportunities. These questions were open-ended allowing opportunity for respondents to respond as they wished. Answers have been clustered by theme where possible.

Opportunities for Industry Growth and Co-Location (respondents = 4)

Respondents were asked to consider what opportunities exist for growth in key industry clusters that would add to the long-term sustainability of the community's economy. One respondent cited the lack of larger parcels in the City for companies to build on as a barrier to the emergence of this type of cluster. Other respondents answered more through the lens of what they would like to see located near their business.

Generally, there was a lack of optimism for industrial growth prospects given today's oil and gas market, and lack of support from senior levels of government for the resource sector.

Adding Value to the Region (responses = 4)

Respondents were asked what kinds of industrial businesses will add the greatest value to the greater region in the coming decade and beyond.

100% of respondents identified oil and gas service companies, and the knock-on effects they bring, as the key for the region.

Critical Factors to Success of Business on Industrial Lands

Factors Contributing to Business Success (responses = 5)

Respondents were asked to rank the top factors that contribute to success of their business. Responses were tallied and presented below based on the number of responses received for each theme.

- Factor 1 – Site Access, and Accessibility (5 responses)
- Factor 2 - Site services (4 responses)
- Factor 3 – Road maintenance and qualified staff (2 responses each)
- Factor 4 – Taxes

Critical Considerations for Long-Term Industrial Land Strategy (responses = 5)

Respondents were also asked to provide an open-ended response to regarding "critical considerations" for the City to keep in mind as it develops a long-term industrial lands strategy. Of the five respondents, the key themes were:

1. Access: clear roads, easy site access
2. Services: sufficient hydro services, and access to high speed internet
3. Property taxes
4. Permitting times

Other critical Issues for Business Viability (responses = 4)

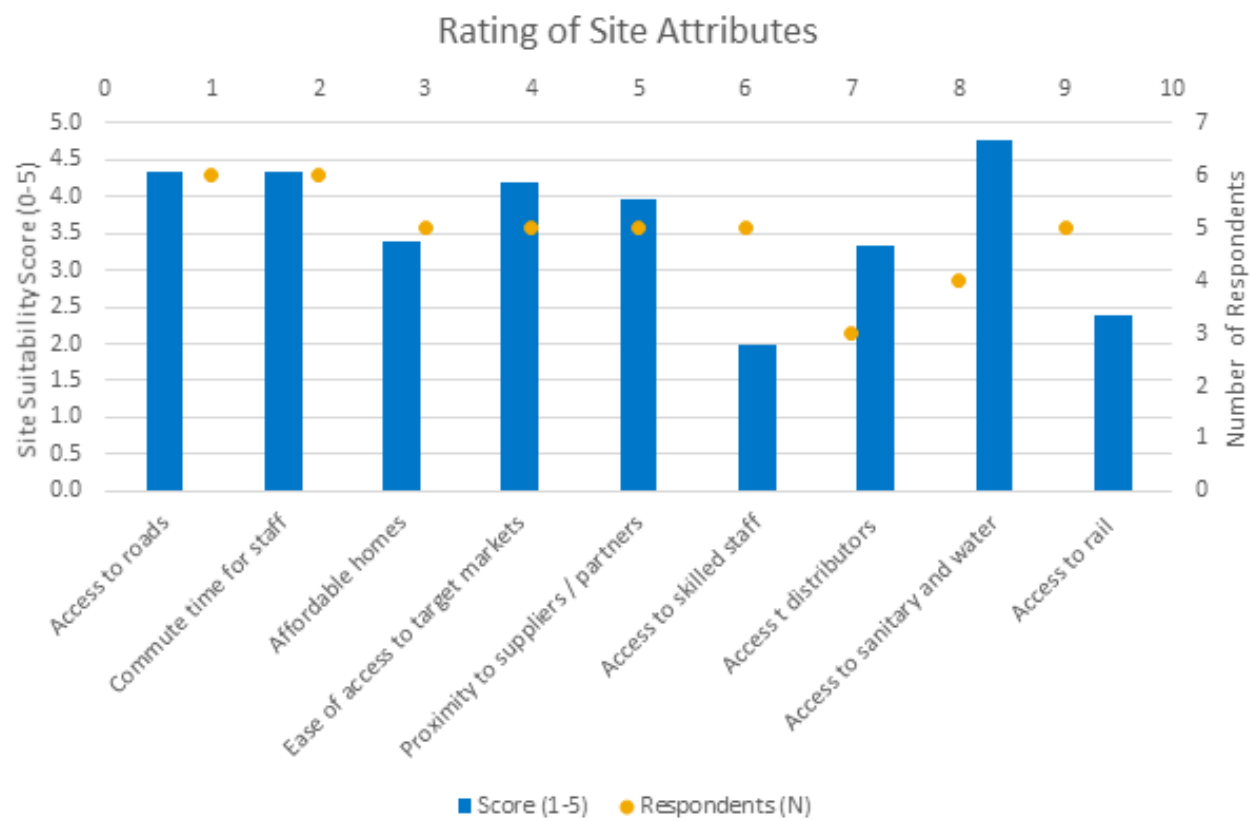
Respondents were asked to list any other "critical issues" for their business going forward. The themes presented here were consistent with those noted elsewhere in the survey:

1. Negative outlook, and lack of government support, for the oil and gas sector
2. High taxes and utility costs
3. Accessibility to sites for large vehicles

Quality of Current Business Locations

Respondents were asked to rate their current business location on a scale of 1 to 5o for each of the following factors:

- Access to road-based transportation routes
- Commute times for staff
- Affordability of homes for staff
- Ease of access to target markets
- Proximity to suppliers and partners
- Access to skilled staff and training programs
- Access to piped sanitary or water services
- Access to major distributors
- Access to rail facilities



Industrial Potential Modelling and Implications

A key objective of this document is to examine the City of Fort St. John's land base holistically, managing a range of competing interests including what is best for the community from an economic and community sustainability standpoint. An important piece of this is determining an objective approach for assessing industrial land use potential, based on a range of factors generally deemed critical to attraction and retention of industrial businesses. This assessment can be used to support future industrial land planning decisions.

Industrial Potential Modelling Methodology and Results

Urban Systems developed a GIS model to identify sites within the City boundaries of high industrial land potential. The first step in development of this model was to identify the primary, critical factors that drive industrial location decisions of end-users. To develop this list, Urban Systems used the combined input of industrial brokers, municipal staff (at Fort St. John and elsewhere), and information gathered through the preparation of similar analyses in other jurisdictions. We also reviewed current land use patterns and recent development activity. Though there are myriad potential factors which can influence a developer or industrial user's locational decisions (including lot sizes, proximity to other land uses, amenities, and services), the following were deemed the primary factors that drive location decisions for industrial business operations and land developers, and were thus built into the GIS model¹⁴:

1. Major Road Access

- with transportation costs accounting for the bulk of many industrial operators' annual costs, proximity of a prospective site to major roadway access points is a critical factor.

- Site scoring was done on a scale of 0-10, with each point below 10 denoting a distance of 100 metres from a major road access point. If a site is more than 1 kilometre from such an access point, that parcel would receive a score of 0 on this criterion.

2. Rail Access

- For some industrial users, particularly those involved in logistics, warehousing, distribution and in some cases manufacturing, the ability to access rail spurs and yards is the deal-breaking criteria for the suitability of a site. For other users, rail access may be less important.
- As with roads, site scores were assigned on a scale of 0-10, with each point below 10 denoting a distance of 100 metres from a rail access point.

3. Airport Access

- Rounding out the transportation-related criteria is airport access. Airport proximity is important for a wide range of industrial operators due to the strategic connection created to other markets and the ability for both people and goods to fly in and out.
- A 10-point scoring scale was used for airports, however the gradient for scoring differs from rail and road. Here, a 0-5,000m range was used; each point below 10 denotes an additional 500 metres in distance from the airport.

4. Proximity to existing industrial uses (agglomerations)

- Industrial end-users generally prefer not to pioneer new locations, unless they are of such a scale or specialized nature that a given site represents the only viable option for them in the area. For most users, proximity to existing industrial nodes or emerging industrial clusters reduces risk and offers opportunities to leverage connections to complementary businesses. Building out an industrial node offers advantages around things like sharing of infrastructure costs, or building up more elaborate input/output synergies.
- A scoring scale of 0-10 was used, with each point below 10 denoting a distance of 100 metres from an existing industrial cluster

¹⁴ Note that the ordering of these factors does not reflect relative importance, as all factors were deemed important, with variability in level of importance a function of specific user group needs.

5. Water Main proximity

- While not all industrial uses / users will require access to municipal water infrastructure (e.g. it may not be critical for an outdoor storage facility), many industrial users will seek sites that have this amenity.
- A scoring scale of 0-1 was used, with each point below 10 denoting a distance of 100 metres from a water main.

6. Average Parcel slope

- Industrial users and developers typically find it challenging to develop industrial sites with slopes greater than 5%. In most cases, parcels with slopes that exceed this threshold are not viable for development without significant investment in earthworks
- A scoring scale of 0-20 was used, which more heavily weights slope as a key criterion
- Slope scores were assigned in 5-point increments based on average parcel slopes of 0%, 2.5%, 5%, 10%, and 15%+.

Another factor that was modelled, and which is reflected in the composite industrial land potential figures presented below, is land use designation (as per the OCP). Specifically, any land parcels with the following OCP designations were excluded from industrial potential consideration:

- Residential (including downtown residential)
- Neighbourhood commercial
- Downtown Commercial and Mixed Use
- Parks, Natural Areas and Trails

All other designations – including “Urban Development Areas” – were subject to the criteria outlined above and assigned an industrial potential score.

One possible point of differentiation for site selection criteria is whether the principle use(r) is a “light” or “heavy” industry. Some examples of light and heavy industry uses are shown below, based on principle uses listed in the Fort St. John zoning bylaw.

Table 24: Examples of Light and Heavy Industrial Uses

Light Industrial Uses	Heavy Industrial Uses
Vehicle washes	Aggregate processing and storage
Warehousing	Bulk fuel
Heavy equipment sales / storage / servicing	Food processing
Light manufacturing	Rail yards
Recycling	Heavy manufacturing and production
Wood processing	Tank farms
Freight terminals	Sawmills

Based on Fort St. John Zoning Bylaw M1 and M2 principle uses

Again, while user criteria will differ significantly even within this light vs. heavy dichotomy (noting also that there is not a clear line of delineation between what constitutes “heavy” and “light” industrial)¹⁵, the scoring criteria for industrial site potential could be varied for light vs. heavy industry through (1) exclusion of some of the above-noted site selection criteria, (2) changes to weights assigned to criteria, and /or (3) layering on additional criteria. These adjustments were not made for this modelling exercise but are considered through the qualitative assessments presented below.

¹⁵ There are many cases of overlapping principle uses in the Fort St. John zoning bylaw, with principle uses classified as either “heavy” or “light” industrial. This is reflective of the significant variability of activity, and associated externalities, within industry sectors.

Industrial Land Potential

Composite Scores – Light and Heavy Industrial

Through aggregation of scores for the six criteria outlined above, plus the added land use designation layer which eliminates certain parcels from consideration (e.g. residential, neighbourhood commercial), a series of industrial land potential composite maps were created. Scores for each criterion, on 10 or 20-point scales (as detailed above) were added, and then converted into a simplified four-tier ranking of industrial use potential: Low, Moderate, High, and Very High.

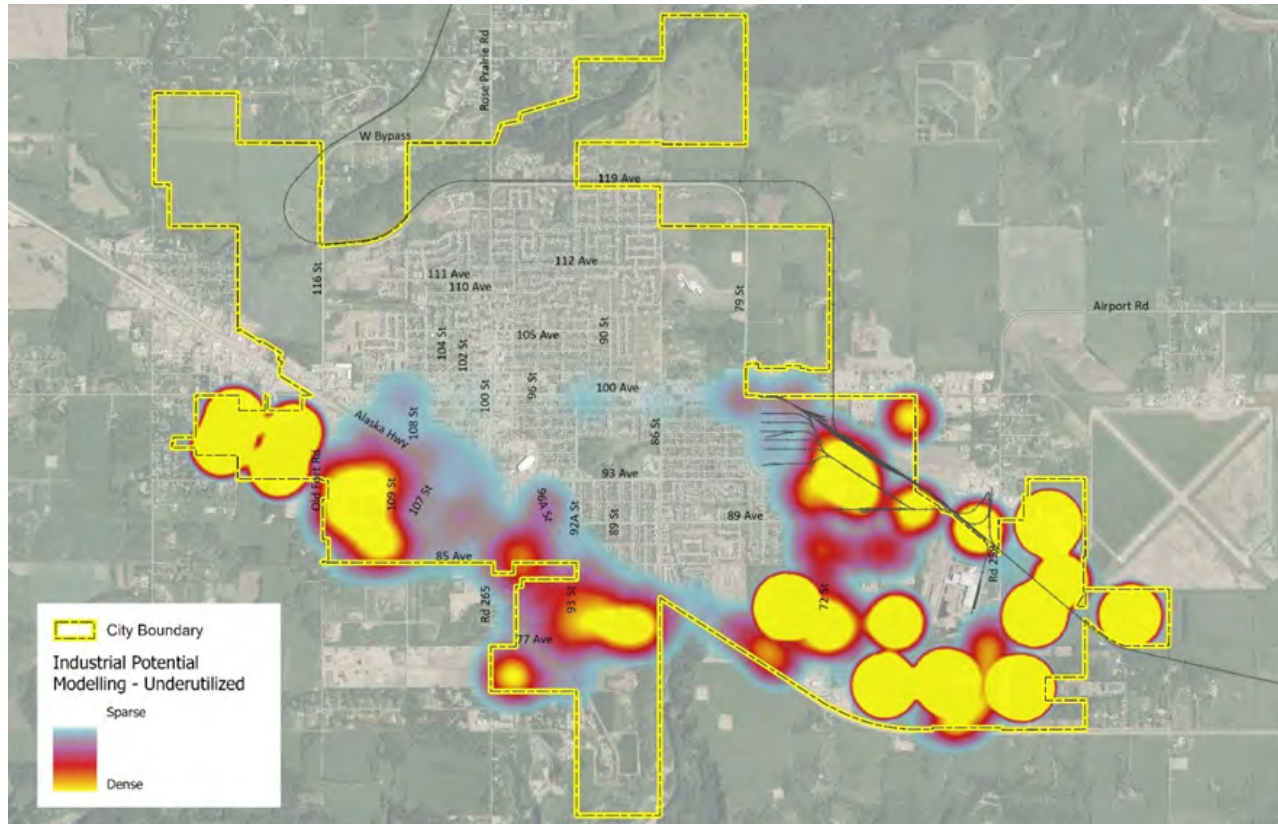
It is important to note that the industrial land potential modelling is an attempt to identify where, from a user desirability and business viability perspective, industrial businesses would want to locate. It is not a recommendation that industrial uses should necessarily be located in any given area. Additional planning considerations will be required to determine whether an area of industrial potential is also an appropriate industrial location given a range of other considerations such as:

- Proximity of sites to, and potential for buffering from, residential areas or other sensitive land uses
- Externalities of various industries, and their relative abilities to mix or co-exist with other uses
- Whether there is a strategically higher and better use for a parcel or area to achieve a desirable pattern of future land use

With the above qualifications in mind, we present here two industrial land potential maps.

The first map (Figure 19) shows ‘hot spots’ of industrial potential – based on the user criteria and scoring discussed above – within the City. This map is inclusive of all lands that are designated Industrial, Agriculture, General Commercial, Highway Commercial, and Urban Development Area in the City’s OCP.

Figure 19: Composite Industrial Potential “Hot Spots”

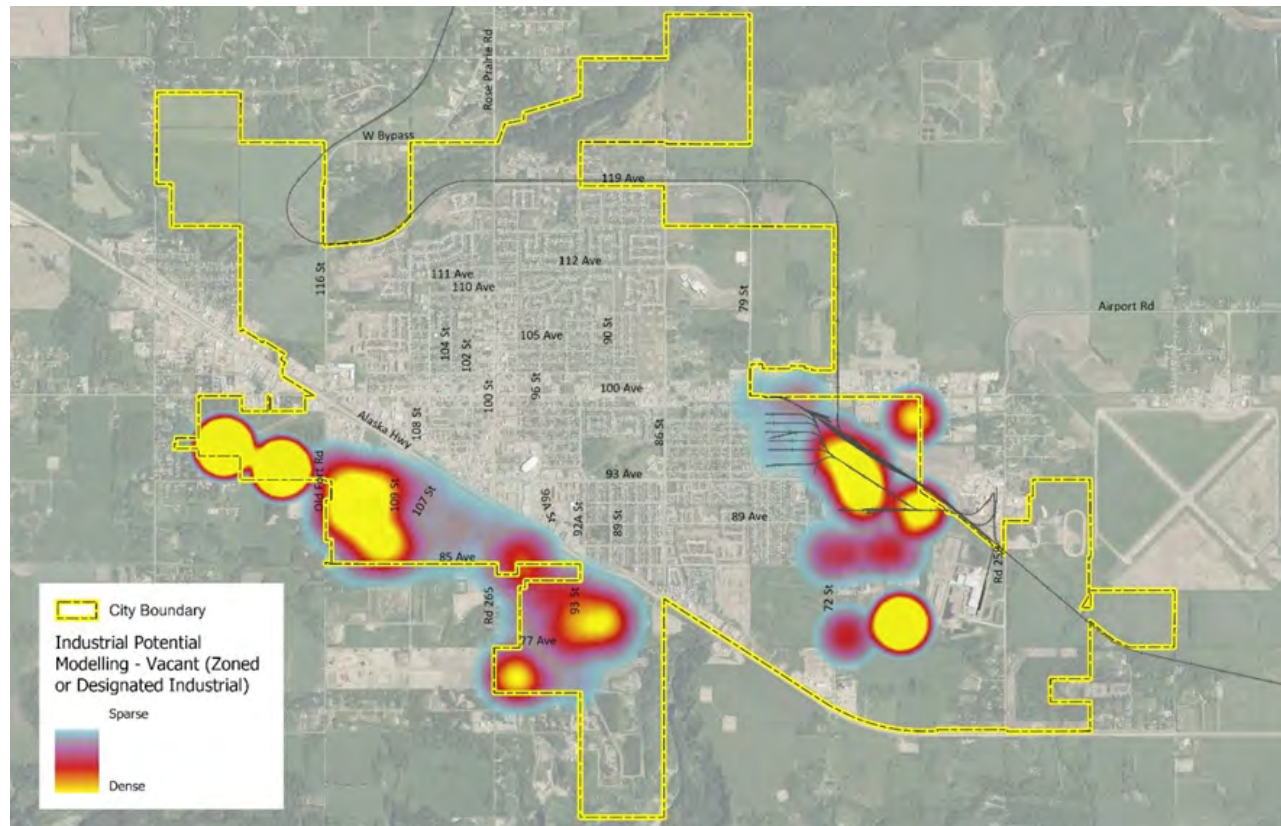


Note that this map shows as high (or very high) potential all the areas that are currently used for industrial or quasi-industrial activities in the City, and captures the vacant industrial parcels identified previously. It also flags other notable areas within the City for their very high industrial potential, including:

- Parcels south, east and west of the currently shuttered Louisiana Pacific OSB Plant
- Parcels that are both used for industrial currently, and vacant industrially zoned parcels, in the south and southwest parts of the City, both north and south of the Alaska Highway

The second map (Figure 20) shows only those ‘high potential’ areas that are already zoned or designated for industrial use and are currently vacant.

Figure 20: Industrial Potential: Vacant Lands with Industrial Zoning or OCP Designation



Implications of Industrial Potential Modelling

As noted previously, the industrial potential scoring is an attempt to identify where, from a business viability standpoint, industrial users may wish to locate. It is not an indication that a specific parcel should necessarily be used for industrial, but rather that consideration should be given to industrial use as one future possibility for a parcel or area. Also note that the scoring of parcels will change over time if new industrial activity emerges in certain areas. An example is the parcel at the far eastern edge of the City, immediately south of the airport. This parcel receives a “high” industrial potential score but is not in the “very high” category that is assigned to the parcel immediately to its west, simply due to it being slightly farther from an existing industrial agglomeration. If additional industry were to emerge in that area, the scoring for that parcel would improve to “very high”, assuming that the parcel could be easily accessed.

For any parcel or parcel cluster, a comprehensive, multi-variate planning review will be required to determine if industrial uses are appropriate given other considerations. This potential modelling serves as a guide, offering one data point for future decision making.

Southeast

Areas in the City’s southeast (south of 100 Avenue) show many areas of very high industrial land potential. The areas east, south and southwest from the OSB Plant offer excellent opportunities for industrial expansion and agglomeration. All of these lands (east and west of 72 Street) are classified as “very high” potential industrial lands due to their combination of relatively flat sites, proximity to rail, road (including the Alaska Highway) and the airport, and the presence of existing significant industrial uses.

While not explicitly modelled, these lands around the OSB Plant also offer the additional benefit of being a potential area for the emergence of a heavy industry cluster that, if planned and managed effectively, could offer long-term eco-collective efficiency. The lot configurations of much of the vacant industrial land base elsewhere in the City do not offer the opportunity that would be desirable to larger industrial users. Further, this area in the City’s southeast offers opportunity for the long-term emergence of a symbiotic industrial cluster. With

proper coordination and oversight, this could include inter-business initiatives such as:

- Wastewater heat exchange (to reduce energy cost burden)
- Effluent or other waste products used as inputs for other industry operations
- Other co-use of materials and services

Through such symbiosis, what might otherwise be negative environmental externalities can be redirected into positive environmental externalities which also lead to cost savings, better resource productivity, reduced energy and an overall contribution towards sustainability and resiliency goals as outlined in the Community Energy and Emissions Plan. The presence of such a cluster (or broad indicators of intent and ability to develop one) may also serve as a calling card for the City, helping to attract industry.

Symbiosis can emerge between firms in different sectors or operating within the same sector. However, for this to emerge, there needs to be a culture of cooperation amongst firms, as well as leadership from the city, the province, and institutional support from other entities such as UNBC or other post-secondary institutions. Non-firm institutions are usually the main sources of knowledge related to environmental management and innovation.

South and Southwest

The south and southwest areas of the City (south of 100 Ave, straddling 100 Street) are home to much of the active industrial activity in the city, and the majority of vacant industrially zoned or designated sites. All the zoned industrial in this part of the city is light industrial.

There are many opportunities in this area for future light industrial use on individual small parcels, or through parcel assemblies to create larger, more readily useable parcels. This area is likely not appropriate for most heavy industrial players due to the relatively small lot sizes. There are some exceptions (e.g. along Old Fort Road), where medium-sized entities could be attracted by flat, square (or rectangular) sites, proximity to the Alaska Highway, and proximity to services located both along the Highway and in the city core.

Conclusions and Action Items

Conclusions

Lack of Large Industrial Lots in Fort St. John

From the analysis of industrial land supply and vacant land supply, it is apparent that the current supply and location of most vacant industrial land does not align well with the lot size and transportation access needs of the full range of prospective future industrial users. Most of the vacant land base is located in the south and southwest and is comprised of smaller parcels.

- There are only 3 parcels over 30-acres in size
- 97% of parcels are 10 acres or less
- 91% of parcels are 5 acres or less

Readiness to Accommodate New Opportunities Scenarios

The future of industrial land demand in Fort St. John will primarily be about having parcels ready to accommodate opportunities as they arise. As discussed, the nature of industrial demand is 'lumpy,' coming in fits and spurts as the economic conditions allow. That demand will 'land' where it can be most readily accommodated, and where there is potential for co-location opportunities.

As shown in the forecasting, there is a wide range of potential futures (15 demand scenarios were presented), and there may yet be others as industrial sectors grow, contract and evolve. The scenarios presented show demand ranging from 145 to 381 acres over 20 years. But, if appropriate lands are not available, demand will go elsewhere.

Looking at the combined sectors of Manufacturing, Transportation and Warehousing, and Mining, Quarrying and Oil and Gas, we see that demand over 20 years in the 'medium development density' scenarios ranges from 108 to 188 acres. Without new, large parcels, most of this demand will end up being accommodated outside of the City.

Notable "Hot Spot" of Industrial Land Potential in Southeast

Industrial land potential modelling has shown very high potential (from a land suitability standpoint) at vacant lands south, east, and west of the OSB Plant and at sites in the southwest parts of the city.

Further planning review, through multiple lenses, will be required to determine if industrial use of any parcel or parcel cluster is appropriate given other considerations. That said, there are land opportunities for larger lot industrial clusters, the most compelling of which is the one in the City's southeast. This area offers a combination of large, flat sites, with rail and highway access, near existing heavy industrial users.

Action Items

Set Industrial Land Development Targets

- The City should plan to have a minimum of a 10-year supply of vacant, serviced industrial lands that could meet the range of potential industrial land user needs.
 - » Based on the 20-year projections, the City needs between 28 and 74 hectares (69 to 182 acres) over 10 years
- While the current vacant industrial land base is more than this, we know that parcel sizes and locations will not be appropriate for larger-lot heavy industrial users, and will also not allow for an efficient, symbiotic industrial cluster to emerge.
- The City will need to pursue appropriate areas for larger-lot industrial uses (using the land potential mapping as a guide) and create a program for bringing these lands online for industrial purposes.
 - » As part of this, the City should use this document to inform discussions with the Provincial Agricultural Land Commission (ALC) to formulate a multi-year plan for agricultural lands and exclusion areas to accommodate growth.
 - » The City should also look to align findings from this document with appropriate long-range planning intent and strategy in the OCP.
- There are notable challenges to making such a long-term supply of lands available: (a) Lands within the Agricultural Land Reserve; (b) fragmented property ownership.

It is crucial that the City work to bring an appropriate supply of larger lot industrial lands online, both as a means to attract new industry players and to allow for expansion / relocation opportunities of those already active in the local and regional market. Preparation and adaptability will be key, particularly in the ability to attract new users.

Identify Site Acquisition and Development Targets / Approaches

- With the assistance of the City's Land Acquisition and Disposition Framework, the City may consider acquiring, assembling, and possibly servicing lands that are targeted for future industrial clusters, provided that challenges around ALR designation can be overcome.
- Identifying partnership and funding strategies will be key. This may include accessing funds from senior levels of government or investing in up-front service works and establishing cost-recovery frameworks such as a local area DCC or a local area service tax.
- The City should establish a clear set of criteria for acquisition of additional properties for future industrial use. Those evaluation criteria should include:
 - » Size of parcel(s)
 - » Topography and configuration
 - » Net developable area
 - » Highway exposure and access
 - » Rail exposure and access
 - » Environmental constraints
 - » Compatibility with adjacent land uses
 - » Other significant constraints (e.g. hydro rights of way)
 - » Costs of providing and maintaining servicing and infrastructure (including lifecycle)
 - » Time required for completion of studies and implementation of servicing works
 - » Utilization of previous investments in infrastructure projects
 - » Acquisition concerns (landowner interests, number of parcels, number of landowners, other competing interests – i.e. weighted using Acquisition and Disposition Framework)
 - » Competitive advantages or disadvantages vs. competing areas

- » Logic of servicing
- » Overall risk assessment
- » Alignment with City's economic development and growth pattern objectives

Consider Varying Industrial Development Standards

- The City should explore opportunities for variability in the standards of development for different types of industrial, in different areas of the city.
- Having such variability may help to bridge emerging gaps between rural and urban development standards, and associated costs. Anecdotally, cost differentials related to rural vs. urban development standards are (amongst other reasons) a notable factor in location (or relocation) decisions of industrial tenants.
- The City of Fort Saskatchewan, Alberta has done work in the past to enact differing levels of servicing standards for its sizeable industrial lands reserve.
 - » Within its sizeable industrial areas, Fort Saskatchewan has a split between areas with 'urban' and 'rural' servicing standards. The latter allows for on-site servicing on large parcels with lower employment densities.

Identify and Promote Growth in Competitive / Emerging Sectors and Identify Industry Cluster Opportunities

- In partnership with local and regional stakeholders and institutions, explore emerging industrial sectors and clustering opportunities. This should include further research on the City's current and emerging competitive advantages, allowing for targeted work to promote attraction, retention, and expansion of high potential sectors. These may include: clean tech, agri-tech, food processing, manufacturing, and oil / gas innovation.
- Conduct further research to identify ideal pairings between producers of waste energy and other outputs, and industrial users that can use these as inputs.
- As part of any cluster development strategy, it would be worthwhile to explore potential for co-operative shipping arrangements, including shared warehousing opportunities.

Industrial Clustering Case Study: “Metal Tech Alley”, Trail, BC

What is it?

- An initiative of the Lower Columbia Initiatives Corporation (LCIC), a regional economic development partnership between Columbia Basin Trust, City of Rossland, City of Trail, Village of Warfield, Village of Montrose, Village of Fruitvale, and Electoral Areas A and B of the RDKB.
- A cluster of industry and technology companies leading the “fourth industrial revolution”
- Established following research undertaken by LCIC to examine the region’s key assets, areas of expertise and current and future economic outlook. A key takeaway from that research was a realization that the Trail area’s biggest asset was the community’s strengths in metallurgy and technology, rather than trying to chase something new.

What is the Strategy?

- Metal Tech Alley economic development and marketing strategy aims to promote the region’s evolution into a highly attractive and competitive location for business and livability, with major focus on global business and innovation clusters that are leading economic and business change.
- The LCIC examined key features of the area that made it attractive for metallurgy and tech companies. These included: (1) over 100 acres of cost-effective industrial land; (2) broadband connectivity; (3) easy access to the US market; (4) a global supply chain of companies located in the area
- The strategy was developed over four years, with support from the Columbia Basin Trust and BC’s Rural Dividend Fund. The marketing strategy and brand were launched in May 2017 following collaboration and feedback from community organizations, business leaders and officials

Evolution of Metal Tech Alley

- A key element is the MIDAS Fab Lab, a public-private enterprise started by the Kootenay Association for Science and Technology (KAST), a non-profit dedicated to the technology sector, along with Teck Metals and Fenix Advanced Materials. MIDAS supports research and development partnerships, business incubation, has a fabrication lab and equipment in metallurgy and advanced manufacturing
- Metal Tech Alley is an area of growing partnerships of businesses at all stages, clustered in metallurgy and intelligent materials science, industrial matter recycling, and industrial “internet of things”. Through a unified message and strong marketing, the area is able to promote an overall vision with greater impact.

Today, there are over 80 high-tech companies in the area. The cluster has enticed people and businesses out of nearby cities and more populated areas, including Vancouver and Calgary.

Take-Aways

- The Alley is today a dynamic and growing cluster of companies, from metallurgical and intelligent materials science to the internet of things
- Through a single unified branding and communications strategy, grounded in solid research on competitive advantages strengths, Metal Tech Alley has been a highly successful clustering initiative. It has attracted like-minded people, companies, and innovators building industry and infrastructure in advanced recycling, digital fabrication, advanced materials / metallurgy, and other innovative tech-based industries.
- Getting businesses to buy in to an overarching vision, and to see themselves as part of a larger innovative community took considerable outreach.
- The LCIC executive director suggests using a single branding and communications company that understands the core mandate and can handle all components of a marketing strategy to ensure a consistent message.
- LCIC also suggests having a good outreach strategy and to get buy-in from the community and areas businesses early in the process.

Appendix A: Major Project Profiles

Spruce Ridge Expansion

Proponent: Enbridge Inc.

Project Type: Natural Gas pipeline project

Total Anticipated Project Cost: \$565,000,000

Project Status: Early Construction

Project Website: <https://www.enbridge.com/projects-and-infrastructure/projects/spruce-ridge-program>

The Spruce Ridge Expansion is a natural gas pipeline project owned by Enbridge Inc. The project will introduce two new sections of pipe parallel to the existing alignment and several compressor station upgrades to increase capacity and safely meet customer demand. Combined, the upgrades will increase the natural gas pipeline capacity by up to 402 million cubic feet per day (MMcf/d).

Two new loops will be created to expand the existing pipeline network:

- Aitken Loop – 13 kilometres - Construction to begin early 2020
- Chetwynd Loop – 25 kilometres –

Currently in an evaluation stage. Half of the route will proceed through a greenfield route.

The project was initiated in 2017 by Spectra Energy, which was purchased by Enbridge Inc. that same year. Consultation and the original application to the Canadian Energy Regulator were completed in the winter of 2017. The project received approval from the National Energy Board in December 2018. The upgrades will allow gas producers in the Northeast to reach markets in the United States pacific northwest including Washington, Oregon and California as well as locations within BC.

Figure 22: Spruce Ridge Extension pipeline loop extensions.



Hackney Hills Wind Park

Proponent: Aeolis Wind Energy Inc.

Project Type: Wind Energy

Total Anticipated Project Cost: \$400,000,000

Project Status: Environmental Assessment

Project Website: <http://aeoliswind.ca/chapter-links/hackney-hills/>

The Hackney Hills Wind Park is a new large wind energy project for northeast BC. The project site is 50 kilometres north of the W.A.C. Bennett Dam. The site is entirely Provincial Crown land and is naturally treeless due to persistent high winds making it a desirable location for wind energy production. The project site is also well connected by service roads for surrounding petroleum and forestry projects. The Hackney Hills Wind Park project will generate an anticipated 380 MW of electricity when it is completed.

The project may still be several years out from construction as the proponent Aeolis Wind Power Corporation withdrew their application with the BC Environmental Assessment Office (EAO) and resubmitted it in January 2020. The project is currently undergoing its environmental assessment.

Figure 23: Hackney Hills Wind Park, Artist Rendering



Site C Dam

Proponent: BC Hydro

Project Type: Hydroelectric Power

Total Anticipated Project Cost: \$10,700,000,000

Project Status: Construction

Project Website: <https://www.sitecproject.com>

The Site C Dam is a major project currently under construction by BC Hydro located approximately 15 kilometres south of Fort St. John. When complete, the dam will be the third hydroelectric dam on the Peace River and will produce 1,100 MW of electricity or enough to power 450,000 homes per year.

The project is a major undertaking and involves several overlapping construction projects to come online. Major project components include the construction of an earth-fill dam, including diversion tunnels as well as a new generating station. The construction of the Site C dam will provide an anticipated 33,000 person-years of employment and create additional full time and permanent positions when it comes online. In addition, communities around the Site C dam have benefited from community agreements with BC Hydro which provide funding for municipal infrastructure, tourism and recreation opportunities as well as affordable housing.

The Site C project achieved all of its environmental approvals in 2014 and began construction in 2015. The dam is expected to be completed and begin operation in 2025 and will be a sustainable source of electricity for the next 100 years.

Figure 24: Diversion Tunnel, Site C Dam, Fort St. John



Taylor Wind

Proponent: EDF Renewables

Project Type: Wind Energy

Total Anticipated Project Cost: \$900,000,000

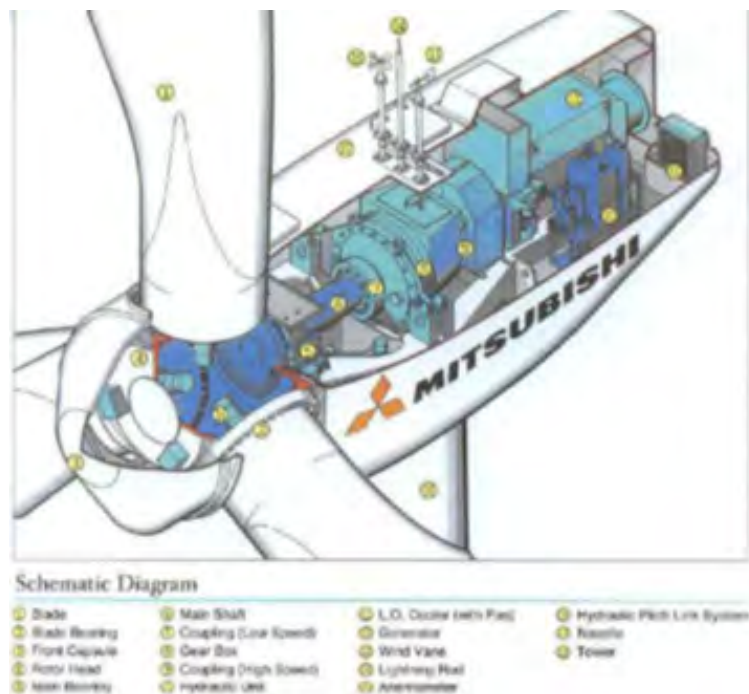
Project Status: Environmental Assessment

Project Website: <https://www.edf-re.com/project/taylor-wind/>

The Taylor Wind project is a wind energy park located 10 kilometres south of Taylor BC, (28 kilometres south of Fort St. John). The proponent's proposal is large and is anticipated to produce between 250 and 400 MW of electricity at completion, depending on the final scale and scope of the project. At its largest the Taylor Wind project would have up to 235 individual wind turbines measuring 80 to 110 meters tall with blade lengths of up to 70 metres. The construction phase of the project is anticipated to create 350 jobs during construction and 15-20 during operation.

The project has been in development for many years and began with wind monitoring stations on the site in 2010. Public consultation to satisfy the environmental assessment was conducted between 2012 and 2013, though engagement activities are ongoing. The most recent update on the EAO website lists that the Taylor Wind project has satisfied all of its application information requirements as of 2015. The project has an anticipated start date of 2022.

Figure 25: Wind Turbine Schematic, Taylor Wind Project Draft Application Information Requirements



Appendix B: Summary Demand Tables

40% Capture Rate Projections

Detailed Employment Projections		Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	
Total		Category	9,755	9,840	9,885	10,130	10,275	10,420	10,565	10,711	10,856	11,001	11,146	11,291	11,436	11,581	11,727	11,872	12,017	12,162	12,307	12,452	12,597	12,743	12,888	13,033	13,178	13,323	
11 Agriculture, forestry, fishing and hunting		Category	305	306	306	307	308	308	309	310	310	310	311	312	313	314	314	315	316	316	317	318	318	319	320	320	321	322	
11.112 Forestry		Basic	30	29	29	28	27	27	26	25	25	24	23	22	21	21	20	19	18	17	17	16	15	15	15	14	13	13	
11.3 Forestry and logging		Basic	60	57	60	61	63	65	66	68	69	71	73	74	76	77	79	81	82	84	85	87	89	90	92	93	96		
11.4 Fishing, hunting and trapping		Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11.5 Support activities for agriculture and forestry		Basic	20	20	19	19	19	19	18	18	18	18	17	17	17	16	16	16	15	15	15	15	14	14	14	14	13	13	
21 Mining, quarrying, and oil and gas extraction		Category	670	681	697	713	728	744	760	776	792	808	824	840	855	871	887	903	919	935	951	966	982	998	1,014	1,030	1,046	1,062	
21.1 Oil and gas extraction		Basic	225	230	234	239	244	248	253	258	262	267	272	276	281	286	290	295	300	304	309	314	318	322	326	330	332	337	342
21.2 Mining and quarrying (except oil and gas)		Basic	10	10	10	10	9	9	9	9	9	9	9	9	8	8	8	8	8	8	7	7	7	7	7	7	7	7	
**213 CUSTOM - 213-C19		Basic	430	441	453	464	475	487	498	509	521	532	543	555	566	577	589	600	611	623	634	645	657	668	679	691	702	713	
21.3 Support activities for mining and oil and gas		Sub-industry	430																										
219 Mining (unspecified)		Sub-industry	0																										
22 Utilities		Category	75	80	81	82	84	85	86	87	88	89	91	92	93	94	95	97	98	99	100	101	103	104	105	106	107	108	
23 Construction		Basic	535	555	575	595	616	636	656	676	696	716	736	756	777	797	817	837	857	877	897	918	938	958	978	998	1,018	1,038	
31-43 Manufacturing		Category	415	421	423	444	455	467	478	489	501	512	523	535	546	557	569	580	591	603	614	625	637	648	659	671	682	693	
31.1 Food manufacturing		Basic	0	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	5	5	5	5	6	6	6	7	
31.2 Beverage and tobacco product manufacturing		Basic	10	11	12	12	12	12	12	13	13	14	14	14	15	15	16	16	17	17	18	18	19	19	20	20	20	20	
31.3 Textile mills		Basic	0	0	1	1	1	1	2	2	2	2	2	3	3	3	4	4	4	5	5	5	5	6	6	6	6	7	
31.4 Textile product mills		Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
31.5 Clothing manufacturing		Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
31.6 Leather and allied product manufacturing		Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
32.1 Wood product manufacturing		Basic	230	234	238	242	247	251	255	259	263	267	271	275	280	284	288	292	296	300	304	309	313	317	321	325	329	333	
32.2 Paper manufacturing		Basic	10	10	10	10	11	11	11	11	11	11	11	12	12	12	12	12	12	12	13	13	13	13	13	13	13	13	
32.3 Printing and related support activities		Basic	0	0	-1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-5	-5	-5	-5	-6	-6	-6	-6	-7	
32.4 Petroleum and coal products manufacturing		Basic	20	22	23	25	26	28	30	31	33	34	36	38	39	41	42	44	46	47	49	50	52	54	55	57	58	60	
32.5 Chemical manufacturing		Basic	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	5	5	5	6	6	6	6	6	7	
32.6 Plastics and rubber products manufacturing		Basic	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	5	5	5	6	6	6	6	6	7	
32.7 Non-metallic mineral product manufacturing		Basic	15	16	16	17	18	19	20	21	22	22	23	23	24	24	25	26	26	27	28	28	29	29	30	30	31	32	
33.1 Primary metal manufacturing		Basic	0	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	5	5	5	6	6	6	6	7	
33.2 Fabricated metal product manufacturing		Basic	35	35	35	35	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	
33.3 Machinery manufacturing		Basic	20	20	20	20	19	19	19	19	19	19	19	19	18	18	18	18	18	18	18	17	17	17	17	17	17	17	
33.4 Computer and electronic product manufacturing		Basic	20	22	23	25	26	28	30	31	33	34	36	38	39	41	42	44	46	47	49	50	52	54	55	57	58	60	
33.5 Electrical equipment, appliance and component manufacturing		Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
33.6 Transportation equipment manufacturing		Basic	15	15	16	16	17	17	18	18	19	19	19	20	20	21	21	21	22	22	23	23	23	24	24	24	25	25	
33.7 Furniture and related product manufacturing		Basic	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2	-2	-2	-3	-3	-3	-3	-3	-3	-3	-3	
33.9 Miscellaneous manufacturing		Basic	35	37	39	40	43	45	46	48	49	51	53	56	57	59	62	63	65	67	68	70	72	73	75	76	78	79	
41 Wholesale trade		Category	370	380	384	397	403	408	414	420	425	431	436	442	448	453	459	465	470	476	482	487	493	498	504	510	516	515	
44-45 Retail trade		Category	1,585	1,590	1,614	1,637	1,661	1,686	1,712	1,739	1,767	1,795	1,826	1,856	1,889	1,923	1,957	1,990	2,024	2,058	2,092	2,126	2,160	2,194	2,228	2,262	2,296	2,330	
44.1 Motor vehicle and parts dealers		Basic	250	250	257	261	265	269	272	276	280	283	287	291	295	298	302	306	310	313	317	320	324	328	332	335	339	343	
44.2 Furniture and home furnishings stores		Non-Basic	50	50	51	51	52	53	54	54	55	56	57	58	59	60	61	62	63	63	64	65	66	66	67	68	68	69	
44.3 Electronics and appliance stores		Basic	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	
44.4 Building material and garden equipment stores		Non-Basic	170	170	173	175	178	180	183	185	188	190	193	195	198	200	203	205	208	210	213	215	218	220	223	226	228	231	
44.5 Food and beverage stores		Basic	370	370	373	375	378	380	383	385	388	390	393	395	398	400	403	406	408	411	414	416	419	421	424	427	429	432	
44.6 Health and personal care stores		Non-Basic	110	110	112	113	115	117	118	120	121	123	125	126	128	130	131	133	134	136	138	139	141	143	144	146	148	149	
44.7 Gasoline stations		Non-Basic	50	50	51	51	52	53	54	54	55	56	57	57	58	59	60	60	61	62	63	63	64	65	66	67	68	69	
44.8 Clothing and clothing accessories stores		Basic	170	170	173	175	178	180	183	185	188	190	193	195	198	200	203	205	208	210	213	215	218	220	223	226	228	231	
44.9 Sporting goods, hobby, book and music stores		Non-Basic	110	110	112	113	115	117	118	120	121	123	125	126	128	130	131	133	134	136	138	139	141	143	144	146	148	149	
45.1 Wholesale trade		Basic	50	50	51	51	52	53	54	54	55	56	57	57	58	59	60	60	61	62	63	63	64	65	66	67	68	69	
45.2 Wholesale trade		Basic	170	170	173	175	178	180	183	185	188	190	193	195	198	200	203	205	208	210	213	215	218	220	223	226	228	231	
45.3 Wholesale trade		Basic	100	100	101	103	104	106	107	109	110	112	113	115	116	118	119	121	122	124	125	127	128	130	131	133	134	136	
45.4 Wholesale trade		Basic	50	50	51	51	52	53	54	54	55	56	57	57	58	59	60	60	61	62	63	63	64	65	66	67	68	69	
45.5 Wholesale trade		Basic	170	170	173	175	178	180	183	185	188	190	193	195	198	200	203	205	208	210	213	215	218	220	223	226	228	231	
45.6 Wholesale trade		Basic	100	100	101	103	104	106	107	109	110	112	113	115	116	118	119	121	122	124	125	127	128	130	131	133	134	136	
45.7 Wholesale trade		Basic	50	50	51	51	52	53	54	54	55	56	57	57	58	59	60	60	61	62	63	63	64	65	66	67	68	69	
45.8 Wholesale trade		Basic	170	170	173	175	178																						

Land Demand Projections

[illegible]

Med (80%)

[illegible]

Low (60%)

Mean Vancouver Island Land Area (Emil/Farm/Acre)		0-1																											
Difficult/Land Use (% of Mean Vancouver)		60%																											
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041		
11 Agriculture, forestry, fishing and hunting	3.8	24	24	24	24	24	24	25	25	25	25	25	26	26	26	26	26	26	26	26	26	26	27	27	27	27	27	27	
21 Mining, quarrying, and oil and gas extraction	3.8	151	153	157	160	164	167	171	175	178	182	185	189	192	196	199	203	207	210	214	217	221	224	228	231	235	239		
31 Manufacturing	3.8	10	11	11	11	11	11	12	12	12	12	12	13	13	13	13	13	13	13	13	13	14	14	14	14	14	14		
32 Construction	22.2	20	21	22	23	24	24	25	26	27	27	28	29	30	31	32	33	34	34	35	36	37	37	38	39	40	41		
33 Manufacturing	3.8	93	95	97	100	102	105	107	110	113	115	118	120	123	125	128	130	133	135	138	141	143	146	148	151	153	156		
43 Wholesale trade	3.8	83	87	90	93	96	99	102	105	108	111	114	117	120	123	126	129	132	135	138	141	144	147	150	153	156	159		
44-45 Retail trade	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
48-49 Transportation and warehousing	3.8	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	87	88	89	90	91	92	93	94	95	96		
53 Information and cultural industries	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
52 Finance and insurance	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
53 Real estate and rental and leasing	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
74 Professional, scientific, technical services	14.2	11	12	12	13	13	13	13	13	13	13	13	14	14	14	14	15	15	15	15	15	15	15	15	15	15	15		
55 Management of companies and enterprises	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
56 Administrative and support, waste management and remediation services	16	16	16	16	16	16	16	17	17	17	17	17	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21		
61 Administrative and support services	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
62 Educational services	3.8	16	16	16	16	16	16	17	17	17	17	17	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21		
63 Health care and social assistance	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
71 Arts, entertainment and recreation	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
72 Accommodation and food services	14.4	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
81 Other services (except public administration)	26	26	26	26	27	28	28	29	29	30	30	30	31	31	32	32	33	33	33	34	34	34	34	34	34	34	34		
81.1 Repair and maintenance	14.4	15	15	15	16	16	16	16	17	17	17	17	17	18	18	18	19	19	19	19	19	20	20	20	20	21	21		
81.2 Personal and laundry services	14.4	10	10	10	11	11	11	11	11	12	12	12	12	12	12	13	13	13	13	13	13	13	14	14	14	14	14		
81.3 Food, beverage, and lodging, civic, and professional and services	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
81.4 Private households	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
81.5 Public administration	13.8	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Total		511	520	530	540	551	561	572	582	593	603	613	623	634	644	654	665	676	686	696	706	717	727	738	748	758	768		

50% Capture Rate Projections

Detailed Employment Projections		Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	
Total		Category	9,755	9,855	10,036	10,218	10,389	10,540	10,762	10,941	11,125	11,306	11,488	11,669	11,850	12,032	12,213	12,395	12,576	12,757	12,939	13,120	13,302	13,483	13,665	13,846	14,027	14,209	
11 Agriculture, forestry, fishing and hunting		Category	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	
111-12 Farms		Basic	30	29	28	28	27	26	25	24	23	22	21	20	19	18	18	17	16	15	14	13	13	12	11	10	9	8	
111-13 Forestry and logging		Basic	55	57	57	61	63	65	67	68	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	101	103	105	
114 Fishing, hunting and trapping		Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
115 Support activities for agriculture and farms		Basic	20	20	19	19	19	18	18	18	17	17	17	17	16	15	15	15	15	14	14	14	13	13	12	11	11	11	
21 Mining, quarrying, and oil and gas extraction		Category	670	685	705	725	744	764	784	804	824	844	863	883	903	923	943	963	982	1,002	1,022	1,042	1,062	1,082	1,101	1,121	1,141	1,161	
211 Oil and gas extraction		Basic	235	243	245	243	248	252	256	260	264	268	272	276	280	284	288	292	296	300	304	308	312	316	320	324	328	332	336
212 Mining and quarrying (except oil and gas)		Basic	10	10	10	10	9	9	9	9	8	8	8	8	8	8	8	7	7	7	7	7	7	6	6	6	6	6	
***21 Custom - 231-239		Basic	430	444	458	473	487	501	515	529	543	558	572	586	600	614	628	643	657	671	685	699	713	728	742	756	770	784	
211 Support activities for mining and oil and gas extraction		Sub-industry	230	230	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229
219 Mining Unspecified		Sub-industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22 Utilities		Category	75	80	81	83	84	86	87	89	90	92	93	95	96	98	99	101	102	104	105	107	108	110	111	113	114	116	
23 Construction		Category	135	146	151	156	161	166	171	176	181	186	191	196	201	206	211	216	221	226	231	236	241	246	251	256	261	266	
31-33 Manufacturing		Category	425	424	438	435	487	481	495	509	523	538	552	566	580	594	608	623	637	651	665	679	693	708	722	736	750	764	
311 Food manufacturing		Basic	0	0	1	1	1	2	2	2	3	3	3	4	4	5	5	6	6	6	6	6	7	7	7	8	8	9	
312 Beverage and tobacco product manufactu		Basic	10	11	11	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
313 Textile mills		Basic	0	0	1	1	1	2	2	2	3	3	3	4	4	4	5	5	6	6	6	7	7	7	8	8	8	9	
314 Textile product mills		Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
315 Wood product manufacturing		Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
321 Leather and allied product manufacturing		Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
322 Paper manufacturing		Basic	230	225	240	246	251	256	261	266	271	277	282	287	292	297	302	308	313	318	323	328	333	339	344	349	354	359	
323 Printing and related support activities		Basic	10	10	10	10	11	11	11	11	11	11	12	12	12	12	12	13	13	13	13	13	13	14	14	14	14	14	
324 Petroleum and coal products manufacturing		Basic	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
325 Chemical and allied products manufacturing		Basic	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	
326 Plastics and rubber products manufacturing		Basic	0	0	1	1	1	2	2	2	2	3	3	4	4	4	5	5	6	6	6	7	7	7	7	8	8	9	
327 Non-metallic mineral product manufacturing		Basic	15	16	17	18	19	20	21	22	23	23	24	24	25	26	27	28	28	29	30	31	32	33	34	35	36	37	
331 Primary metal manufacturing		Basic	0	0	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6	7	7	7	7	8	8	9	
332 Fabricated metal product manufacturing		Basic	25	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	
333 Machinery manufacturing		Basic	0	0	20	20	19	19	19	19	19	19	18	18	18	18	18	18	17	17	17	17	17	16	16	16	16	16	
334 Computer and electronic product manufactu		Basic	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	
335 Electrical equipment, appliance and commo		Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
336 Transportation equipment manufacturing		Basic	170	165	17	17	18	18	19	19	20	20	21	21	22	22	23	23	24	25	25	26	26	27	27	27	27	27	
337 Furniture and related product manufacturing		Basic	0	0	0	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-4	-4	
41 Wholesale trade		Category	394	384	397	399	414	405	417	425	434	442	450	458	466	474	482	490	498	506	514	522	530	538	546	554	562	570	
44-45 Retail trade		Category	1,585	1,590	1,619	1,649	1,678	1,708	1,737	1,767	1,796	1,826	1,855	1,885	1,914	1,944	1,973	2,003	2,032	2,062	2,091	2,121	2,150	2,180	2,209	2,238	2,268	2,298	
441 Motor vehicle and parts dealers		Non-Basic	250	250	255	259	264	269	273	278	282	287	292	296	301	306	310	315	320	324	329	333	338	343	347	352	357	361	
442 Furniture and home furnishings stores		Non-Basic	50	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	
443 Electronics and appliance stores		Non-Basic	45	45	46	47	48	48	49	50	51	52	53	53	54	55	56	57	58	58	59	60	61	62	63	63	64	65	
444 Building material and garden equipment a		Non-Basic	170	170	173	176	179	183	186	189	192	195	198	202	205	208	211	214	217	220	224	227	230	233	236	239	243	246	
445 Food and beverage stores		Non-Basic	365	365	370	373	376	380	382	384	387	390	392	394	397	400	402	404	407	409	411	413	415	417	419	421	423	425	
446 Health and personal care stores		Non-Basic	110	110	112	114	116	118	120	122	124	126	128	130	132	134	137	139	141	143	145	147	149	151	153	155	157	159	
447 Gasoline stations		Non-Basic	50	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	
448 Clothing and clothing accessories stores		Non-Basic	108	108	111	114	116	118	120	122	124	126	128	130	132	134	137	139	141	143	145	147	149	151	153	155	157	159	
449 Sporting goods, hobby, book and music st		Non-Basic	55	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	
452 General merchandise stores		Non-Basic	175	175	178	181	183	186	189	191	194	198	201	204	207	211	214	217	220	224	227	230	233	237	240	243	246	250	
453 Miscellaneous store retailers		Non-Basic	100	100	102	104	106	107	109	111	113	115	117	119	121	124	126	128	130	132	135	137	139	141	143	145	147	149	
454 Non-store retailers		Non-Basic	95	95	97	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	
48-49 Transportation and warehousing		Category	310	315	321	327	333	338	344	350	356	362	368	373	379	385	391	397	403	408	414	420	426	432	438	444	449	455	
51 Information and cultural industries		Category	80	80	81	83	84	86	87	89	90	92	93	95	96	98	99	101	102	104	105	107	108	110	111	113	114	116	
511 Publishing industries (except internet)		Basic	15	15	15	16	17	17	17	18	18	18	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	
512 Motion picture and sound recording indus		Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
***51 CUSTOM - 513-515+516+517+518		Basic	65	65	66	67	69	70	71	72	73	75	76	77	78	79	81	82	83	84	85	86	88	89	90	92	93	94	
513 Broadcasting and telecommunications		Sub-industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
515 Broadcasting (except internet)		Sub-industry	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	
518 Internet Telecommunications and Broadca		Sub-industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
519 Data processing, hosting, and related s		Sub-industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Basic and Non-Basic Summary

Basic Total Employment	4,025	4,100	4,174	4,249	4,324	4,398	4,473	4,548	4,622	4,697	4,772	4,846	4,921	4,996	5,070	5,145	5,220	5,294	5,369	5,444	5,518	5,593	5,668	5,742	5,817	5,892
Basic Total Earnings Estimate (x1,000,000)	303	310	317	324	330	337	344	351	358	365	372	379	386	393	400	407	413	420	427	434	441	448	455	462	469	476
Total Non-Basic Employment	5,755	5,862	5,969	6,075	6,182	6,289	6,396	6,502	6,609	6,716	6,823	6,929	7,036	7,143	7,250	7,356	7,463	7,570	7,677	7,783	7,890	7,997	8,104	8,210	8,317	8,424

Industrial-Lands Employment Projections

	N	% to Industrial Land																													
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041				
11 Agriculture, forestry, fishing and hunting	85%	89	90	91	91	92	93	94	94	95	96	96	97	98	98	99	100	101	101	102	103	103	104	105	106	106	107				
12 Mining, quarrying, and oil and gas extraction	80%	570	582	599	604	616	608	600	600	710	718	718	745	747	748	748	818	818	862	888	898	904	910	916	936	951	970				
20 Utilities	38	40	41	41	42	43	44	44	44	45	46	47	48	49	49	50	50	50	51	52	53	54	55	56	56	57					
23 Construction	85%	455	478	498	519	540	562	583	604	626	647	669	690	711	733	754	776	797	818	841	863	884	904	925	947	968					
30 Manufacturing	35	353	361	365	372	380	385	392	400	409	417	425	433	440	447	455	463	471	479	487	495	503	511	519	527	535					
41 Wholesale trade	85%	115	123	129	135	141	147	153	159	165	171	177	183	189	195	401	407	413	419	425	431	437	443	449	455	461					
44-45 Retail trade	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
46 Wholesale trade and warehousing	85%	264	278	293	308	323	338	353	368	383	397	412	427	442	457	472	487	502	517	532	547	562	577	592	607	622					
51 Information and cultural industries	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	317	327	337	347	357	367	377	387	397	407					
52 Finance and insurance	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
53 Real estate and rental and leasing	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
54 Professional, scientific and technical services	25%	165	165	168	171	174	177	180	183	186	189	193	196	199	202	205	208	211	214	217	220	223	226	229	232	235					
55 Management of companies and enterprises	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
56 Administrative and support, waste management and remediation services	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
561 Administrative and support services	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
562 Waste management and remediation services	90%	59	59	60	61	62	63	64	65	66	67	68	69	70	72	73	74	75	76	77	78	79	80	81	82	83					
61 Educational services	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
62 Health care and social assistance	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
71 Arts, entertainment and recreation	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
72 Accommodation and food services	5%	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74					
81 Other services (except public administration)	370	370	377	383	391	398	405	411	418	425	432	438	445	453	460	466	473	480	487	493	500	507	514	521	528	535					
811 Repair, maintenance and recreation	74%	121	121	125	129	134	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	213	218	223	228	233					
812 Food and beverage services	140	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164					
813 Religious, grant-making, civic, and professional and	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
814 Private households	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
90 Total	10%	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77					
91 Grand total		2,780	2,837	2,913	2,986	3,062	3,138	3,213	3,289	3,362	3,437	3,514	3,588	3,663	3,740	3,816	3,899	3,965	4,000	4,116	4,190	4,265	4,340	4,416	4,492	4,567					

Land Demand Projections

[illegible]

60% Capture Rate Projections

Detailed Employment Projections

	Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	
Total	Category	9,755	9,870	10,087	10,305	10,523	10,740	10,958	11,176	11,394	11,611	11,829	12,047	12,264	12,482	12,700	12,918	13,135	13,353	13,571	13,788	14,006	14,224	14,442	14,659	14,877	15,095	
11 Agriculture, forestry, fishing and hunting	Category	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	
	Basic	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	
	111 Forestry and logging	55	57	60	62	65	67	69	71	72	74	77	80	84	88	91	94	96	99	102	105	108	110	111	115	118	121	
	114 Fishing, hunting and trapping	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	115 Support activities for agriculture and forests	20	20	19	19	18	18	17	17	16	16	16	16	15	15	14	14	14	13	13	12	12	12	12	11	11	10	
21 Mining, quarrying, and oil and gas extraction	Category	670	689	713	736	760	784	808	832	855	879	903	927	951	974	998	1,022	1,046	1,070	1,093	1,117	1,141	1,165	1,189	1,212	1,236	1,260	
	211 Oil and gas extraction	225	232	239	246	253	260	267	274	281	288	295	302	309	316	323	330	337	344	351	358	365	372	379	386	393	400	
	212 Mining and quarrying (except oil and gas)	10	10	10	9	9	9	9	9	8	8	8	8	8	7	7	7	7	6	6	6	6	6	5	5	5	5	
	***21 CUSTOM - 213+219	430	447	464	481	498	515	532	549	566	583	600	617	634	651	668	685	702	719	736	753	770	787	804	821	838	855	
	219 Mining activities for minerals and 219 Mining (excepted)	430	430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22 Utilities	Category	75	80	82	84	85	87	89	91	92	94	96	98	100	101	103	105	107	108	110	112	114	116	117	119	121	123	
23 Construction	Basic	535	565	595	626	656	686	716	746	777	807	837	867	897	928	958	988	1,018	1,048	1,078	1,109	1,139	1,169	1,199	1,229	1,259	1,290	
31-33 Manufacturing	Category	415	427	444	461	478	495	512	529	546	563	580	597	614	631	648	665	682	699	716	733	750	767	784	801	818	835	
	311 Food manufacturing	0	0	1	1	2	2	2	3	3	4	4	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	
	312 Beverage and tobacco product manufacturing	10	11	12	12	13	14	14	15	15	16	17	17	18	18	19	20	20	21	21	22	23	23	24	24	25	25	
	313 Textile mills	0	0	1	1	2	2	2	3	3	4	4	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	
	314 Textile product mills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
33 Manufacturing	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	331 Primary metal manufacturing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	332 Fabricated metal product manufacturing	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	
	333 Machinery manufacturing	20	19	20	19	19	19	19	18	18	18	18	18	17	17	17	16	16	16	16	16	16	16	16	15	15	15	
	334 Computer and electronic product manufacturing	20	22	25	27	30	32	34	37	39	42	44	46	48	51	54	56	58	61	63	66	68	70	73	75	78	80	
33 Manufacturing	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	335 Electrical equipment, appliance and component manufacturing	15	15	17	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
	337 Furniture and related product manufacturing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	339 Miscellaneous manufacturing	35	37	40	42	45	47	49	52	54	57	59	61	64	66	69	71	73	76	78	81	83	85	88	90	93	95	
41 Wholesale trade	Category	370	380	388	397	405	414	422	431	439	448	456	465	473	482	490	498	507	515	524	532	541	549	558	566	575	583	
44-45 Retail trade	Category	1,585	1,590	1,625	1,661	1,696	1,732	1,767	1,802	1,838	1,873	1,909	1,944	1,979	2,015	2,050	2,086	2,121	2,156	2,192	2,227	2,263	2,298	2,333	2,369	2,404	2,439	
	441 Motor vehicle and parts dealers	Non-Basic	250	250	256	261	267	272	278	283	289	295	300	306	311	317	322	328	333	339	345	350	356	361	367	372	378	384
	442 Furniture and home furnishings stores	Non-Basic	50	50	51	52	53	54	56	57	58	59	60	61	62	63	64	66	67	68	69	70	71	72	73	74	75	
	443 Electronics and appliance stores	Non-Basic	45	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69
	444 Building material and garden equipment stores	Non-Basic	170	170	174	178	181	185	189	193	196	200	204	208	212	215	219	223	227	231	234	238	242	246	249	253	257	
44-45 Retail trade	Category	365	365	373	381	388	395	402	410	417	424	431	438	445	452	459	466	473	480	487	494	501	508	515	522	529	536	
	445 Food and beverage stores	Non-Basic	115	115	112	115	117	120	122	125	127	130	132	134	137													

Land Demand Projections

[illegible]

Med (80%)

[illegible]

Low (60%)

[illegible]

70% Capture Rate Projections

Detailed Employment Projections		Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Total	Category	9,755	9,885	10,109	10,393	10,647	10,910	11,155	11,439	11,663	11,917	12,211	12,424	12,678	12,912	13,186	13,440	13,694	13,948	14,202	14,456	14,710	14,964	15,218	15,472	15,726	15,980	
11 Agriculture, forestry, fishing and hunting	Category	105	106	107	109	110	111	112	113	114	115	117	118	119	120	121	123	124	125	126	127	128	130	131	132	133	134	
11-112 Farms	Basic	0	0	29	28	27	25	24	23	22	21	20	18	17	16	15	14	13	11	10	9	8	7	5	4	3	2	
113 Forestry and logging	Basic	55	58	58	61	63	65	67	69	72	75	77	80	83	86	89	91	94	97	100	103	106	109	112	115	118	122	
114 Fishing, hunting and trapping	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
115 Support activities for agriculture and farms	Basic	20	20	19	19	18	18	17	17	16	15	15	14	14	13	13	13	13	12	11	11	10	10	9	8	7	6	
21 Mining, quarrying, and oil and gas extraction	Category	670	693	721	748	776	804	832	859	887	915	943	970	998	1,026	1,054	1,082	1,109	1,137	1,165	1,193	1,220	1,248	1,276	1,304	1,331	1,359	
211 Oil and gas extraction	Basic	252	259	265	271	277	283	289	295	301	307	313	319	325	331	337	343	349	355	361	367	373	379	385	391	397	403	
212 Mining and quarrying (except oil and gas)	Basic	10	10	10	10	9	9	9	9	8	8	7	7	7	7	7	7	6	6	6	5	5	5	5	4	4	3	
***21 Custom - 233-239	Basic	430	450	470	490	509	529	549	569	589	609	628	648	668	688	708	728	747	767	787	807	827	847	866	886	906	926	
213 Support activities for mining and quarrying	Sub-industry	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	630	
219 Mining Unspecified	Sub-industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22 Utilities	Category	75	80	82	84	86	88	90	92	95	97	99	101	103	105	107	109	111	113	115	117	119	122	124	126	128	130	
23 Construction	Category	131	136	139	141	143	145	147	149	151	153	155	157	159	161	163	165	167	169	171	173	175	177	179	181	183	185	
31-33 Manufacturing	Category	415	430	450	470	489	509	529	549	569	589	608	628	648	668	688	708	727	747	767	787	807	827	846	866	886	906	
311 Food manufacturing	Basic	0	0	1	1	2	2	3	3	4	4	4	5	5	6	6	7	7	7	7	8	8	9	9	10	11	11	
312 Beverage and tobacco product manufacturing	Basic	10	11	11	12	13	14	14	14	15	15	16	17	18	18	19	20	21	22	23	23	24	25	26	26	27	28	
313 Textile mills	Basic	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
314 Textile product mills	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
315 Clothing manufacturing	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
321 Leather and allied product manufacturing	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
322 Wood product manufacturing	Basic	230	237	244	252	259	266	273	281	288	295	302	310	317	324	331	339	346	353	360	367	375	382	389	396	404	411	
323 Printing and related support activities	Basic	10	10	10	10	11	11	11	12	12	12	12	13	13	13	13	14	14	14	14	14	15	15	15	15	16	16	
324 Petroleum and coal products manufacturing	Basic	1	-1	0	1	-1	-2	-3	-3	-3	-4	-4	-5	-5	-6	-6	-7	-7	-7	-7	-8	-9	-10	-10	-11	-12		
325 Chemical manufacturing	Basic	20	20	26	28	31	34	37	40	42	45	48	51	54	56	59	62	65	68	70	73	76	79	82	84	87	90	
326 Plastics and rubber products manufacturing	Basic	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	7	8	8	9	9	10	10	11	11	12	
327 Non-metallic mineral product manufacturing	Basic	15	16	17	19	20	21	22	23	24	26	27	28	29	30	31	33	34	35	36	37	38	40	41	42	43	44	
331 Primary metal manufacturing	Basic	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	7	7	8	8	9	9	10	10	11	11	
332 Fabricated metal product manufacturing	Basic	35	36	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	
333 Machinery manufacturing	Basic	20	20	20	19	19	19	19	18	18	18	18	17	17	17	17	16	16	16	16	15	15	15	15	14	14	14	
334 Computer and electronic product manufacturing	Basic	20	23	26	28	31	34	37	40	42	45	48	51	54	56	59	62	65	68	70	73	76	79	82	84	87	90	
335 Electrical equipment, appliance and component manufacturing	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
336 Transportation equipment manufacturing	Basic	18	17	16	18	19	19	19	21	21	22	23	24	25	26	27	28	29	30	30	31	32	33	34	35	36	37	
337 Furniture and related product manufacturing	Basic	0	0	0	-1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-3	-4	-4	-4	-4	-4	-5	-5	-5	-5	-6	-6	-6	
338 Miscellaneous manufacturing	Basic	35	38	41	43	46	49	52	55	57	60	63	66	69	71	74	77	80	83	86	89	91	94	97	99	102	105	
41 Wholesale trade	Category	170	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	
44-45 Retail trade	Category	1,585	1,590	1,631	1,673	1,714	1,755	1,796	1,838	1,879	1,920	1,962	2,003	2,044	2,086	2,127	2,168	2,209	2,251	2,292	2,333	2,375	2,416	2,457	2,498	2,540	2,581	
441 Motor vehicle and parts dealers	Non-Basic	250	250	256	263	269	276	282	289	295	302	308	315	321	328	334	341	347	354	360	367	373	380	386	393	399	406	
442 Furniture and home furnishings stores	Non-Basic	50	50	51	52	53	54	55	56	58	59	60	62	63	64	66	67	68	69	71	72	73	75	76	77	78	79	
443 Electronics and appliance stores	Non-Basic	45	46	46	47	48	49	50	51	52	53	54	56	57	58	59	60	61	63	64	65	66	67	68	70	71	72	
444 Building material and garden equipment and supplies stores	Non-Basic	170	170	174	179	183	188	192	196	201	205	210	214	219	223	227	232	236	241	245	249	254	258	263	267	272	276	
445 Food and beverage stores	Non-Basic	365	369	374	378	383	387	391	395	400	404	408	412	416	420	424	428	432	436	440	444	448	452	456	460	464	468	
446 Health and personal care stores	Non-Basic	110	110	113	116	119	121	124	127	130	133	136	139	141	144	147	150	153	156	159	161	164	167	170	173	176	179	
447 Gasoline stations	Non-Basic	50	50	51	53	54	55	56	58	59	60	62	63	64	66	67	68	69	71	72	73	75	76	77	79	80	81	
448 Clothing and clothing accessories stores	Non-Basic	165	165	169	174	178	182	186	191	195	199	204	208	212	216	221	225	229	234	238	242	246	251	255	259	264	268	
449 Sporting goods, hobby, book and music stores	Non-Basic	50	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	
450 General merchandise stores	Non-Basic	175	175	180	184	188	193	198	202	207	211	216	220	225	230	234	239	243	248	252	257	261	266	270	275	280	284	
451 Miscellaneous store retailers	Non-Basic	100	100	103	105	108	110	113	116	118	121	123	126	129	131	134	136	139	142	144	147	149	152	155	157	160	162	
452 Non-store retailers	Non-Basic	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	
46-49 Transportation and warehousing	Category	310	315	323	331	340	348	356	364	372	380	389	397	405	413	421	430	438	446	454	462	470	479	487	495	503	511	
51 Information and cultural industries	Category	80	80	82	84	86	88	90	92	95	97	99	101	103	105	107	109	111	113	115	117	119	122	124	126	128	130	
511 Publishing industries (except internet)	Basic	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
512 Motion picture and sound recording industries	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
***51 Custom - 513-554-515-516-517-518	Basic	65	65	67	68	70	72	73	75	77	79	80	82	84	85	87	89	90	92	94	95	97	99	100	102	104	106	
513 Broadcasting and telecommunications	Sub-industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
514 Data processing and related services	Sub-industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
515 Broadcasting (except internet)	Sub-industry	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	
516 Internet Publishing and Broadcasting	Sub-industry	0	0	0	0	0																						

Basic and Non-Basic Summary

Basic Total Employment	4,025	4,130	4,234	4,339	4,443	4,548	4,652	4,757	4,861	4,966	5,070	5,175	5,279	5,384	5,488	5,593	5,698	5,802	5,907	6,011	6,116	6,220	6,325	6,429	6,534	6,638
Basic Total Earnings Estimate (x1,000,000)	3023	3113	322	332	342	351	361	371	380	390	400	410	419	429	438	448	458	467	477	487	496	506	516	525	535	545
Total Non-Basic Employment	5,755	5,904	6,054	6,203	6,353	6,502	6,652	6,801	6,951	7,100	7,250	7,399	7,549	7,698	7,847	7,997	8,146	8,296	8,445	8,595	8,744	8,894	9,043	9,193	9,342	9,492

Industrial-Lands Employment Projections

		% to industrial land																									
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
11 Agriculture, forestry, fishing and hunting	85%	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114
21 Mining, quarrying, and oil and gas extraction	85%	570	589	621	636	660	683	707	730	754	778	801	825	848	872	896	919	943	966	990	1,014	1,037	1,061	1,084	1,108	1,132	1,155
31 Utilities	38	50	52	54	57	60	63	67	70	73	76	79	82	85	88	91	94	97	100	103	106	109	112	115	118	121	124
23 Construction	85%	455	485	515	545	575	605	634	664	694	724	754	784	814	844	874	904	934	964	994	1,024	1,054	1,084	1,114	1,144	1,174	1,204
31-33 Manufacturing	85%	353	365	382	399	416	433	450	467	483	500	517	534	551	568	585	601	618	635	652	669	686	703	719	736	753	
42 Wholesale trade	85%	315	323	337	349	363	373	382	390	398	407	415	423	430	438	446	454	462	470	478	486	494	502	510	518	526	
44-45 Retail trade	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
48 Information and warehousing	0%	264	268	275	282	289	296	303	309	316	323	330	337	344	351	358	365	372	379	386	393	400	407	414	421	428	
51 Transportation and mail services	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
52 Finance and insurance	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
53 Real estate and rental and leasing	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
54 Professional, scientific, and technical services	16%	165	174	182	190	198	206	214	222	230	238	246	254	262	270	278	286	294	302	310	318	326	334	342	350	358	
55 Management of companies and enterprises	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
56 Administrative and support, waste management and remediation services	59	59	59	60	62	63	65	66	68	69	71	72	74	75	77	78	80	81	83	84	86	87	89	90	92	93	
561 Administrative and support services	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
562 Waste management and remediation services	90%	59	59	60	62	63	65	66	68	69	71	72	74	75	77	78	80	81	83	84	86	87	89	90	92	93	
61 Educational services	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
62 Health care and social assistance	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
71 Arts, entertainment and recreation	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
72 Accommodation and food services	5%	49	49	50	51	53	54	55	56	58	59	60	62	63	64	65	66	68	69	70	72	73	74	75	77	78	
51 Other services (except health care administration)	37%	370	389	398	408	428	437	447	457	467	477	486	495	505	514	523	532	541	550	559	568	577	586	595	604	613	
811 Restaurant and food services	75%	221	221	227	233	238	244	250	256	261	267	273	279	284	290	296	302	307	313	319	325	330	336	342	348	353	
812 Personal and laundry services	89%	149	149	153	156	160	164	168	172	176	180	184	187	191	195	199	203	207	211	214	218	222	226	230	234	238	
813 Personal, non-manual, civic, and professional and social administration	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
814 Private households	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Public administration	10%	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	
		2,780	2,782	2,781	2,768	2,772	2,778	2,781	2,784	2,783	2,789	2,794	2,799	2,804	2,810	2,815	2,820	2,825	2,830	2,835	2,840	2,845	2,850	2,855	2,860	2,865	

Land Demand Projections

High (90%)

Metro Vancouver Industrial Land Use (Emp/Parcel Area)		6.1																									
Total Land Use (%) of Metro Vancouver		90%																									
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
11 Agriculture, forestry, fishing and hunting	5.7	16	15	16	16	16	17	17	17	17	17	17	18	18	18	18	19	19	19	19	19	19	19	20	20	20	20
21 Mining, quarrying, and oil and gas extraction	5.7	101	104	108	112	116	120	125	129	133	137	141	146	150	154	158	162	166	170	175	179	183	187	191	195	200	204
22 Manufacturing	5.7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
33 Construction	33.3	14	15	15	15	16	17	18	19	20	21	22	23	24	24	24	24	25	26	27	28	29	31	32	33	34	35
31-33 Manufacturing	5.7	62	64	67	70	73	76	79	82	85	88	91	94	97	100	103	106	109	112	115	118	121	124	127	130	133	
44 Wholesale trade	5.7	56	57	58	61	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	
44-45 Retail trade	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
48-49 Transportation and warehousing	5.7	47	47	49	50	51	52	53	54	56	57	58	59	61	62	63	64	66	67	68	69	71	72	73	74	75	
51 Information and cultural industries	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
52 Finance and insurance	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
53 Real estate and rental and leasing	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
54 Professional, scientific and technical services	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
55 Management of companies and enterprises	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
56 Administrative and support, waste management and remediation services	5.7	10	10	10	11	11	11	12	12	12	13	13	13	13	14	14	14	14	15	15	15	15	16	16	16	16	
56A Administration and support services	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
56C Waste management and remediation services	5.7	10	10	11	11	11	11	12	12	12	13	13	13	13	14	14	14	14	15	15	15	15	16	16	16	16	
61 Education and arts services	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
62 Health care and social assistance	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
71 Arts, entertainment and recreation	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
72 Accommodation and food services	21.6	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
81 Other services (except public administration)	5.7	17	17	18	18	18	19	19	20	20	21	21	22	22	22	23	23	24	24	24	25	25	26	26	27	27	
811 Repair and maintenance	21.6	10	10	11	11	11	11	12	12	12	13	13	13	13	13	14	14	14	14	15	15	15	16	16	16	16	
812 Personal and laundry services	5.7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
813 Religious, grant-making, civic, and professional and	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
814 Private households	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
91 Public administration	20.7	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Total		341	350	362	374	386	399	411	423	435	447	459	471	483	495	508	519	532	544	556	568	580	592	604	617	629	

Med (80%)

Metro Vancouver Industrial Land Use (Emp/Parcel Acre):

Default Language

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
11 Agriculture, forestry, fishing and hunting	5.0	18	18	18	18	13	15	19	19	19	19	20	20	20	20	20	21	21	21	21	21	22	22	22	22	23
111 Mining, quarrying, and oil and gas extraction	5.0	113	117	126	130	143	138	140	145	150	154	159	164	168	170	172	173	175	176	177	178	179	180	181	182	183
22 Utilities	5.0	8	8	8	8	9	9	9	9	10	10	10	10	10	10	11	11	11	11	12	12	12	12	13	13	13
23 Construction	29.6	15	16	17	18	19	20	21	22	23	24	25	26	28	29	30	31	32	33	34	35	36	37	38	39	40
41 Wholesale trade	5.0	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118
411 Wholesale trade	5.0	63	64	66	67	69	71	72	74	76	77	79	81	82	84	86	87	89	91	92	94	96	97	99	101	102
44-45 Retail trade	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48-49 Transportation and warehousing	5.0	52	53	55	56	57	59	60	61	63	64	65	67	68	70	71	72	74	75	77	78	79	81	82	84	85
51 Information and cultural industries	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52 Finance and insurance	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53 Real estate and rental and leasing	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54 Professional, scientific, and technical services	5.0	9	9	9	9	9	10	10	10	10	11	11	12	11	11	12	12	12	13	13	13	13	14	14	14	14
55 Management of companies and enterprises	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56 Administrative and support, waste management and remediation serv	12	12	12	12	13	13	13	13	14	14	14	14	15	15	15	15	16	16	16	17	17	17	18	18	18	19
561 Administrative and support services	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
562 Waste management and remediation services	12	12	12	13	13	14	14	14	15	15	15	15	16	16	16	17	17	17	17	18	18	18	19	19	19	20
61 Educational services	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62 Health care and social assistance	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71 Arts, entertainment and recreation	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
72 Accommodation and food services	19.2	19	19	19	20	21	21	22	22	23	23	24	24	25	25	26	26	27	27	28	28	29	29	30	30	31
81 Other services (except public administration)	19.2	12	12	12	12	12	13	13	13	14	14	14	15	15	15	15	16	16	16	17	17	17	18	18	18	19
811 Repair and maintenance	12	12	12	12	12	12	13	13	13	14	14	14	15	15	15	15	16	16	16	17	17	17	18	18	18	19
812 Rental and laundry services	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813 Religious, grant-making, civic, and professional	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
814 Private households	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90 Public administration	18.4	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
	386	398	407	417	425	436	443	450	458	465	472	479	487	495	503	511	519	527	535	543	551	559	567	575	583	591

Low (60%)

Metro Vancouver Industrial Land Use (Emp/Parcel Acre):

Default Language

[illegible]

60% Capture Rate Projections - with Extractive Industries (21) Rebound (2006 levels by 2025, 60% capture of region thereafter)

Detailed Employment Projections

	Type	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	
Total	Category	9,755	9,897	10,181	10,465	10,750	11,035	11,317	11,601	11,885	12,169	12,456	12,744	13,032	13,320	13,608	13,896	14,184	14,472	14,760	15,048	15,336	15,624	15,912	16,200	16,488	16,776	
11 Agriculture, forestry, fishing and hunting	Category	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	
111 - 112 Farms	Basic	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	
112 Forestry and logging	Basic	55	57	60	62	65	67	69	72	74	77	79	81	84	86	89	91	93	96	98	101	103	105	108	110	113	115	
114 Fishing, hunting and trapping	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
115 Support activities for agriculture and forestry	Basic	20	20	19	19	18	18	18	17	17	16	16	16	15	15	14	14	14	13	13	12	12	12	11	11	10	9	
21 Mining, quarrying, and oil and gas extraction	Category	670	716	767	818	869	921	972	1,023	1,074	1,125	1,149	1,173	1,196	1,220	1,244	1,268	1,292	1,315	1,339	1,363	1,387	1,411	1,434	1,458	1,482	1,506	
211 Oil and gas extraction	Basic	225	243	261	278	296	314	332	349	367	385	392	399	406	413	420	427	434	441	448	455	462	469	476	483	490	497	
212 Mining and quarrying (except oil and gas)	Basic	10	10	10	10	10	10	10	10	10	10	10	10	10	9	9	9	9	8	8	8	8	7	7	7	7	7	
***21 CUSTOM - 213-219	Basic	430	463	497	530	563	597	630	663	697	730	747	764	781	798	815	832	849	866	883	900	917	934	951	968	985	1,002	
213 Support activities for mining and oil and gas	Sub-industry	430	463	497	530	563	597	630	663	697	730	747	764	781	798	815	832	849	866	883	900	917	934	951	968	985	1,002	
219 Mining Unspecified	Sub-industry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22 Utilities	Category	75	80	82	85	87	89	92	94	96	97	99	101	103	104	106	108	110	112	113	115	117	119	121	122	124	126	128
23 Construction	Category	585	585	595	626	656	686	716	746	776	807	837	867	897	928	958	988	1,018	1,048	1,078	1,108	1,138	1,168	1,198	1,228	1,258	1,288	1,318
31-33 Manufacturing	Category	415	427	444	461	478	495	512	529	546	563	580	597	614	631	648	665	682	699	716	733	750	767	784	801	818	835	
311 Food manufacturing	Basic	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6	6	6	7	7	8	8	8	9	9	10	10	
312 Beverage and tobacco product manufacturing	Basic	10	11	11	12	12	13	14	14	15	15	16	17	17	18	18	19	19	20	20	21	21	22	23	23	24	25	
313 Textile mills	Basic	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6	6	6	7	7	8	8	8	9	9	10	10	
314 Textile product mills	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
315 Clothing manufacturing	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
316 Leather and allied product manufacturing	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
321 Wood product manufacturing	Basic	230	236	242	249	255	261	267	273	280	286	292	298	304	311	317	323	329	335	342	348	354	360	366	373	379	385	
322 Paper manufacturing	Basic	10	10	10	11	11	11	11	11	12	12	12	12	12	13	13	13	13	13	14	14	14	14	14	15	15	15	
323 Printing and related support activities	Basic	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
324 Petroleum and coal products manufacturing	Basic	20	22	25	27	30	32	34	37	39	42	44	46	49	51	54	56	58	61	63	66	68	70	73	75	78	80	
325 Chemical manufacturing	Basic	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6	6	6	7	7	8	8	8	9	9	10	10	
326 Plastics and rubber products manufacturing	Basic	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6	6	6	7	7	8	8	8	9	9	10	10	
327 Non-metallic mineral product manufacturing	Basic	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
331 Primary metal manufacturing	Basic	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6	6	6	7	7	8	8	8	9	9	10	10	
332 Fabricated metal product manufacturing	Basic	35	35	36	36	37	37	38	38	39	40	40	41	41	42	42	43	43	44	44	45	45	46	46	47	47	48	
333 Machinery manufacturing	Basic	20	20	20	19	19	19	19	19	18	18	18	18	18	17	17	17	17	17	16	16	16	16	15	15	15	15	
334 Computer and electronic product manufacturing	Basic	20	22	25	27	30	32	34	37	39	42	44	46	49	51	54	56	58	61	63	66	68	70	73	75	78	80	
335 Electrical equipment, appliance and component manufacturing	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
336 Transportation equipment manufacturing	Basic	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
337 Furniture and related product manufacturing	Basic	0	0	0	-1	-1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-3	-3	-3	-4	-4	-4	-4	-4	-5	-5	-5	-5	
339 Miscellaneous manufacturing	Basic	35	37	40	42	45	47	49	52	54	57	59	61	64	66	69	71	73	76	78	81	83	85	88	90	93	95	
41 Wholesale trade	Category	270	280	291	302	312	322	332	342	352	362	372	382	392	402	412	422	432	442	452	462	472	482	492	502	512	522	532
44-45 Retail trade	Category	1,585	1,590	1,636	1,682	1,728	1,775	1,821	1,867	1,913	1,959	2,006	2,041	2,076	2,112	2,147	2,183	2,219	2,255	2,291	2,326	2,362	2,398	2,434	2,469	2,505	2,537	
441 Motor vehicle and parts dealers	Non-Basic	250	250	257	265	272	279	286	294	301	308	315	321	328	332	338	343	349	354	360	365	371	377	382	388	393	399	
442 Furniture and home furnishings stores	Non-Basic	50	50	51	53	54	56	57	59	60	62	63	64	65	66	68	69	70	71	72	73	74	75	76	78	79	80	
443 Electronics and appliance stores	Non-Basic	45	45	46	48	49	50	52	53	54	55	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	
444 Building material and garden equipment and supplies stores	Non-Basic	170	170	175	180	185	190	195	200	205	210	214	218	222	226	230	233	237	241	245	248	252	256	260	264	267	271	
445 Food and beverage stores	Non-Basic	360	365	376	386	397	408	418	429	439	450	460	469	477	485	493	501	508	517	525	534	542	550	558	566	574	582	
446 Health and personal care stores	Non-Basic	110	110	113	116	120	123	126	129	132	136	139	141	144	146	148	150	152	154	156	158	161	163	166	168	171	173	
447 Gasoline stations	Non-Basic	50	50	51	53	54	56	57	59	60	62	63	64	65	66	68	69	70	71	72	73	74	75	76	78	79	80	
448 Clothing and clothing accessories stores	Non-Basic	165	165	170	175	179	184	189	194	199	203	208	212	215	219	223	226	230	234	238	241	245	249	252	256	260	263	
449 Sporting goods, hobby, book and music stores	Non-Basic	55	55	57	58	60	61	63	65	66	68	69	71	72	73	74	75	77	78	79	80	82	83	84	85	87	88	
450 General merchandise stores	Non-Basic	175	175	180	185	190	195	200	205	210	214	218	222	226	230	234	238	241	245	249	252	256	260	264	267	271	275	
451 Miscellaneous store retailers	Non-Basic	100	100	103	106	109	112	115	117	120	123	126	128	131	133	135	137	139	142	144	146	148	151	153	155	157	160	
454 Nonstore retailers	Non-Basic	55	55	57	58	60	61	63	65	66	68	69	71	72	73	74	75	77	78	79	80	82	83	84	85	87	88	
48-49 Transportation and warehousing	Category	310	315	324	333	342	352	361	370	379	388	397	404	411	418	425	432	439	446	453	460	467	474	481	489	496	503	
51 Information and cultural industries	Category	80	80	82	85	87	89	92	94	96	99	101	103	104	106	108	110	112	113	115	117	119	121	122	124	126	128	
511 Publishing industries (except internet)	Basic	15	15	15	16	16	17	17	18	18	19	19	20	20	20	20	21	21	21	22	22	22	23	23	23	24	24	
512 Motion picture and sound recording industries	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
***51 CUSTOM - 513-514+515+516+517+518+519	Basic	65	65	67	69	71	73	74	76	78	80	82	83	85	86	88	89	91	92	94	95	96	98	99	101	102	104	
513 Broadcasting and telecommunications	Non-Basic	0	0	0	0																							

Land Demand Projections

High (90%)

Metro Vancouver Industrial Land Use (Emp/Parcel Acre) Default Land Use (% of Metro Vancouver)		6.3 90%																																	
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041								
11 Agriculture, forestry, fishing and hunting	5.7	16	16	16	16	16	17	17	17	17	17	17	17	17	17	18	18	18	18	18	18	19	19	19	19	19	19	20							
21 Mining, quarrying, and oil and gas extraction	5.7	101	107	115	123	130	138	146	153	161	169	172	176	179	183	186	190	194	197	201	204	208	211	215	219	222	226								
22 Utilities	5.7	7	7	7	7	8	8	8	8	8	9	9	9	9	9	10	10	10	10	10	10	10	10	10	10	11	11	11							
23 Construction	33.3	14	14	15	16	17	18	18	19	20	21	21	22	23	24	25	25	26	27	28	28	29	30	31	31	32	33								
31-33 Manufacturing	5.7	62	64	66	69	72	74	77	79	82	84	87	89	92	95	97	100	102	105	107	110	113	115	117	120	123	125								
41 Wholesale trade	5.7	56	57	59	60	62	64	65	67	69	70	72	73	74	76	77	78	80	81	82	83	84	86	87	88	90	91								
44-45 Retail trade	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
48-49 Transportation and warehousing	5.7	47	47	49	50	51	53	54	55	57	58	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75								
51 Information and cultural industries	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
52 Finance and Insurance	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
53 Real estate and rental and leasing	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
54 Professional, scientific and technical services	21.6	8	8	8	8	8	9	9	9	9	9	10	10	10	10	10	10	10	10	11	11	11	11	12	12	12	12								
55 Management of companies and enterprises	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
56 Administrative and support, waste management and remediation service	10	10	10	11	11	11	12	12	12	12	13	13	13	13	14	14	14	15	15	15	15	15	16	16	16	16	16								
561 Administrative and support services	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
562 Waste management and remediation services	5.7	10	10	11	11	11	11	12	12	12	12	13	13	13	13	14	14	14	15	15	15	15	16	16	16	16	16								
61 Educational services	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
62 Health care and social assistance	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
71 Arts, entertainment and recreation	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
72 Accommodation and food services	21.6	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3								
81 Other services (except public administration)	17	17	17	18	18	19	19	20	20	21	21	22	22	22	23	23	24	24	24	25	25	25	26	26	27	27	27								
811 Repair and maintenance	21.6	10	10	11	11	11	11	12	12	12	13	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16								
812 Personal and laundry services	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
813 Religious, grant-making, civic, and professional and sci	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
814 Private households	5.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
91 Public administration	20.7	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3								
Total		341	353	369	384	399	415	430	446	461	477	488	499	509	519	530	540	551	561	571	581	592	602	613	623	634	644								

Med (80%)

Metro Vancouver Industrial Land Use (Emp/Parcel Acre) Default Land Use (% of Metro Vancouver)		6.3 80%																																	
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042							
11 Agriculture, forestry, fishing and hunting	5.0	18	18	18	18	19	19	19	19	19	19	19	20	20	20	20	20	20	21	21	21	21	21	21	21	21	22	22	22						
21 Mining, quarrying, and oil and gas extraction	5.0	113	121	129	138	147	155	164	172	181	190	197	205	210	214	218	222	226	230	234	238	242	246	250	254	258	262	266	269						
22 Utilities	5.0	8	8	8	8	9	9	9	9	9	10	10	10	10	10	11	11	11	11	11	12	12	12	12	12	12	13	13	13						
23 Construction	29.6	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	34	35	36	37	37	38	39	40						
31-33 Manufacturing	5.0	70	72	75	78	81	84	86	89	92	95	98	101	104	107	110	113	116	119	122	125	128	131	134	137	140	143	146	149						
41 Wholesale trade	5.0	63	64	66	68	70	72	73	75	77	79	81	82	84	85	87	88	89	91	92	94	95	97	98	99	101	102	103	104						
44-45 Retail trade	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
48-49 Transportation and warehousing	5.0	52	53	55	56	58	59	61	62	64	65	67	68	69	71	72	73	74	75	76	78	79	80	81	82	84	85	86	87						
51 Information and cultural industries	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
52 Finance and Insurance	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
53 Real estate and rental and leasing	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
54 Professional, scientific and technical services	19.2	9	9	9	9	9	10	10	10	10	10	11	11	11	11	12	12	12	12	12	13	13	13	13	13	14	14	14	14						
55 Management of companies and enterprises	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
56 Administrative and support, waste management and remediation service	12	12	12	12	13	13	13	14	14	14	15	15	15	15	16	16	16	16	16	16	17	17	17	17	18	18	18	18	18						
561 Administrative and support services	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
562 Waste management and remediation services	5.0	12	12	12	12	13	13	13	14	14	14	15	15	15	15	16	16	16	16	16	17	17	17	17	18	18	18	18	18						
61 Educational services	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
62 Health care and social assistance	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
71 Arts, entertainment and recreation	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
72 Accommodation and food services	19.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3						
81 Other services (except public administration)	19	19	19	20	20	21	22	22	23	23	24	24	25	25	26	26	27	27	28	28	29	29	29	29	29	30	30	31	31						
811 Repair and maintenance	19.2	12	12	12	12	13	13	13	14	14	14	15	15	15	15	16	16	16	16	17	17	17	17	18	18	18	18	18	18						
812 Personal and laundry services	19.2	8	8	8	8	8	9	9	9	9	10	10	10	10	10	11	11	11	11	11	12	12	12	12	12	12	12	12	12						
813 Religious, grant-making, civic, and professional and scientific	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
814 Private households	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
91 Public administration	18.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3						
Total		384	397	414	432	449	467	484	501	519	536	549	561	572	584	596	608	620	631	643	654	666	678	689	701	713	724	734	744						





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