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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

METRO VANCOUVER REGIONAL DISTRICT
INDUSTRIAL LANDS STRATEGY TASK FORCE

REGULAR MEETING

Thursday, September 12, 2019
9:00 a.m.
28th Floor Committee Room, 4730 Kingsway, Burnaby, British Columbia

A G E N D A[1]

1. ADOPTION OF THE AGENDA

1.1 September 12, 2019 Regular Meeting Agenda
That the Industrial Lands Strategy Task Force adopt the agenda for its regular meeting scheduled for September 12, 2019 as circulated.

2. ADOPTION OF THE MINUTES

2.1 June 20, 2019 Regular Meeting Minutes
That the Industrial Lands Strategy Task Force adopt the minutes of its regular meeting held June 20, 2019 as circulated.

3. DELEGATIONS

4. INVITED PRESENTATIONS

4.1 Jay Wollenberg, Wollenberg Munro Consulting Inc.
Subject: Changing Nature of Industry and Industrial Land Demand in Metro Vancouver

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Changing Nature of Industry and Industrial Land Demand in Metro Vancouver
Designated Speaker: Gord Tycho, Senior Planner, Regional Planning
That the Industrial Lands Strategy Task Force receive for information the report titled "Changing Nature of Industry and Industrial Land Demand in Metro Vancouver" dated August 29, 2019.

[1] *Note: Recommendation is shown under each item, where applicable.*

5.2 Emerging Trends in the Region's Industrial Land Supply
Verbal Update
Designated Speakers:
Gord Tycho, Senior Planner, Regional Planning
Russell Mathew, Hemson Consulting Ltd.

5.3 Task Force Workshop on Addressing the Industrial Lands Supply Challenge: Summary
Designated Speaker: Gord Tycho, Senior Planner, Regional Planning
That the Industrial Lands Strategy Task Force receive for information the report titled "Task Force Workshop on Addressing the Industrial Lands Supply Challenge: Summary" dated July 29, 2019.

6. INFORMATION ITEMS

7. OTHER BUSINESS

7.1 Regional Industrial Lands Strategy Workshop Outline

8. BUSINESS ARISING FROM DELEGATIONS

9. RESOLUTION TO CLOSE MEETING
Note: The Committee must state by resolution the basis under section 90 of the Community Charter on which the meeting is being closed. If a member wishes to add an item, the basis must be included below.

10. ADJOURNMENT/CONCLUSION
That the Industrial Lands Strategy Task Force adjourn/conclude its regular meeting of September 12, 2019.

Membership:

Harvie, George (C) - Delta
West, Brad (VC) - Port Coquitlam
Back, Jordan - North Vancouver District
Baird, Ken - Tsawwassen First Nation
Brodie, Malcolm - Richmond
Buchanan, Linda - North Vancouver City
Kirby-Yung, Sarah – Vancouver
Locke, Brenda – Surrey
Towner, Teri - Coquitlam

Non-Voting Members:
Desmond, Kevin - TransLink
Bronstein, Ron - Ministry of Jobs, Trade and Technology
Grout, Kim - Agriculture Land Commission
Litwin, Val - BC Chamber of Commerce
McMullin, Anne - Urban Development Institute
Silber, Arnold - Value Property Group
Silvester, Robin - Port of Vancouver
Yuen, Todd – Industrial at Beedie Development

METRO VANCOUVER REGIONAL DISTRICT
INDUSTRIAL LANDS STRATEGY TASK FORCE

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Industrial Lands Strategy Task Force held at 9:21 a.m. on Thursday, June 20, 2019 in the 28th Floor Committee Room, 4730 Kingsway, Burnaby, British Columbia.

MEMBERS PRESENT:
Chair, Mayor George Harvie, Delta
Vice Chair, Mayor Brad West, Port Coquitlam
Councillor Sarah Kirby-Yung, Vancouver
Councillor Brenda Locke, Surrey
Councillor Teri Towner, Coquitlam

MEMBERS ABSENT:
Councillor Jordan Back, North Vancouver District
Chief Ken Baird, Tsawwassen
Mayor Malcolm Brodie, Richmond
Mayor Linda Buchanan, North Vancouver City

NON-VOTING MEMBERS PRESENT:
Ron Bronstein, Ministry of Jobs, Trade and Technology
Jeff Fisher, Urban Development Institute (Alternate)
Val Litwin, BC Chamber of Commerce
Sarah Ross, TransLink (Alternate)
Robin Silvester, Port of Vancouver
Todd Yuen, Beedie Group

NON-VOTING MEMBERS ABSENT:
Kim Grout, Agricultural Land Commission
Arnold Silber, Value Property Group

STAFF PRESENT:
Heather McNell, Director, Regional Planning and Electoral Area Services, Planning and Environment
Janis Knaupp, Legislative Services Coordinator, Board and Information Services

1. ADOPTION OF THE AGENDA

1.1 June 20, 2019 Regular Meeting Agenda

It was MOVED and SECONDED
That the Industrial Lands Strategy Task Force adopt the agenda for its regular meeting scheduled for June 20, 2019 as circulated.

CARRIED

2. ADOPTION OF THE MINUTES

2.1 May 2, 2019 Regular Meeting Minutes

It was MOVED and SECONDED
That the Industrial Lands Strategy Task Force adopt the minutes of its regular meeting held May 2, 2019 as circulated.

CARRIED

3. DELEGATIONS

3.1 Tegan Smith, Chair, NAIOP Intensive Use of Industrial Land Committee

Tegan Smith, Chair, National Association for Industrial and Office Parks (NAIOP) Intensive Use of Industrial Land Committee spoke to the Committee about the purpose of NAIOP's Intensive Use of Industrial Land Committee and role in representing industrial land owners.

The delegation also included comments from Beth Berry, Beedie, Ben Teddei, Conwest, Alan Boniface, Dialog Architecture, and Ryan The, Westgroup Properties. The delegation highlighted two multi-level industrial models recognizing the shortage of available industrial land in Metro Vancouver and commented on types of industrial intensification, users of industrial land, impact of small and medium sized business/strata, location, feasibility and constraints, and interest in working with local governments to improve access to industrial land.

Regarding the models presented, members commented on high lease rates and user conflicts between industrial and residential in mixed-use developments leading to the loss of industrial activities and land over the long-term.

In response to question, the delegation commented on:

- successful residential-industrial (light and medium) projects in the US, Asia and Europe
- demand to accommodate a variety of businesses on industrial land, including indoor recreation facilities, and the need for local governments to examine a broad range of businesses when designating land uses

Presentation material titled "Study on Industrial Intensification Feasibility in Metro Vancouver" is retained with the June 20, 2019 Industrial Land Strategy Task Force agenda.

Request of Staff
Staff was requested to email the Industrial Lands Strategy Task Force a link to the June 20, 2019 presentation titled "Study on Industrial Intensification Feasibility in Metro Vancouver".

4. INVITED PRESENTATIONS
No items presented.

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Manager's Report
Report dated June 10, 2019 from Heather McNell, Director, Regional Planning and Electoral Area Services, Planning and Environment, updating the Industrial Lands Strategy Task Force on industrial tax allocation by member municipality and commercial truck parking.

It was MOVED and SECONDED
That the Industrial Lands Strategy Task Force receive for information the report dated June 10, 2019, titled "Manager's Report".

CARRIED

6. INFORMATION ITEMS
No items presented.

7. OTHER BUSINESS
No items presented.

8. BUSINESS ARISING FROM DELEGATIONS
No items presented.

9. RESOLUTION TO CLOSE MEETING
No items presented.

10. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED
That the Industrial Lands Strategy Task Force conclude its regular meeting of June 20, 2019.

CARRIED
(Time: 9:55 a.m.)

_____ _____

Janis Knaupp,
Legislative Services Coordinator

George Harvie, Chair

30102725 FINAL

To: Industrial Lands Strategy Task Force

From: Gord Tycho, Senior Planner, Regional Planning

Date: August 29, 2019 Meeting Date: September 12, 2019

Subject: **Changing Nature of Industry and Industrial Land Demand in Metro Vancouver**

RECOMMENDATION

That the Industrial Lands Strategy Task Force receive for information the report titled "Changing Nature of Industry and Industrial Land Demand in Metro Vancouver" dated August 29, 2019.

PURPOSE

To provide the Industrial Lands Strategy Task Force (Task Force) with the consultant report on the changing nature of industry and industrial land demand in Metro Vancouver.

BACKGROUND

As part of developing the Regional Industrial Land Strategy, a series of white papers, reports, and other deliverables are under development. In 2018, the Task Force expressed interest in exploring the changing nature of industry, and the role of technology impacts on industrial land demand in the region. The consultant study is now ready for Task Force consideration.

METRO VANCOUVER INDUSTRIAL LANDS: CHANGING NATURE OF INDUSTRY AND LAND DEMAND

As input into the development of the Regional Industrial Lands Strategy, Metro Vancouver retained the services of Wollenberg Munro Consulting to investigate the changing nature of technology and the implications for industry, and industrial land demand, in the region. Specifically, the consultant was asked to:

- explore conditions and trends in industrial employment and land supply;
- explore factors that could affect the supply and demand for industrial land in Metro Vancouver;
- generate possible future scenarios for consideration; and
- develop policy implications for consideration by the Task Force.

Industrial land accommodates a large share of the region's economic base, contributes to the diversity of the economy, and contributes to social and income diversity by offering a wide array of job opportunities for skilled workers. In terms of trends, resource sector and manufacturing jobs are declining, transportation/warehouse/distribution jobs are increasing, knowledge economy and tourism is growing, and retail and service sector is growing. Despite these shifts, total industrial type employment is still increasing, albeit more slowly than total employment.

In 2011, approximately 47% of jobs were classified as 'community oriented' (retail, teaching, health, finance, etc.), 53% as 'economic drivers' (related to goods and services, etc.), and 26% as 'industrial' or dependent on industrial land (including transportation/warehousing/logistics, manufacturing, wholesale, construction, and resources).

Implications of Current Trends

The trajectory for vacant industrial land take-up has been a little over 200 acres per year. In addition to absorption, additional industrial land (developed and undeveloped) is 'lost' due to transition to other uses. Available forecasts for the take-up of developed land are approximately 250 acres per year, giving a range of 200 to 250 as a 'present trends continued' estimate.

According to the 2015 Regional Industrial Lands Inventory, there are approximately 5,500 acres of 'vacant' industrial land. Vacant in the inventory is actually vacant of industrial uses; some of this land is currently utilized for other purposes including residential and agricultural. There is a severe shortage of available industrial land, and demand is strong. The consultant found that the identified 'vacant' inventory will be taken up in 22 to 28 years, *assuming 100% of the undeveloped inventory is available for industrial development in this time frame.*

Based on these indicators, the inventory of vacant industrial land is not sufficient to last through the planning horizon of the Regional Industrial Lands Strategy, which is the year 2050. The Strategy must confront the possibility that under present trends continued, Metro Vancouver cannot keep accommodating industrial growth except through densification / intensification, which works for some uses but not others.

Factors that could alter the outlook for Industrial Land

Factors that could affect the supply of land available for industrial use include:

- occupancy of industrial land by industrial / commercial, office, residential or mixed use developments;
- densification / intensification;
- rising sea levels / flooding;
- availability of land in the Fraser Valley; and
- adding new industrial land to the inventory.

All factors, other than the last two, have a neutral or negative influence on land available for industrial development.

Factors that could affect the demand for industrial land include:

- global changes;
- changing structure of the regional economy;
- technology / automation;
- consumer behavior;
- population growth; and
- land values.

All factors, other than land values are anticipated to be neutral or positive influences on the rate of land take-up by industrial users.

Based on the consultant review, it is possible that industrial land demand will accelerate, and it is unlikely that in the foreseeable future there will be a decline in the pace of industrial floor space growth or reduced need for industrial land to accommodate industrial development. The only factors that might put significant downward pressure on industrial land requirements are high industrial land values that drive away industrial prospects and high housing prices that limit the supply of skilled labour.

Possible Futures
The study contains three scenarios to reflect the annual absorption of industrial lands:

- slower absorption (200 acres/yr);
- recent trends (225 acres/yr); and
- faster absorption (275 acres/yr).

All three scenarios suggest that it is highly likely that during the decade 2035 to 2045, Metro Vancouver will have exhausted its inventory of vacant and undeveloped industrial land.

Recommended Policy Directions
Assuming Metro Vancouver (and the Fraser Valley) want to accommodate a wide range of industrial uses, the consultant report recommends that the Regional Industrial Land Strategy consider the following policy directions:

1. *Protection*: Greater measures to protect the existing inventory of industrial land, including revising municipal zoning bylaws to reduce allowable non-industrial uses of industrial land in locations where existing and new industrial development are still functional and economically viable. Many retail and office uses have options for where they locate (albeit at a higher land or rent cost), but large industrial uses do not, so zoning should be revisited to reduce or eliminate some kinds of retail, service commercial, and office use in solidly industrial areas.

2. *Intensification/densification*: Explore possible ways to use industrial land more intensively, without compromising the ability to accommodate larger manufacturing and logistics uses. The kind of densification that involves replacing industrial users with higher density office type environments increases total employment capacity and can provide ground level space for small scale industrial users, but it does not help accommodate very large manufacturing or logistics uses. For these users, intensification means using land more efficiently (e.g. reducing/consolidating storage and parking, higher site coverage). It is worth examining some of the region's large, uniform, industrial areas to explore the potential for intensification without transitioning to different land use.

3. *Increase Inventory*: Explore options for increasing the inventory of vacant industrial land, particularly for large-site users. This will clearly be a challenging policy direction as there are no un-controversial ways to shift land from other uses to industrial. However, if the region wants to maintain the full dimensions of its economic and employment diversity, it is necessary to confront the challenge of being able to accommodate large manufacturing and logistics users.

REGIONAL PLANNING ADVISORY COMMITTEE

The consultant presented the study and findings to the Regional Planning Advisory Committee on July 19, 2019. Discussion ensued about the general trends and potential for industry to become cleaner and more viable in mixed use areas. The consultant clarified two points in this regard. First, although new forms of industry continue to evolve and some industrial sectors are amenable to locating in mixed use areas, others are less so and will continue to require larger footprints and buffers. Second, the need will continue to locate these more traditional forms of industry in the area that they serve. One critical element is that Metro Vancouver is land-constrained to a greater extent than other cities due to geography and an international border. Consequently, the problem is magnified in Metro Vancouver as traditional industries compete for industrial lands in closer proximity to the region's Urban Core.

Discussion continued about the intensification/densification potential for industrial lands in the region. The consultant suggested that this may be a solution for some industrial sectors, but not for all. The life cycle and economics of building replacement may delay densification efforts. Finally, there was an inquiry regarding a suggested approach to addressing pressures to replace employment lands with non-employment uses near rapid transit stations. The consultant recommendation was to provide clear edges, with sound, well defended policy if it is considered at all.

NEXT STEPS

Regional Planning staff will be reviewing and incorporating the findings from this report, and from previous white papers and surveys, into the development of the Regional Industrial Lands Strategy.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The Changing Nature of Industry and Industrial Land Demand in Metro Vancouver Study was completed at a cost of $20,000, which was part of the 2019 Board-approved Regional Planning budget.

SUMMARY / CONCLUSION

Wollenberg Munro Consulting completed a study on the changing nature of technology and the implications for industry, and industrial land demand, in the region. Conditions and trends in industrial employment and land supply, factors that could affect the supply and demand for industrial land in Metro Vancouver, and future scenarios were explored.

The study concluded that the undeveloped industrial inventory will be taken up in 22 to 28 years. Examined factors such as technology were found to not alter this projection in any significant manner. Based on these indicators, the inventory of vacant industrial land does not appear to be sufficient to last through the planning horizon of the Regional Industrial Lands Strategy. The Strategy must confront the possibility that under present trends continued, Metro Vancouver cannot keep accommodating industrial growth except through densification, which works for some uses, but not others.

The consultant recommends that Regional Industrial Land Strategy consider the recommendations:

- *Protection:* Greater measures to protect the existing inventory of industrial land, including revising municipal zoning bylaws to reduce the allowable non-industrial uses of industrial land in locations where existing and new industrial development are still functional and economically viable;
- *Intensification/densification*: Explore possible ways to use industrial land more intensively, without compromising the ability to accommodate larger manufacturing and logistics uses; and
- *Increase Inventory*: Explore options for increasing the inventory of vacant industrial land, particularly for large-site users.

Attachment
Report titled, "The Changing Nature of Industry and Industrial Land Demand in Metro Vancouver" dated June, 2019 *(Orbit doc# 32256844)*

30850509

The Changing Nature of Industry and Industrial Land Demand in Metro Vancouver: Discussion Paper

June 2019

Prepared for:
Metro Vancouver

Wollenberg Munro Consulting Inc.

Table of Contents

Summary

Metro Vancouver is working on a Regional Industrial Land Strategy. As input to this Strategy, Metro Vancouver commissioned WMCI to produce a discussion paper on the changing nature of industry and the implications for the supply and absorption of industrial land in the region.

Industry Sectors in the Regional Economy

Metro Vancouver has a strong, diverse regional economy with employment growing at over 2% per year. Jobs in the sectors that tend to occupy industrial land (manufacturing, warehouse/distribution, transportation, construction) have been growing more slowly, at under 1% per year, but still account for nearly one quarter of all employment. These sectors are projected to keep growing and will continue to need industrial land if the region is to sustain its role as a major gateway and retain its diversity of jobs.

Industrial Land Inventory and Absorption

The total inventory of industrial land in Metro Vancouver is about 28,000 acres. Over 80% of this is already developed for industrial use. The remaining 20% includes vacant land, land used for resource extraction, land earmarked for Port and YVR use, and land occupied by non-industrial use. Not all of this land will be available for new industrial development. Only about 3,200 acres are currently vacant and just under half of this inventory is in parcels of 10 acres or more.

Every year about 250 acres of occupied industrial land is converted to other uses (usually commercial or residential) and just over 200 acres of vacant land are occupied by new industrial development.

Factors Affecting the Supply of Industrial Land

Based on existing community plans and market trends, there will continue to be some redevelopment of industrial land to higher intensity uses. While some space in redevelopment projects will accommodate industrial-type uses, these will tend to be smaller scale operations that fit into an urban context.

The average density of new industrial development is increasing. More employment can be accommodated, but densification is not reducing the rate of take-up of vacant industrial land.

In the future, flooding and sea level rise may reduce the amount of usable industrial land in the region.

Continuation of present trends will have these results:

- Gradual decrease in the total supply of industrial land.
- Full absorption of the available inventory of vacant, developable industrial land before 2050.
- Some loss of industrial land due to flooding and sea level rise.
- Rising industrial land prices.
- Diminishing ability to accommodate new large-scale industrial uses, which could reduce the diversity of the regional economy.

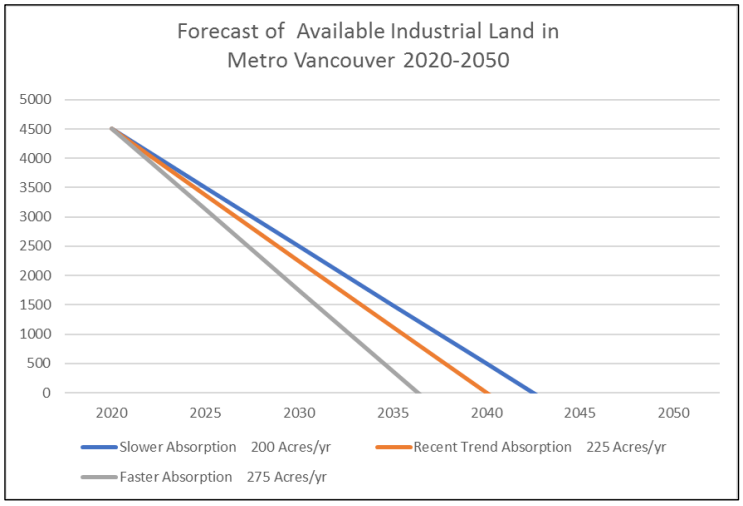
Factors Affecting the Rate of Vacant Land Take-Up

Global changes, regional population growth, transition in the structure of the regional economy, technological advances, and changes in consumer behavior are more likely to increase industrial land demand rather than decrease it. Densification will increase employment capacity but is not likely to reduce the take-up of vacant

land. The only factor likely to put significant downward pressure on industrial land absorption is rising land price, due to scarcity, but this could mean a reduction in employment growth and diversity as some prospective industrial users are deflected to other urban regions.

Scenarios

The graph opposite shows three scenarios for the future inventory of developable industrial land. All scenarios assume the working inventory of undeveloped industrial land is 4,500 acres (i.e. less than the "on paper" inventory of 5,500 acres, because some land is used for other purposes).



The scenarios indicate that the inventory of developable industrial land is likely to be exhausted during 2035 to 2045. Because of this, the next fifteen years will likely see rising industrial land price and reduced ability to accommodate large-site manufacturing, warehouse, and transportation uses.

Policy Implications

Assuming the region wants to continue to accommodate a wide range of industrial uses, there are three policy directions that should be considered:

- Adopt measures to protect the existing inventory of industrial land from conversion to non-industrial use.
- Encourage increased intensification of industrial land use, while maintaining the ability to develop large scale industrial uses that do not fit comfortably in mixed use, high density development.
- Explore options to increase the inventory of vacant, developable industrial land.

An urban region with a constrained land supply cannot accommodate new industrial development on vacant land indefinitely. Given the need to eventually confront a near-zero inventory of greenfield industrial land, an obvious policy question is *"how far into the future is it appropriate or necessary to accommodate new absorption?"*

A vacant land supply horizon of only fifteen years is uncomfortably close, considering that industrial use still accounts for a large share of regional employment growth and considering the complexity of finding and planning new industrial land. On the other hand, there is no point in trying to gauge the need for industrial land in say fifty or more years, as this is long enough for major economic and other changes to occur. A planning horizon of say thirty years is perhaps a reasonable balance, so the Regional Industrial Land Strategy could explore ways to accommodate projected Lower Mainland industrial land absorption to the year 2050. This means aiming to identify about 2,000 to 4,000 acres of additional land for industrial use.

1.0 Introduction

Geography has given Metro Vancouver a very attractive physical setting but has also imposed a constraint on the supply of developable urban land. The mountains, ocean, and US border create hard limits on the urban region, while Provincial and regional land use designations, such as the Agricultural Land Reserve and the Urban Containment Boundary, further constrain the amount of land available for urban use.

The constrained land supply has resulted in strong competition among the uses for urban land. Higher value residential and commercial uses, spurred by strong population growth, have tended to squeeze the land area available for industrial use. Yet, industrial land accommodates key components of the regional economic base, including manufacturing, goods movement, warehouse/distribution, transportation, and construction. Metro Vancouver estimates that over a quarter of all jobs in the region are located on industrial land, so the ability to accommodate industrial activity and industrial jobs is clearly important to the size, strength, and diversity of the regional economy.

Because of the importance of industrial jobs and the limits on regional land supply, Metro Vancouver is working on a Regional Industrial Lands Strategy to establish a vision for the future of industrial land to the year 2050.

As input to this Regional Industrial Lands Strategy, Metro Vancouver is commissioning some background research and analysis to inform the process. As part of this package of resources, Metro Vancouver asked Wollenberg Munro Consulting Inc (WMCI) to write this discussion paper on the changing nature of industry and the implications for industrial land demand and supply in Metro Vancouver.

2.0 Scope

This discussion paper has these main components:

1. A review of Metro Vancouver's current industrial land inventory and trends in the nature of industrial land use, industrial employment, and the rate of take-up of undeveloped industrial lands.
2. A review of factors that could materially shift the amount or nature of industrial land requirements over the next several decades. These factors include shifts in the regional economy, technology, international trade, climate change, the form of industrial floor space development, and land value.
3. Three scenarios for the future of industrial land supply and take-up during 2030 to 2050.
4. Implications for the Regional Industrial Lands Strategy.

3.0 Defining "Industry"

"Industry" is a traditional broad term in land use planning, sometimes divided into heavy and light based on the size of the use and the degree of noise, odours, truck traffic, or other negative externalities imposed on adjacent uses. In the past, industry might fairly have been described as employment not accommodated in retail or office space and tending to require isolation from other urban uses, but this distinction has become blurred or several reasons:

- some business sectors such as film/television frequently occupy some space that is industrial in character (such as large film studios) and space that is more office-like (management, pre- and post-production, editing, design, special effects, and animation). Sometimes these are all in the same location, but often not.
- Some uses that are industrial in nature, such as small-scale specialized manufacturers, fit comfortably in higher density, mixed use urban environments and do not require (in fact prefer to not have) the kind of spatial segregation that larger industrial uses need.
- Some uses that occupy industrial type buildings are actually retail or service uses. Large home improvement stores or auto dealerships, for example, occupy industrial character buildings and often prefer industrial settings because they need large land area and large floor plates not usually available in more dense locations.
- Technology and specialization have resulted in the creation of small scale manufacturing activities that fit comfortably in an urban context because they do not have "old industry" externalities such as high truck volumes or noise.

For the purpose of this discussion paper, we use these terms:

- **"Industry" or "industrial"** refers to uses that involve manufacturing, warehouse/distribution, construction, transportation, utilities, and similar uses that generally require ground level space (for loading and storage), generally require relatively large land parcels and floor areas not typically found in urban residential or shopping districts, and may prefer spatial separation from residential uses because of heavy traffic, noise, light, all-hours operation, or other impacts.
- **"small scale industrial"** means specialized manufacturing and processing (e.g. commercial bakers, coffee roasters, craft brewery, musical instrument makers, specialized clothing manufacturers) that are industrial in nature but are compatible with other urban uses.
- **"Industrial/commercial"** means uses that are primarily retail or service uses but that are at a scale or have a character that tends to make them prefer the same kinds of sites and locations as industrial uses either because of size, ability to pay for land and space, or some externality. Examples include large home improvement stores, large auto dealerships, very large supermarkets, warehouse style retailers, and some kinds of auto repair (e.g. auto body and painting).

This discussion paper is mainly about the outlook for the uses considered industrial based on the above categories. The other uses are considered to the extent that some shifts from large industry to smaller scale operations and the growth of industrial/commercial uses have an impact on demand for industrial-type land.

4.0 Conditions and Trends in Metro Vancouver Industrial Employment, Land Supply, and Land Demand

4.1 Structure of the Regional Economy

Typical descriptions of the regional economy use categories of floor space (such as industry, retail, and service) or categories of employment (such as managerial, research, clerical) to divide the economy into segments. These categories are useful because this is the way that most available data on employment is structured.

However, these categories are not very good at dividing the economy into sectors or business clusters based on the factors that drive demand. Tourism, for example, is a sector that is vital to the Metro Vancouver economy but has employment scattered across retail (specialty stores and souvenir shops), service (hotels and restaurants), transportation (tour bus operators), and professional services (conference organizers). So, a different way to describe the regional economy is to divide it into business clusters. This approach requires cobbling together information from a variety of sources, so the result is only an approximation, but it provides a useful description of the structure of the regional economy.

Exhibit 1 shows an estimate we produced in 2011 that breaks the regional economy into its major clusters. Attachment 1 provides notes on how these estimates were derived.

Exhibit 1: Estimate of Metro Vancouver Employment by Business Cluster (2011)

Business Groups (those with greatest dependency on industrial land are highlighted in grey)	**Metro Vancouver[b]**	
	Number of Jobs in 2011	**% of Total Metro Jobs**
Community-Oriented	550,000	47%
Transportation, Warehousing & Logistics	65,000	6%
Manufacturing	65,000	6%
Wholesale	60,000	5%
Tourism	75,000	6%
Technology	65,000	6%
Commercial Services	85,000	7%
Higher Education & Hospital	45,000	4%
Construction	80,000	7%
Resource	20,000	2%
FIRE Specialized	40,000	3%
Film and Television	15,000	1%
Government Headquarters	15,000	1%
Total Number of Jobs	1,180,000	100%

Estimated by Coriolis Consulting Corp. using a variety of sources (e.g. 2011 National Household Survey from Statistics Canada, data from BC Stats and regional hospitals and post-secondary institution websites, industry association reports, and interviews with industry representatives). The Metro Vancouver total is all jobs in Metro (including jobs at a fixed location and jobs with no fixed workplace address).

While these are approximations, they support some key observations about the regional economy:

- About 47% of all jobs can be classified as community-oriented, primarily associated with in meeting the day to day needs of the people who live in the region. This includes almost all retail jobs, personal services, K to 12 teachers, and portions of the higher education, health, finance, and other services sectors. These jobs exist mainly because the metropolitan area's economic drivers support population and employment growth that in turn creates the need for these community-serving jobs.
- The other 53% of jobs are in clusters that could be characterized as economic drivers. These jobs are in sectors that involve exporting goods and services, importing goods, and drawing revenues from outside the region. These jobs are distributed over several sectors that each have 1% to 7% of total employment, reflecting the diversity of the Metro Vancouver, which is not dominated by one or two major sectors.
- About 26% of all jobs (or about 50% of the jobs that are in the economic driver clusters) could be considered industrial and dependent on industrial land, including transportation/warehousing/logistics, manufacturing, wholesale, construction, and resources. Some other clusters are partly dependent on industrial land, such as studio space for the film and television sector and lab space for some technology firms.
- Industrial land accommodates many of the skilled trades and blue collar jobs that support middle income households.

Industrial land accommodates a large share of the region's economic base, contributes to the diversity of the economy, and contributes to social and income diversity by offering a wide array of job opportunities for skilled workers.

4.2 Industrial Employment Trends

Over the long term, the composition of employment in the region has been shifting in significant ways. Broadly speaking:

1. The total number of resource sector jobs has declined. There are various causes including reduction in the fishing fleet based here, increased mechanization in agricultural production, and almost complete elimination of forestry harvesting in the region.
2. The total number of manufacturing jobs has declined, largely because of the termination or relocation of operations such as forest products manufacturing, industrial scale breweries, ship-building, and other traditional, large, heavy manufacturers that ceased operations or relocated.
3. Transportation, warehouse, and distribution employment has increased, as Metro Vancouver's role as an import/export gateway has increased and the in-region demand for goods has increased because of population growth.
4. The knowledge economy (technology, film/television/digital media, research) is growing.
5. Tourism is growing.
6. The retail and service sectors are growing, in part due to increasing population and in part due to increased per capita spending on goods and personal services.

Despite these shifts, total industrial-type employment is still increasing, albeit more slowly than total employment.

Exhibit 2 shows the total number of jobs in industrial-type clusters as of 1996 and 2016 in Metro Vancouver.

Exhibit 2: Total Number of Jobs in Industrial-Type Clusters in Metro Vancouver (1996, 2016)

	# of Jobs 1996	# of Jobs 2016	Average Annual Job Growth 1996 to 2016	Average Annual Growth Rate 1996 to 2016
Jobs that tend to generate industrial floorspace	214,378	235,535	1,058	0.5%
All jobs	824,875	1,276,900	22,601	2.2%

Source: Statistics Canada census data. Note that the categories of data vary between the 1996 and 2016 data. The following assumptions were made to categorize jobs as those that tend to generate industrial floorspace:

1996 data

- 40% of “Primary” jobs
- 100% of “Communications” jobs
- 10% of "Construction" jobs
- 100% of "Manufacturing" jobs
- 30% of "Wholesale and Retail Trade" jobs
- 100% of "Transportation and Storage" jobs

2016 data

- 60% of "Agriculture, Forestry, Fishing, Hunting" jobs
- 100% of "Utilities" jobs
- 10% of "Construction" jobs
- 100% of "Manufacturing" jobs
- 100% of "Wholesale Trade" jobs
- 100% of "Transportation and Warehousing" jobs
- 10% of "Admin and Support, Waste Management, Remediation" jobs

The growth rate in industrial jobs averaged about 0.5% per year over the 20-year period, compared with 2.2% per year for total employment. The share of these jobs declined from 26% to 19% of total employment, but this is still a large number of jobs.

4.3 Trends in Industrial Activity

Statistics Canada collects annual data to measure manufacturing activity at the National and Provincial levels. In November 2016, it also published a special longitudinal analysis of manufacturing sales and employment during 2007 to 2012 for Canada’s largest Census Metropolitan Areas (CMAs) including Vancouver[1]. This analysis, which includes the period before, during, and after the global financial crisis showed that while total manufacturing sales in BC decreased from $43.1 billion in 2007 to $40.7 billion in 2012, Vancouver CMA’s share of the Provincial total increased from 49.8% in 2007 to 51.5% in 2012. Exhibit 3 from the study shows that Vancouver CMA accounts for over half of BC’s manufacturing sales in the categories of food, chemical, fabricated metal, machinery, electrical/component, and transportation manufacturing.

[1] Local Manufacturing Data: A longitudinal analysis of manufacturing sales and employment for Canada’s largest CMAs; November 14, 2016; Statistics Canada; https:www150.statscan.gc.ca/n1/pub/11-621-m2016100-eng.htm

Exhibit 3: Vancouver CMA's % share of BC Manufacturing Sales (2012)

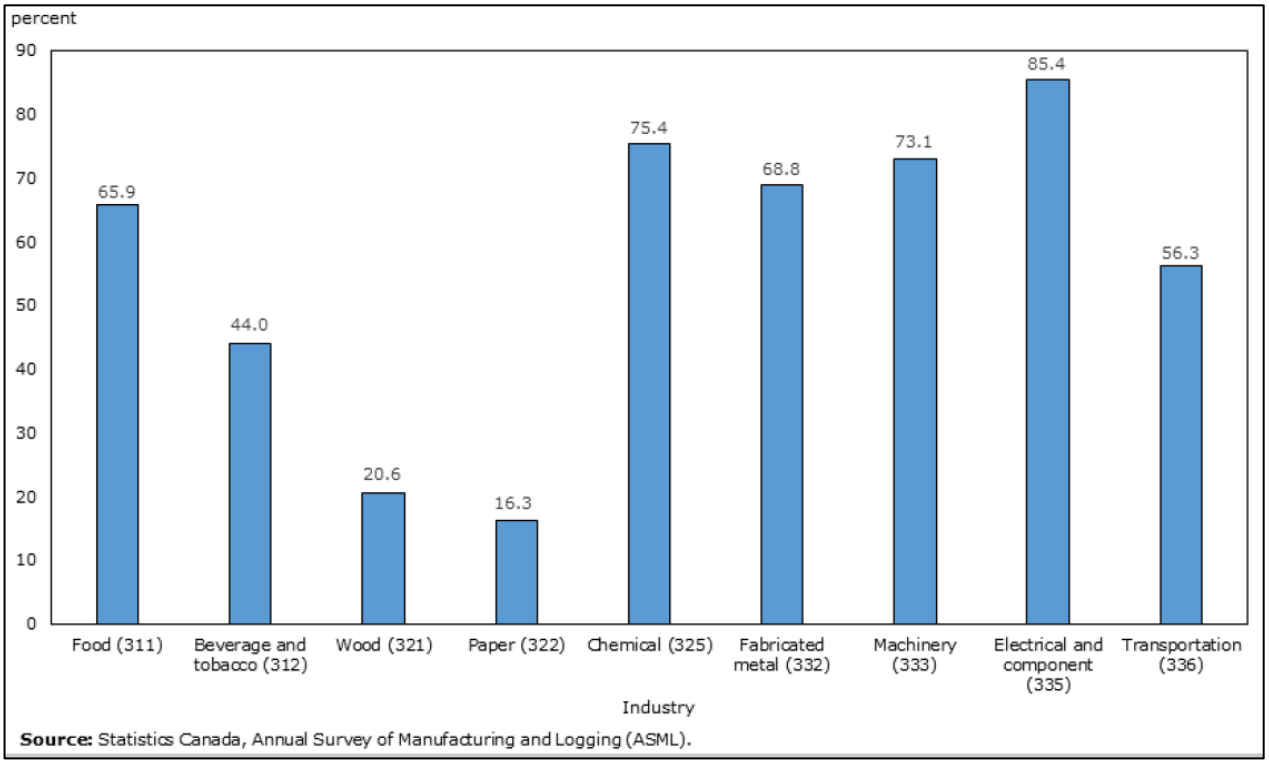


Exhibit 4 shows that Vancouver CMA manufacturing sales increased during 2007 to 2012 in the categories of food, chemical, and transportation manufacturing. Exhibit 5 shows that Vancouver CMA's share of manufacturing employment in BC was higher in 2012 than 2007 in the food, chemical and transportation manufacturing categories.

Exhibit 4: Vancouver CMA Manufacturing Sales by Industry (2007-2012)

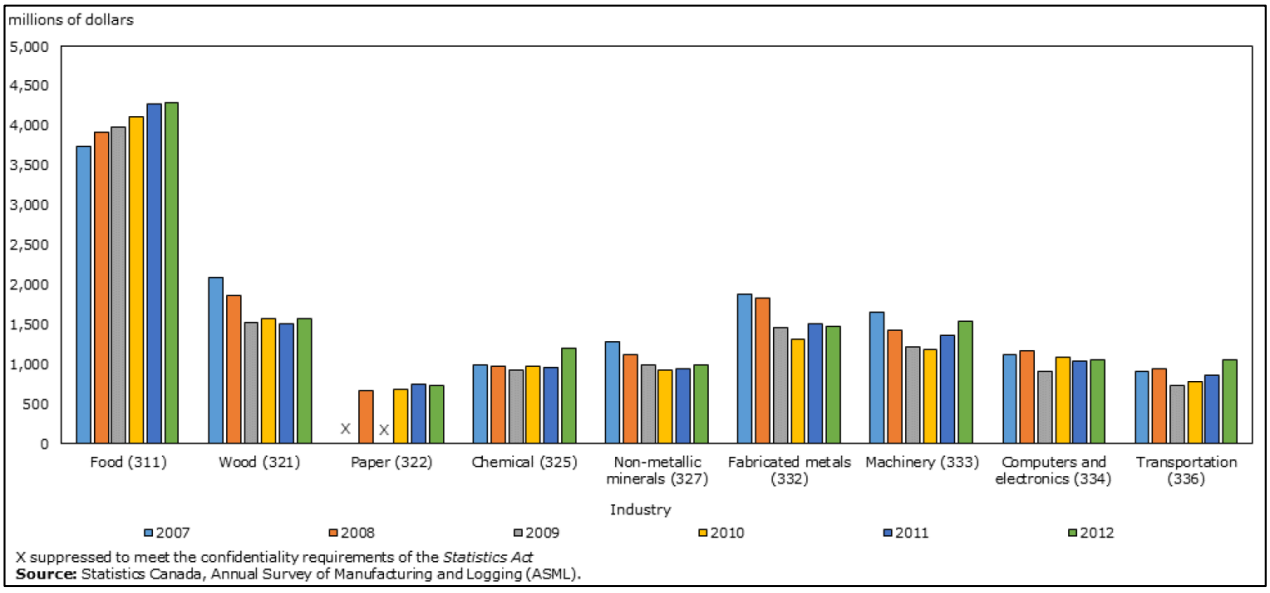
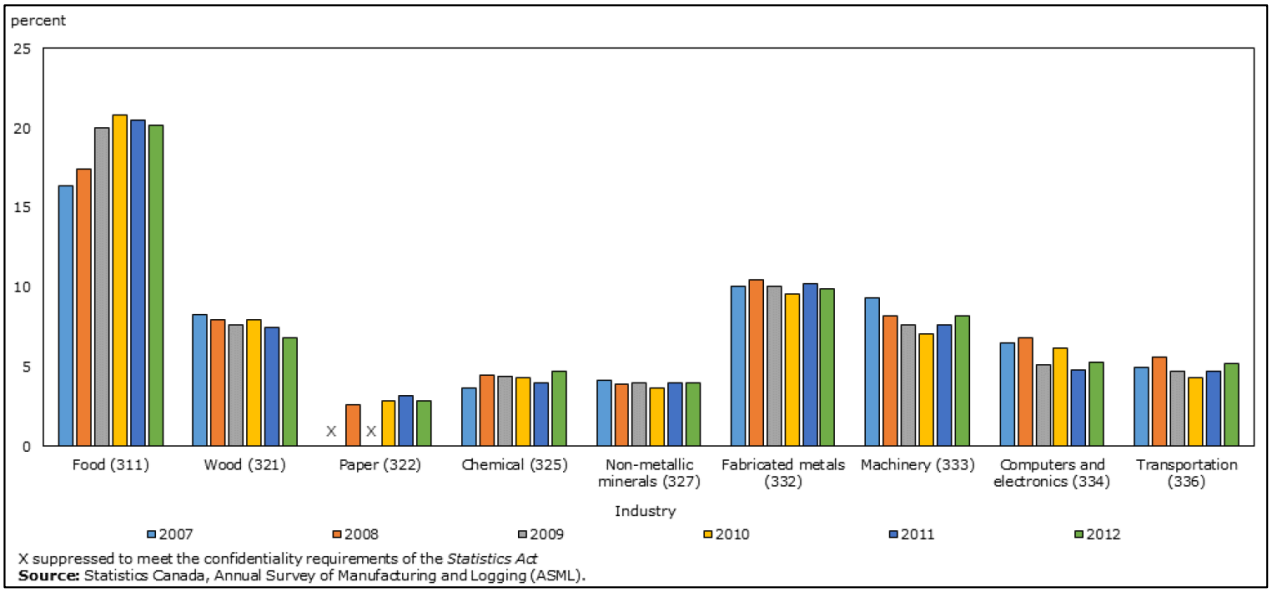


Exhibit 5: Vancouver CMA % Share of BC Manufacturing Employment (2007-2012)



The same data is not available at the CMA level for years after 2012, but Exhibit 6 shows that manufacturing industries in BC have seen average annual growth in sales of about 5% per year during 2014 to 2017. Based on 2007 to 2012 data showing Vancouver CMA accounted for about half of manufacturing sales in BC, it would be reasonable to assume that the Vancouver CMA has experienced growth in manufacturing activity and sales during 2014 to 2017.

Exhibit 6: BC Manufacturing Activity (2014-2017)

Principal statistics for Manufacturing Industries (Categories 31-33)	Dollars per Year (000s CAD)								Annual % Change 2014-17
	2014		2015		2016		2017		
Total revenue	47,628,479	B	48,308,984	A	51,482,045	A	54,673,298	B	5%
Revenue from goods manufactured	44,816,960	C	45,279,067	B	48,044,612	B	51,022,066	B	4%
Total expenses	44,339,301	A	44,663,248	A	47,134,389	A	49,803,678	B	4%
Total salaries and wages, direct and indirect labour	7,561,632	C	7,861,966	B	8,305,175	B	8,663,696	B	5%
Cost of materials and supplies	25,815,265	C	25,630,055	E	27,228,352	E	28,775,432	E	4%

Source: Statistics Canada. Table 16-10-0117-01; https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1610011701

Notes:

Data quality: A=excellent, B =very good, C=good, E=use with caution

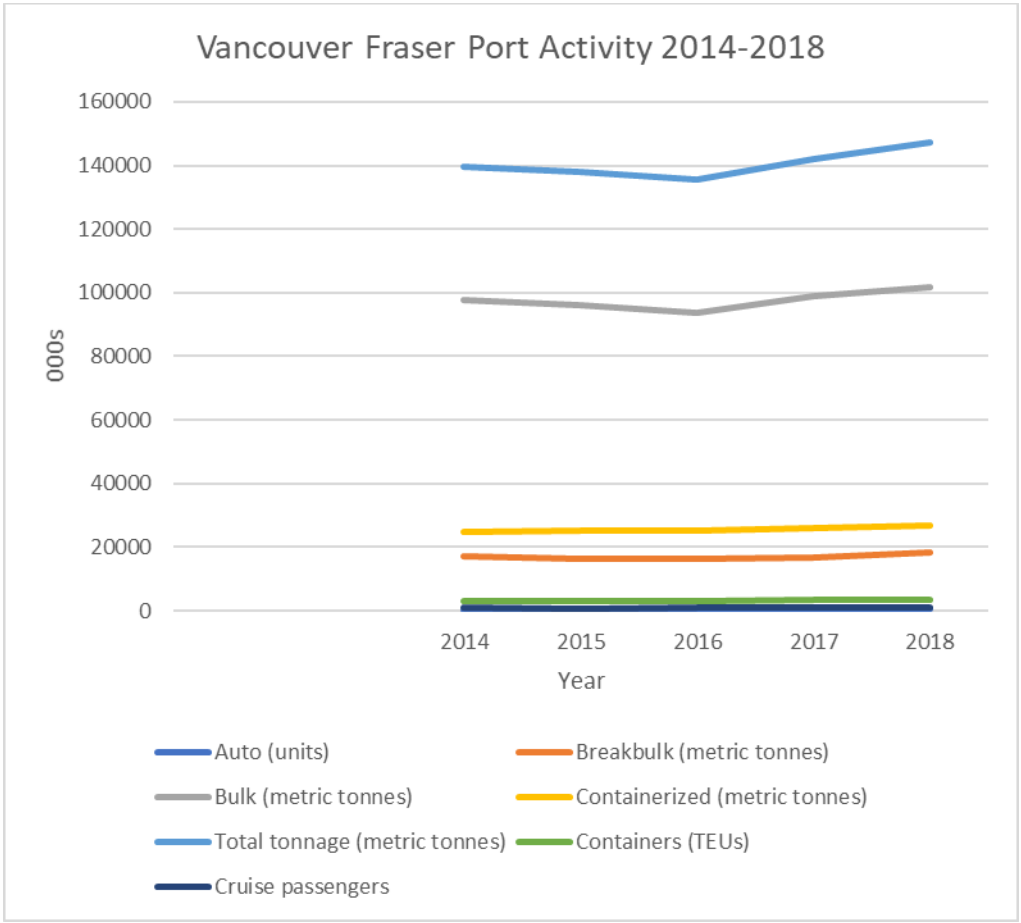
Maunfacturing 31-33 includes: Food Manufacturing; Beverage and Tobacco Product Manufacturing; Textile Mills; Textile Product Mills; Clothing Manufacturing; Leather and Allied Product Manufacturing; Wood Product Manufacturing; Paper Manufacturing; Printing and related Support Activities; Petroleum and Coal Product Manufacturing, Chemical Manufacturing, Plastics and Rubber Products Manufacturing, Non-Metallic Mineral Product Manufacturing; Primary Metal Manufacturing; Fabricated Metal Product Manufacturing; Machinery Manufacturing; Computer and Electronic Product Manufacturing; Electronic Equipment, Appliance and Component Manufacturing; Transportation Equipment Manufacturing; Furniture and Related Product Manufacturing; Miscellaneous Manufacturing.

In addition to growth in manufacturing activity, Exhibit 7 shows annual growth in the total tonnage and containers shipped through Vancouver Fraser Port during 2014 to 2018, demonstrating increased need for "gateway" industrial lands that accommodate import and export business.

Exhibit 7: Vancouver Fraser Port Activity 2014-2018

Operating highlights (000s)	2014	2015	2016	2017	2018	Ave Annual Growth 2014-18
Auto (units)	351	384	393	430	425	5%
Breakbulk (metric tonnes)	16,967	16,472	16,240	16,627	18,209	2%
Bulk (metric tonnes)	97,654	96,190	93,847	98,992	101,795	1%
Containerized (metric tonnes)	24,666	25,037	25,057	26,019	26,665	2%
Total tonnage (metric tonnes)	**139,638**	**138,083**	**135,537**	**142,068**	**147,094**	**1%**
Containers (TEUs)	2,913	3,054	2,930	3,252	3,396	4%
Cruise passengers	812	805	827	843	889	2%

Source: Vancouver Fraser Port Authority, Annual Report, 2018



Comparing this data with the employment trends in Section 4.2 shows that industrial activity (i.e. production, goods movement) has been growing faster than industrial employment. This is consistent with the trend to greater use of machinery and technology which allows productivity to increase at a faster pace than jobs.

Job creation is an important contributor to the regional economy, as this generates wage income that drives local spending. Industrial activity also contributes to the regional economy as it results in industrial investment that yields new property base, construction activity, and support for a variety of other kinds of employment such as professional services.

4.4 Industrial Land Inventory

This section provides detailed information about the region's inventory of industrial land, based on Mero Vancouver's Industrial Land Inventory.

Before diving into the detailed evaluation, though, the big picture can be summarized in a few main points.

Exhibit 8 shows the location of all land in the region that is considered industrial in the region as of 2015, divided into land already developed for industrial use versus land that is undeveloped, meaning vacant or currently used for a non-industrial purpose. The industrial land that is not yet developed is concentrated in a few locations and much of it is in the eastern part of the region.

Exhibit 8: Location of Metro Vancouver Industrial Land, 2015

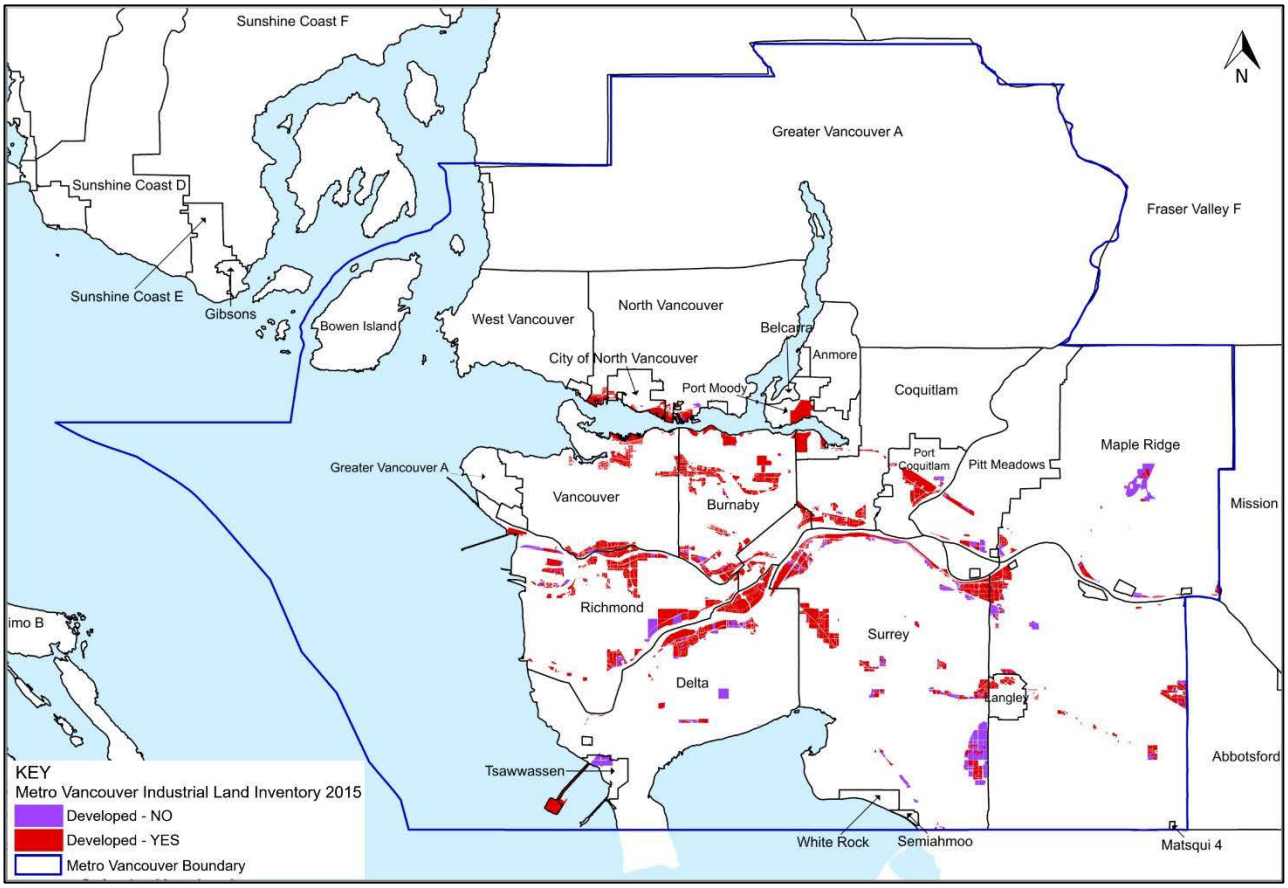


Exhibit 9 shows the use of the industrial land inventory. 75% of the entire inventory is already developed for industrial use and is zoned or designated as industrial in a community plan or other municipal development plan. The exhibit also shows that another 5% is developed and zoned for industrial use but is designated for a different (non-industrial) use in a community or development plan, meaning it has been earmarked for transition away from industrial use. Finally, the exhibit shows that 20% of the industrial inventory is categorized as undeveloped for industry. "Undeveloped" in this category includes vacant land, but it also includes land occupied by a low density non-industrial use such as agriculture or resource extraction.

Exhibit 10 shows more detail about the "undeveloped" category. The exhibit shows that the vacant industrial land inventory is only 66% of the undeveloped total (9% belonging to YVR or the Port and 57% belonging to

others). The balance is occupied by non-industrial uses that may at some point transition to industrial use, but they are not necessarily available to accommodate new industrial development in the short term. Because lands controlled by the Port or YVR are earmarked for specialized uses pertaining to the region's role as a gateway, only 57% of the undeveloped total (about 3200 acres) is vacant land that is available for general industrial development.

More detail is provided later in this section, but the key message from this overview is that the inventory of actual vacant industrial land in the region is not large. There is about 500 acres controlled by the Port and YVR and about 3200 acres controlled by private sector and other owners.

The rest of this section examines the industrial land inventory in more detail.

Exhibit 9: Total Metro Industrial Land 2015 (by Development Status and by Zoning and OCP Designation)

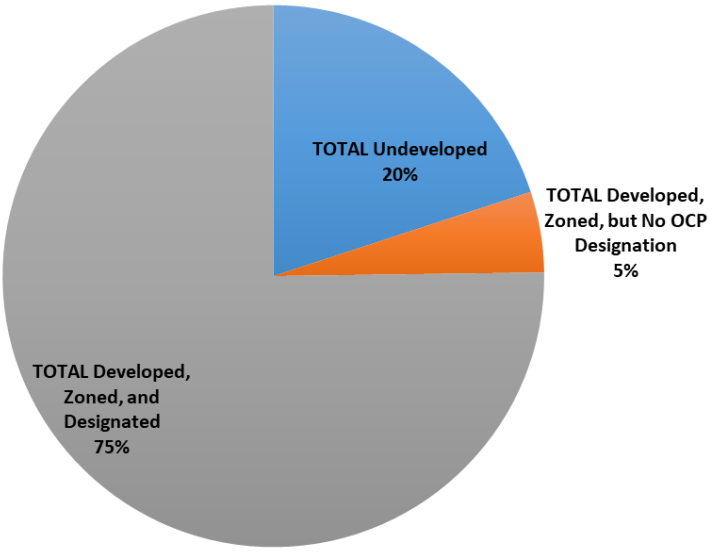


Exhibit 10: Metro Vancouver Undeveloped Industrial Land 2015 (by Current Use)

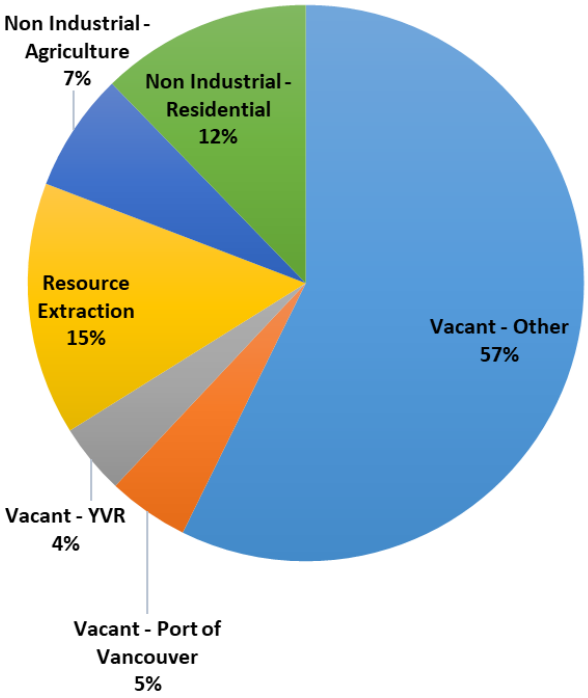


Exhibit 11 shows the land area breakdown in these main categories:

- Developed for industrial use, which is over 22,000 acres or 75% of the whole inventory. This land is used, zoned, and designated in a plan so it has a measure of protection against transition to other uses.
- Developed for industrial use, but not designated in a plan. This is just under 1400 acres (around 5%) and it is likely that this land will transition to another use.
- Undeveloped for industry, which is about 5600 acres or 20% of the inventory.

Exhibit 11: Metro Vancouver Industrial Inventory, 2015

	2015			
Metro Vancouver Industrial Inventory	**Number of Parcels**	**Hectares**	**Acres**	**%of Total**
TOTAL Undeveloped		**2261**	**5586**	**20.0%**
TOTAL Developed		**9061**	**22389**	**80.0%**
TOTAL Developed, Zoned, but No OCP Designation		**545**	**1347**	**4.8%**
TOTAL Developed, Zoned, and Designated		8516	21042	75.2%
TOTAL INDUSTRIAL		**11321**	**27975**	**100.0%**
TOTAL Developed, Zoned, but No OCP Designation, By Ownership				**% of Developed, Zoned , No OCP**
Private	735	472	1166	**86.6%**
Federal-YVR	19	45	112	**8.3%**
Federal-Other	6	9	22	**1.7%**
Provincial	11	3	8	**0.6%**
Crown Corp	10	6	16	**1.2%**
Municipal/ Regional/ Translink	25	9	22	**1.6%**
TOTAL Developed, Zoned, but No OCP Designation	**806**	**545**	**1347**	**100.0%**

Exhibit 12 shows a more detailed breakdown of the industrial lands that are developed and that are both zoned and designated in an official plan. This is the portion of the occupied inventory not presently earmarked for transition.

As shown in Exhibit 12, about 6% of the total is occupied by commercial uses.

Relatively small shares are occupied by outdoor storage (4%) and parking (less than 1%), which is significant because these categories could become more intensively developed but they would not add much to total capacity.

Exhibit 12: Metro Vancouver Developed Industrial (Zoned + OCP) - By Use,

	2015			
Use	Number of Parcels	Hectares	Acres	% of Undeveloped
Industrial - General	4737	4682	11569	59.2%
Industrial - Outdoor Storage	363	319	789	4.0%
Infrastructure - Maint Yards/ Emerg Services	65	94	233	1.2%
Infrastructure - Utilities, Tank Farms	81	852	2104	10.8%
Transportation -YVR, Port, Rail, Other)	176	1453	3590	18.4%
Transportation - Parking	19	9	22	0.1%
Subtotal - Industrial, Infrastructure, Transp	5441	7409	18307	93.6%
Commercial - Big Box	25	80	197	1.0%
Commercial - Auto Related	118	99	244	1.2%
Commercial - Small or Medium	187	78	194	1.0%
Commercial - Media Production	56	30	74	0.4%
Commercial - Office	265	196	485	2.5%
Commercial - Banquet Hall	11	2	5	0.0%
Subtotal - Commercial	662	485	1198	6.1%
Education/ Training	16	7	17	0.1%
Recreation	18	13	31	0.2%
Total Developed (Zoned+OCP)	**6137**	**7913**	**19554**	**100.0%**
Total Public Undeveloped	274	932	2304	
TOTAL Undeveloped	1294	2261	5586	
TOTAL Developed Industrial	7435	9061	22389	
TOTAL INDUSTRIAL	8729	11321	27975	

Exhibit 13 shows the total inventory of undeveloped industrial land in Metro Vancouver as of 2015, by type of owner. The total undeveloped inventory is just under 5,600 acres. However, lands controlled by railways, the Port, and YVR are generally not available on the open market for all industrial uses. These lands are earmarked for use by the owners or by a narrow range of uses that are associated with goods movement and transportation. Lands owned by the federal and provincial government are likewise earmarked for specific purposes.

The undeveloped land that is available for a broad range of potential industrial uses is at most about 75% of the total inventory, or around 4,200 acres owned by the private sector, TFN, or local governments. The 58% of the land (around 3,200 acres) that is privately owned is perhaps the most readily available on the open market to the full range of possible industrial uses.

Exhibit 13: Metro Vancouver Undeveloped Industrial Land - By Owner, 2015

	2015			
Ownership	**Number of Parcels**	**Hectares**	**Acres**	**% of Undeveloped**
Private	1016	1311	3239	**58.0%**
Private-Railway	4	18	43	**0.8%**
Federal-Port	23	106	263	**4.7%**
Federal-YVR	20	93	229	**4.1%**
Federal-Other	13	116	286	**5.1%**
Provincial	51	131	323	**5.8%**
Crown Corp	8	38	94	**1.7%**
TFN	11	127	315	**5.6%**
Municipal/ Regional/ Translink	148	321	793	**14.2%**
TOTAL Undeveloped	**1294**	**2261**	**5586**	**100.0%**
TOTAL Developed Industrial	7435	9061	22389	
TOTAL INDUSTRIAL	8729	11321	27975	

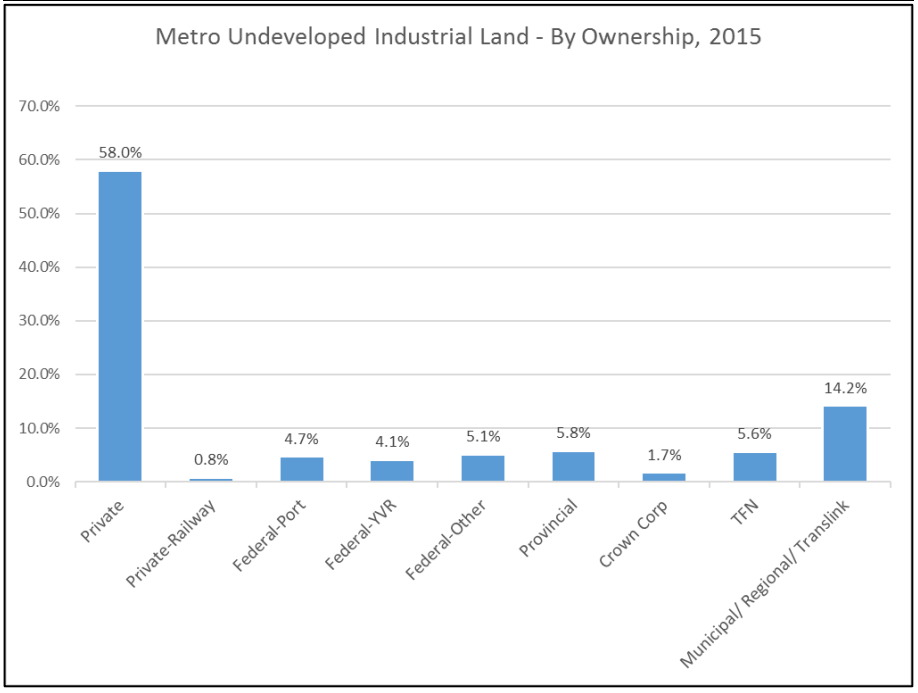


Exhibit 14 shows the current use of the undeveloped industrial land. Only about two thirds of this land (about 3,700 acres) is actually vacant. The balance is used for resource extraction (much of which is for construction aggregates), agriculture, and residential use. These existing uses may constrain the ability to develop these lands for new manufacturing, warehouse, transportation, utilities, or other industrial floorspace.

The 3,700 acres of vacant land includes about 500 acres controlled by the Port and YVR, so about 3,200 acres is controlled by private owners, local governments, and others.

Exhibit 14: Metro Vancouver Undeveloped Industrial Land - By Current Use, 2015

		2015		
Use	Number of Parcels	Hectares	Acres	% of Undeveloped
Vacant - Other	654	1295	3201	57.3%
Vacant - Port of Vancouver	23	106	263	4.7%
Vacant - YVR	20	93	229	4.1%
Resource Extraction	39	332	821	14.7%
Non Industrial - Agriculture	25	156	386	6.9%
Non Industrial - Residential	533	277	685	12.3%
TOTAL Undeveloped	**1294**	**2261**	**5586**	**100.0%**
TOTAL Developed Industrial	7435	9061	22389	
TOTAL INDUSTRIAL	8729	11321	27975	

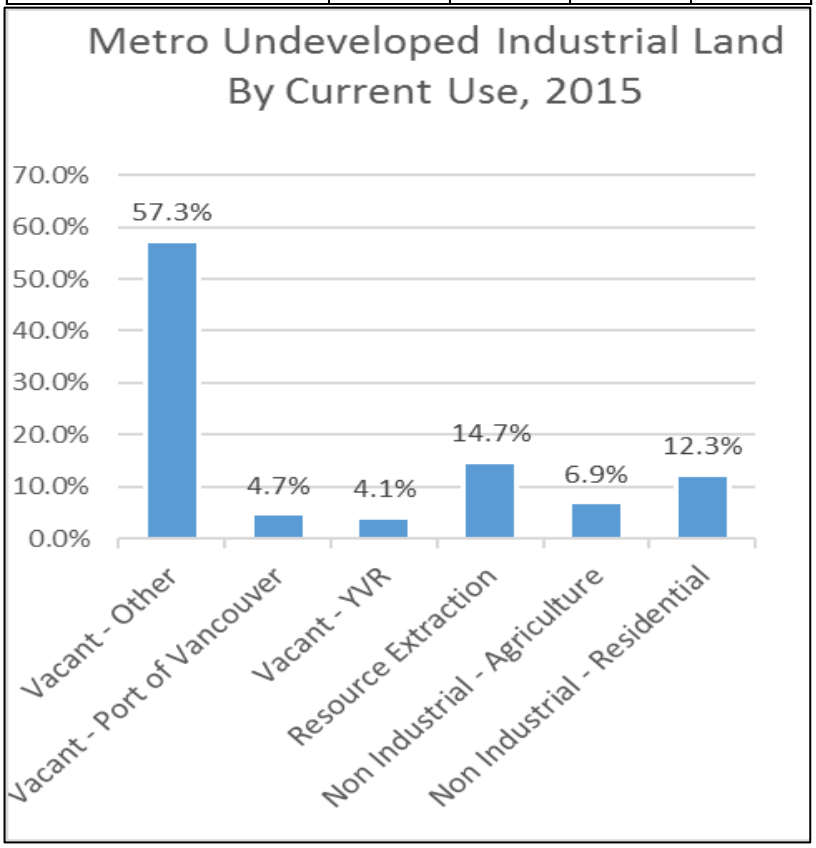
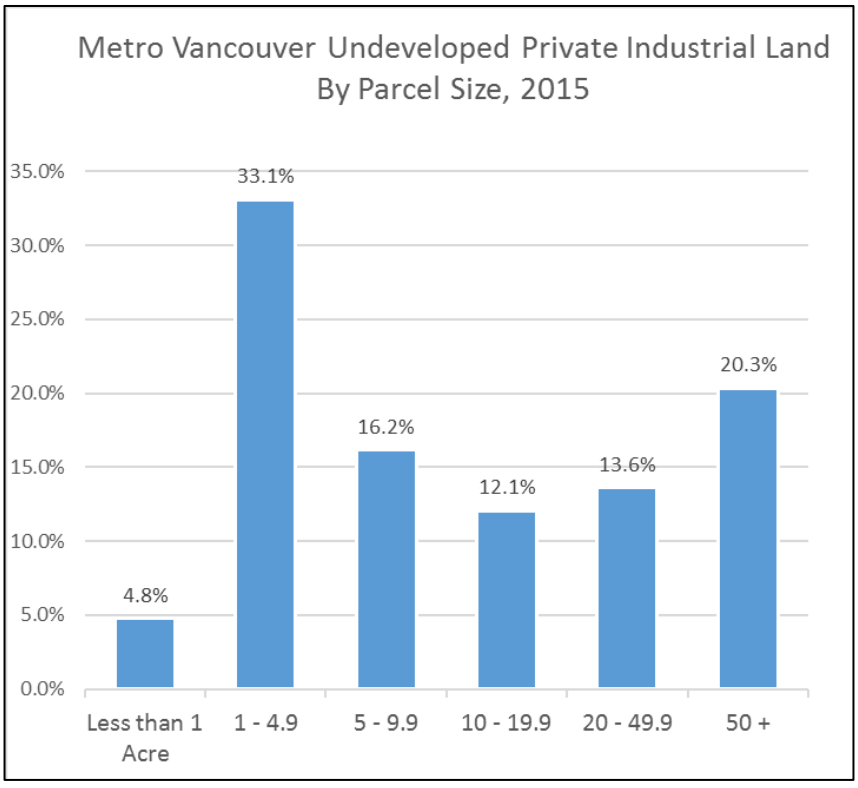


Exhibit 15 shows the distribution of the vacant private undeveloped land by parcel size. As shown, about 38% of the land is in parcels under 5 acres, 16% is in parcels of 5 to 10 acres, and 46% is in parcels of 10 or more acres.

Exhibit 15: Metro Vancouver Private Undeveloped Industrial Land - By Parcel Size, 2015

	2015			
Parcel Size (Acres)	**Number of Parcels**	**Hectares**	**Acres**	**% of Undeveloped**
Less than 1 Acre	474	63	156	**4.8%**
1 - 4.9	421	440	1086	**33.1%**
5 - 9.9	76	215	530	**16.2%**
10 - 19.9	28	160	396	**12.1%**
20 - 49.9	15	181	447	**13.6%**
50 +	6	270	667	**20.3%**
Total Private Undeveloped	**1020**	**1328**	**3282**	**100.0%**
Total Public Undeveloped	274	932	2304	
TOTAL Undeveloped	1294	2261	5586	
TOTAL Developed Industrial	7435	9061	22389	
TOTAL INDUSTRIAL	8729	11321	27975	



This series of exhibits shows that the “working inventory” of industrial land, generally available on the market for new industrial users, is much smaller than the total “paper inventory” and much of it is in small parcels.

4.5 Industrial Land Take-Up

Exhibit 16 shows the rate of absorption of vacant industrial land during 2005 to 2015, using data from Metro Vancouver. Average annual absorption over the whole period has been about 210 acres per year.

Exhibit 16: Metro Vancouver Industrial Land Absorption 2005 - 2015

Hectares	2005-2010	2010-2015
Vacant to Developed	534	426
Developed to Vacant	69	47
Net Absorption	465	380
Average Annual Net Absorption	**93**	**76**

Acres	2005-2010	2010-2015
Vacant to Developed	1,320	1,054
Developed to Vacant	170	116
Net Absorption	1,150	938
Average Annual Net Absorption	**230**	**188**

A report commissioned by Vancouver Fraser Port Authority in 2015 estimated that the rate of industrial land absorption in Metro Vancouver will average about 250 acres per year in the medium to long term, provided sufficient land is available[2]. The report projected that the region's supply of vacant land for new industrial growth would be exhausted by around 2030 to 2035.

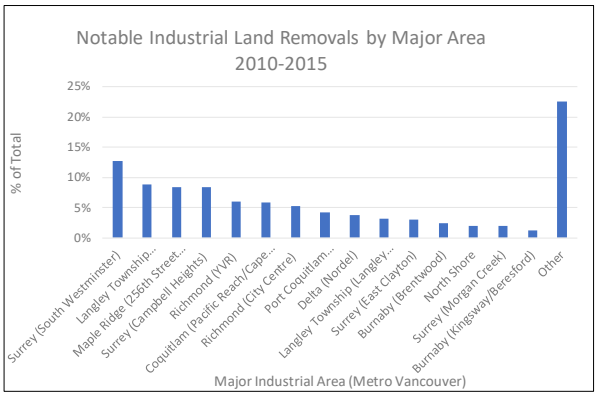
New development depletes the inventory of vacant land. In addition, some vacant and occupied industrial land is lost as a result of policy decisions to shift land from industrial to residential, retail, or office use. Exhibit 17 shows that the rate of industrial land removal (in addition to the absorption of vacant land) during 2010 to 2015 has been about 250 acres per year.

[2] "The Industrial Land Market and Trade Growth in Metro Vancouver", 2015, Site Economics Ltd for Port Metro Vancouver (as it was then called, now referred to as Vancouver Fraser Port Authority), page 61

Exhibit 17: Metro Vancouver Industrial Land Removals, 2010-2015

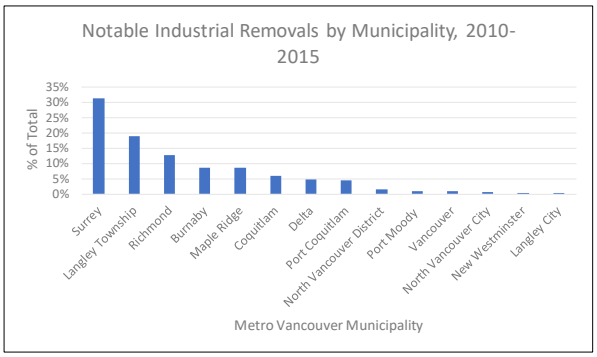
Notable Industrial Land Removals by Major Industrial Area, 2010-2015

Major Industrial Areas	% of Total	Area (Ha)	Area (Ac)
Surrey (South Westminster)	13%	63	155
Langley Township (Willoughby/Northwest Langley)	9%	44	109
Maple Ridge (256th Street Industrial Area)	8%	42	105
Surrey (Campbell Heights)	8%	42	103
Richmond (YVR)	6%	30	73
Coquitlam (Pacific Reach/Cape Horn)	6%	29	71
Richmond (City Centre)	5%	26	63
Port Coquitlam (Maryhill/Lougheed)	4%	21	52
Delta (Nordel)	4%	19	46
Langley Township (Langley Town Centre)	3%	16	38
Surrey (East Clayton)	3%	15	38
Burnaby (Brentwood)	2%	12	31
North Shore	2%	10	25
Surrey (Morgan Creek)	2%	10	24
Burnaby (Kingsway/Beresford)	1%	6	15
Other	23%	112	278
TOTAL	100%	**497**	**1,226**



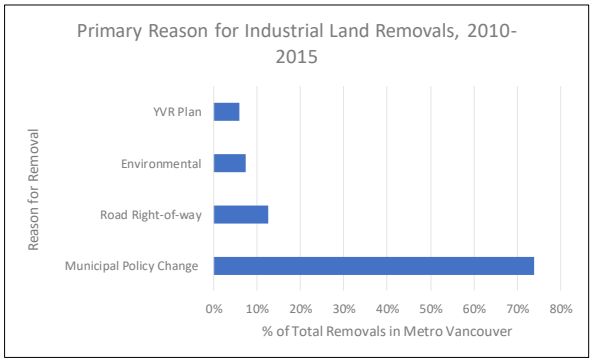
Notable Industrial Land Removals by Municipality, 2010-2015

Municipality	% of Total	Area (Ha)	Area (Ac)
Surrey	31%	155	382
Langley Township	19%	94	231
Richmond	13%	63	155
Burnaby	9%	43	107
Maple Ridge	9%	43	106
Coquitlam	6%	30	73
Delta	5%	24	60
Port Coquitlam	4%	22	54
North Vancouver District	1%	7	16
Port Moody	1%	5	13
Vancouver	1%	4	11
North Vancouver City	1%	3	8
New Westminster	0%	2	5
Langley City	0%	2	5
Total Acres	**100%**	**497**	**1,226**



Primary Reason for Industrial Lands Removals, 2010-2015

Primary Reason	% of Total	Area (Ha)	Area (Ac)
Municipal Policy Change	74%	367	906
Road Right-of-way	13%	63	155
Environmental	7%	37	92
YVR Plan	6%	30	73
Total Acres	100%	**497**	**1,226**



4.6 Industrial Floor Space Trends

Exhibit 18 and Exhibit 19 show the total inventory of industrial floor space in Metro Vancouver and the other major industrial locations in the Lower Mainland, and changes during 2008 to 2018.

Exhibit 18: Lower Mainland Industrial Floorspace Inventory, 2008 to 2018 (Square Feet)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Metro Vancouver	163,522,283	168,270,992	170,055,799	171,532,075	174,134,329	176,290,759	181,393,126	184,468,109	187,084,637	190,030,432	193,694,844
Abbotsford & Chilliwack	7,474,473	8,216,706	8,583,961	8,702,186	8,702,186	8,788,651	10,632,456	10,773,756	11,113,536	11,215,990	11,568,449
Total Lower Mainland	170,996,756	176,487,698	178,639,760	180,234,261	182,836,515	185,079,410	192,025,582	195,241,865	198,198,173	201,246,422	205,263,293

Source: Colliers Industrial Market Reports

Exhibit 19: Lower Mainland Industrial Floorspace Growth 2008-2018

	Average Annual Growth in square feet		Share of Lower Mainland Growth		Average Annual % Growth Rates	
	2008 to 2018	2013 to 2018	2008 to 2018	2013 to 2018	2008 to 2018	2013 to 2018
Metro Vancouver	3,017,256	3,480,817	88%	86%	2%	2%
Abbotsford & Chilliwack	409,398	555,960	12%	14%	4%	6%
Total Lower Mainland	3,426,654	4,036,777	100%	100%	2%	2%

Source: Colliers Industrial Market Reports

The data shows these trends:

- Industrial floor space in Metro Vancouver increased by over 30 million square feet in this ten-year period.
- This growth translates into an average rate of about 1.7% per year over the decade. This is faster than the rate of industrial employment growth (about 0.5% per year), so the ratio of space per worker is increasing. This is consistent with the broad economic trend of industrial jobs being replaced with technology. The rate of floor space growth is being driven partly by growth in the total volume of manufacturing activity and goods movement, which is growing more quickly than employment.
- The amount of new floorspace construction has increased every year over the whole decade, in Metro Vancouver and the Fraser Valley. The rate of vacant land take-up was slower in 2010 to 2015 than in 2005 to 2010 (see Exhibit 16), so the average density of industrial land is increasing.
- The Metro Vancouver share of total Lower Mainland growth was 88% over the decade, but only 86% in the most recent five years. There is a shift in industrial floor space development to the east, with Abbotsford and Chilliwack seeing average annual growth of 4.5% per year over the decade. There are several factors driving this shift including high land values in Metro Vancouver, the diminishing availability of large parcels of vacant industrial land, and increased road congestion in the core.

A 2015 Vancouver Fraser Port Authority study estimated that approximately 25% of all new industrial land absorption (around 60 acres per year) would be taken up by single storey buildings of over 100,000 square feet.[3]

[3] "The Industrial Land Market and Trade Growth in Metro Vancouver", 2015, Site Economics Ltd for Port Metro Vancouver (as it was then called, now referred to as Vancouver Fraser Port Authority), page 70

Assuming an average density of around 0.4 FSR for these large buildings, a building of 100,000 square feet requires a site area of just under 6 acres. This is significant, because Exhibit 15 shows that almost 40% of the vacant, privately owned industrial land is in parcels of less than 5 acres.

4.7 Industrial Land Values and Lease Rates

Exhibit 20 shows snapshots of industrial land values and industrial lease rates in the Lower Mainland at late 2014, late 2017, and early 2019, based on market reports published by large real estate brokerages.

Exhibit 20: Lower Mainland Industrial Land Values and Industrial Lease Rates (2014, 2017)

	Late 2014	Late 2017	Early 2019
Average Vacant Industrial Land Value ($million/ acre)	$1.1 million to $1.6 million	$1.9 million to $3.0 million	$ 2 million to $4 million
Average Rent Industrial Space ($/net square foot/year)	$8 per sq ft per year	$10 per sq ft per year	$12 per sq ft per year

The figures in Exhibit 20 are averages for the whole region. The increases are significant, but these regional average numbers mask even more dramatic trends in the region's core. In the City of Vancouver, asking prices jumped from under $3 million per acre to $7+ million per acre in this 3-year period. In 2019, there have been recorded transactions for industrial land in Vancouver in the range of $1,000 per square foot for land (over $40 million per acre).

These land price increases do not reflect a fundamental change in the ability of traditional industrial uses to pay for land. Rather, the growth in price reflects the impact of the scarcity of large, vacant, developable industrial land parcels in the developed parts of the region, speculation that densities will be increased on industrial land, and a shift to more dense forms of development that combine office, retail, and industrial in multi-storey buildings.

The nature of this new industrial space is very different than traditional industrial floor space, in several ways:

- The floor plates tend to be smaller than in traditional manufacturing and warehouse buildings, so the typical ground floor uses are usually industrial/commercial or small scale industrial.
- Construction costs are much higher than traditional low density, single-storey industrial buildings, so breakeven rents are much higher.
- Many of the industrial users incorporate retail and service elements, partly as a means of generating enough sales volume to support the market rent.

4.8 Trends in the Nature of Industrial Activity and the Form of Industrial Development

There are significant long-term transitions in the nature of industrial use and the form of industrial development in the region.

There has been a long-term shift away from some forms of heavy manufacturing. For example, sawmills, shipyards, large scale breweries, steel fabricators, and some rail operations have either ceased or relocated to the east. Granville Island, the north and south shores of False Creek, Fraser River frontage, and Burrard Inlet frontage are examples of areas that have transformed from heavy industry to residential and commercial use. These departing heavy industries have not been replaced by other heavy industries. Where the lands have remained in employment use, the new uses have tended to be light industrial, business/office park, or commercial in nature.

There are many reasons for these trends, but the main forces behind these transitions include:

- Increasing land values, which have led some industries to close operations in order to free up land value. In some cases, these industries have relocated but in other cases the gain in land value coincided with production-side reasons to end operations.
- Decreasing availability of wood fibre in this region. There are still a few mills operating in the Lower Mainland, but most of the mills in the central area have closed. Declining log availability is a large part of this, but many of the mills had old equipment and also saw opportunities to free up land value.
- Increased road congestion in the urban area, making it harder to import raw material and export finished product by truck.
- Large scale transitions in certain sectors. The shipbuilding and repair sector, for example, has shifted much production to offshore locations because of cheaper labour.

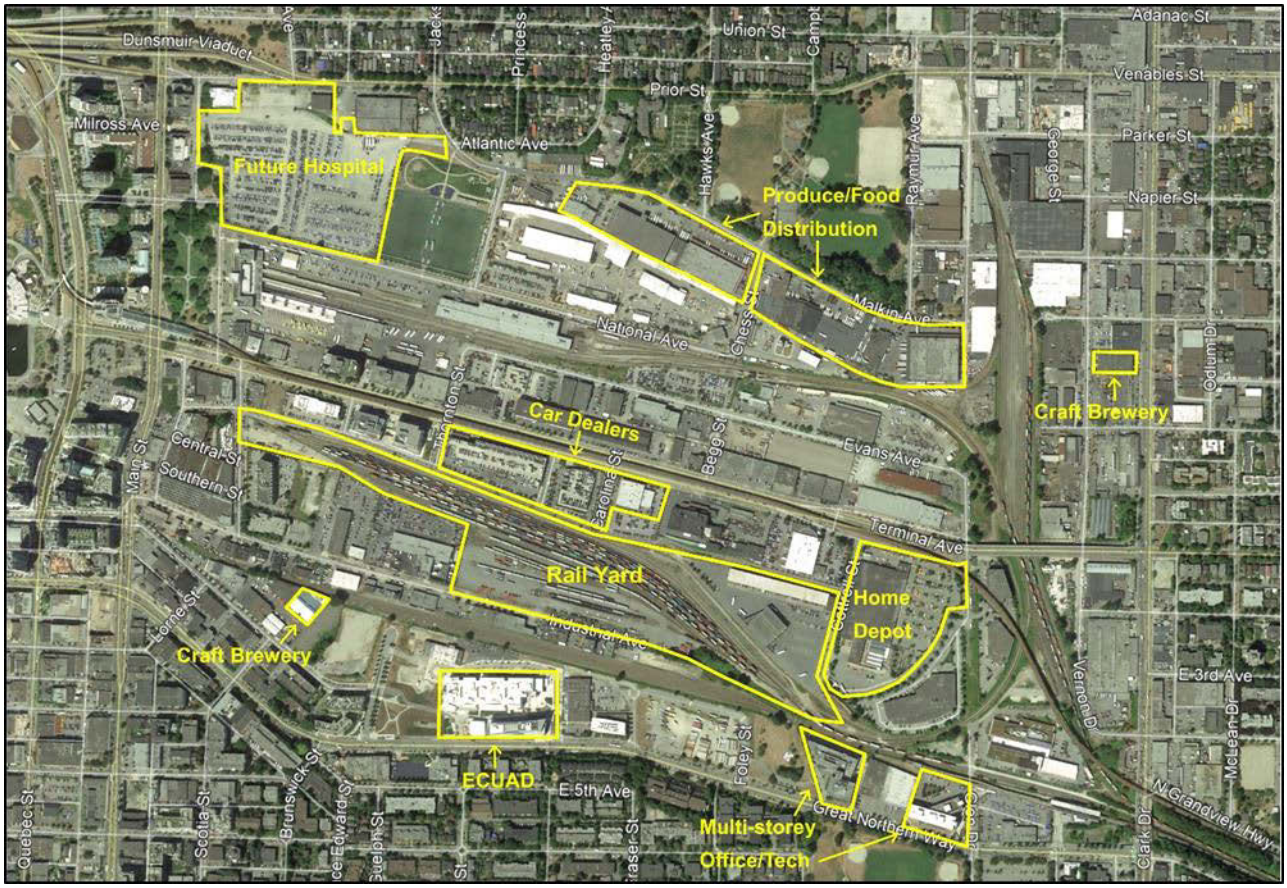
Another important trend has been the encroachment by some kinds of commercial uses into industrial territory. Large scale home improvement and furniture stores, car dealerships, and warehouse style retail stores such as Costco occupy industrial sites.

Also, there have been changes in the form of development on industrial land in urban locations. A combination of zoning changes and market changes have resulted in a new trend in multi-storey buildings for employment space, with industrial-like space on the ground floor and office-like space on upper floors. These trends do not seem significant in most of the large suburban industrial land concentrations around the region, (evidenced by Exhibit 12 that shows that only about 6.5% of the regional total occupied industrial land inventory is used for non-industrial purposes), but these shifts in use and in form and character are focused in central locations where reductions in industrial land inventory have been most pronounced and where very high land values are squeezing traditional, low density heavier uses.

These changes are caused in part by land value pressure, which tends to encourage maximum use of the floor space potential allowed by zoning, shifts in the nature of industrial activity to smaller scale uses in these areas, and increased allowable densities to accommodate larger numbers of jobs (albeit in types of jobs that tend to occupy office-like work environments rather than traditional industry-like work environments).

False Creek Flats in Vancouver is an excellent example of the rising pressure on industrial land.

Exhibit 21: False Creek Flats, Vancouver (2019)



False Creek Flats is bounded by Main Street on the west, Clark Drive on the east, Prior Street on the north, and Great Northern Way on the south. Historically, the entire area was occupied by extensive rail yards, manufacturing, transportation, and warehouse uses.

As shown in Exhibit 21, some of these original uses remain. There are still large railyards and a large concentration of food distribution operations known as Produce Row. But a large portion of the area is shifting away from these traditional industrial uses. As examples:

- Lands formerly occupied by Finning (sales, service, and parts for heavy equipment) were donated to create the Great Northern Way campus which now houses a digital media centre and the new Emily Carr University of Art and Design which relocated from Granville Island.
- A large area in the northwest corner has been selected as the site for the new hospital and health care campus that will replace St. Paul's Hospital in downtown Vancouver, with the present site proposed to be redeveloped with high density residential.
- Big box retail and several new car dealerships have moved into the area.
- Some multi-storey office development has occurred. Some of this is for the tech sector, but occupants also include the Canada Revenue Agency and the headquarters of Mountain Equipment Co-op.
- Small, specialized food/beverage manufacturers have moved in, including some craft breweries and a commissary kitchen that is used for small batch producers and food truck operators.

These uses all accommodate employment, generally at a higher density than in the former industrial uses. But these are very different kinds of uses and jobs. Some of the former industrial jobs no longer exist, and some have relocated to sites further east where they show up as part of the absorption of available vacant land.

A recent example of this shift is Molson's decision to move its brewery operation from Vancouver. The brewery currently occupies a large and very valuable redevelopment site at the south end of the Burrard Bridge. Presumably to free up land value, replace an aging facility, and get away from traffic congestion, Molson has elected to construct a completely new facility (400,000 square foot building on a 36-acre parcel). To find a large enough site that had the required services and utilities (i.e. water), and offered the required road access for truck traffic, Molson is building in Chilliwack because it could not find a suitable site in Metro Vancouver. Fortunately for the whole urban region, Molson decided to remain in the Lower Mainland despite the challenge of finding a new location. When Labatt's closed its large brewery in New Westminster, the land was converted to residential, retail, and office use and the brewery operations were shifted out of the Lower Mainland.

5.0 Implications of Current Trends

The trajectory for vacant industrial land take-up has been a little over 200 acres per year. In addition, industrial land (developed and undeveloped) is lost due to transition to other uses. The loss of "developed" land does not remove vacant land per se, although it is one of the contributors to vacant land take-up if industries relocate from developed to vacant land. More detailed analysis of transitions in land use is needed to create a more comprehensive assessment of changes in land inventory.

Available forecasts for the take-up of developed land are on the order of 250 acres per year, giving a range of 200 to 250 as a present trends continued estimate.

The total inventory of undeveloped industrial land is about 5,500 acres, before deducting portions that are used for other purposes and may not transition to industrial, deducting losses due to transitions and redevelopment, or taking into account the large share that is in small parcel sizes that could constrain absorption.

The implication of this situation is that the undeveloped inventory will be taken up in 22 to 28 years, *assuming 100% of the undeveloped inventory is available for industrial development in this time frame.*

If transitions from industrial to other uses continue to diminish the total supply of industrial land they will also put pressure on the inventory of vacant land to accommodate industrial uses that relocate, although some or all of this trend is probably already captured in the estimates of past absorption.

Based on these indicators, the inventory of vacant industrial land does not appear to be sufficient to last through the planning horizon of the Regional Industrial Lands Strategy which is the year 2050. The Strategy must confront the possibility that under present trends continued Metro Vancouver cannot keep accommodating industrial growth except through densification which works for some uses but not others.

The next step in this discussion paper is to examine a range of possible factors that might alter the outlook, for better or worse.

6.0 Factors That Could Alter the Outlook for Industrial Land in Metro Vancouver

The Regional Industrial Land Strategy is looking ahead 30 years, which is more than enough time for profound changes to occur in technology, the economy, the physical environment, demographics, and other factors which can affect the supply or demand of industrial land. Considering the changes that have happened in the last three decades and that the pace of change is accelerating, there is a high degree of risk in speculating about conditions 30 years from now.

The approach used in this discussion paper is to identify emerging factors that might change the outlook and try to gauge the most likely direction of the impact, in terms of increasing or decreasing the need for industrial land rather than trying to predict the actual pace of demand associated with these changes.

The factors considered are as follows:

Factors Affecting the Supply of Land Available for Industrial Use in the Region

- Occupancy of industrial land by industrial/commercial uses

- Occupancy of industrial land by office use
- Redevelopment of industrial land for residential use
- Redevelopment of industrial land for mixed industrial and residential use
- Taking a Lower Mainland perspective on land supply
- Prospects for "new" industrial land and capacity
- Rising sea level and flooding

Factors Affecting the Demand for Industrial Land in the Region

- Global economic, demographic, and physical changes
- Changing structure of the regional economy
- Changing nature of industrial activity
- Technology that affects transportation and logistics
- Technology that affects manufacturing processes
- Changes in consumer behaviour
- Land values
- Population growth

6.1 Factors Affecting the Supply of Land Available for Industrial Use in the Region

This section reviews ways in which the available "room" to accommodate industrial floor space development might increase or decrease.

This section does not include consideration of significant changes to land already allocated for other urban uses (residential, retail, office) because transition from these uses to industrial is not financially viable. This section also does not include changes to lands designated for agricultural use or for recreation, conservation, and other open space uses as these are protected by current policy and regulations.

6.1.1 Occupancy of Industrial Land by Industrial/Commercial Uses

Large scale industrial/commercial uses such as home improvement, furniture, very large supermarkets, and warehouse style retailers seek sites that are very similar to the kind of land needed by industry: level, excellent highway access, relatively large parcels (10 acres or more), and not already occupied by a higher value use. Almost every "industrial" district in the region includes some of this type of use, in part because many municipal zoning bylaws allow these uses in industrial zoning districts. While these uses have the same physical land needs as industry, they generally have a greater ability to pay for land. So, where these uses are allowed, they compete land away from manufacturing or warehouse type uses.

This trend is continuing and as the region's population expands there will be new chains and new outlets for existing chains seeking locations.

In some higher density locations, chains adapt their retail model and their physical form to fit onto urban-scale sites and to reduce their land cost. They can be part of mixed-use projects, such as the Home Depot on Cambie Street in Vancouver or the Costco in downtown Vancouver. These are the exception though, and all other outlets of these brands (and similar ones) have an "industrial" footprint: large site, large single floor space, large surface parking lot, some outdoor storage.

Industrial/ commercial service uses such as sales and repair of automobiles and trucks, RVs, mobile homes, and boats also look for sites with industrial characteristics and they are often included as allowable uses in municipal industrial zoning districts. Because these uses can outbid traditional industrial use and will pay a premium for sites with high accessibility and high exposure, some "industrial" land becomes occupied by service commercial uses.

Unless zoning bylaws are amended to narrow the range of allowable uses, commercial uses will continue to expand into areas that are designated for industrial. Where allowed, these commercial uses add demand for (and push up the price of) industrial land, with the effect of reducing the available supply of available land for true industrial users.

6.1.2 Occupancy of Industrial Land by Office Uses

The regional office market can be divided into five broad categories based on locational requirements and preferences:

1. Office users that want an urban, high density, transit-oriented location such as Downtown Vancouver, the Broadway corridor, or Regional Town Centres. These uses want transit, amenities, smaller floor plates, view, and the benefits of clustering that are available in concentrated locations, so they do not compete with industrial use for land.
2. Office users that want an urban, transit-oriented location that is near but not in a high-density core. False Creek Flats and Mount Pleasant in Vancouver are good examples of this type of location. City policy supports employment use in these areas and recent development has included higher density employment uses that include a mix of office and industrial-like space. The industrial space is on the ground floor and is available for a wide range of uses with some industrial character that have included things like craft brewery, commercial bakery, coffee roasters, and auto repair. The industrial uses can afford the higher rent associated with multi-floor mixed use buildings. They tend to be relatively small, and many (such as bakery or craft brewery) have an associated retail or food/beverage component that helps pay the rent. These kinds of office and industrial developments are occupying lands that were formerly traditional industrial. While they are employment uses, and they do accommodate some forms of industry, they cannot accommodate the kinds of large-scale warehouse, transportation, or manufacturing uses that in some cases they have replaced.
3. Office users that prefer locations in shopping centres and local commercial districts in order to serve local populations. These include doctors, dentists, insurance agents, smaller accounting and legal firms, and other professionals and service providers that want to be conveniently located in their customer trade area. These do not compete with industrial uses for land.
4. Office uses that are part of larger industrial space. This includes the office component of warehouse, manufacturing, or other industrial uses. This kind of office space usually needs to be co-located with the industrial function and it does not reduce the industrial capacity of the site.

5. Office users that prefer a low-density business or office park environment that offers good access to the regional highway system, direct ground floor access, the potential for larger floor plates, and ample surface parking for quick entrance/exit. These features appeal to firms that have staff that need to travel around the region during the day, that need to combine lab space with office space, that require grade level access for equipment, supplies, or personnel, or that prefer larger floor plates than cannot typically be provided in a high density, tower form office building. Examples include firms with mobile sales and service teams (such as office coffee suppliers and business product suppliers), civil engineering and land survey companies, environmental testing labs, and security equipment sales, installation, and monitoring services. This type of office use seeks sites in areas that could otherwise be industrial. The demand for this type of industrial use may decline as employers put increasing emphasis on transit access for employees, but there will continue to be demand for some of this kind of use because of the functional requirements of the business.

The second and fifth categories above compete directly with industrial use.

In the case of the higher density mixed employment development, it can displace former lower density industrial use. Total employment capacity rises, which is good, and the ground floor can be available for some types of smaller scale industrial activities which are in high demand and can support relatively high rent, but they cannot accommodate industry at the scale that needs large sites and large floor areas.

In the case of office/business park users, they compete with industry for large, highway accessible lands. There are significant land areas in most municipalities in Metro Vancouver that are allocated to this type of use. Sometimes a concern is expressed that these kinds of developments are problematic for two reasons:

1. They are using industrial land. This is true, so there is a trade-off in terms of the type and density of employment that can be accommodated.
2. They should be in higher density, transit-oriented locations such as Regional Town Centres. While this may be true for some of the office uses found in business/office parks, many simply could not function well in a high density, high rise environment. They accommodate a kind of business and kind of employment that needs a lower density, highway-oriented location.

6.1.3 Redevelopment of Industrial Land for Residential Use

Much former heavy industrial land in the region has transitioned or been designated for residential development. Much of this is waterfront land (e.g. False Creek and Fraser Lands in Vancouver, Fraser River frontage in New Westminster, Lower Lonsdale in North Vancouver) but some is upland (e.g. Joyce lands in Vancouver, some parts of Metrotown, the former Labatt's brewery in New Westminster). There is not a comprehensive record of these transitions, but the reduction in industrial land supply has been hundreds of acres.

In many cases, the transition has been almost inevitable, as a combination of urban development on adjacent lands and challenges with large volumes of truck traffic have made continued heavy industrial use untenable, but in some cases the transition has been driven by the need and opportunity for creating new residential communities. Residential development can then put pressure on adjacent industrial areas, sometimes because new residents complain about the industrial activity and sometimes because the pressure of higher land value is hard to resist.

6.1.4 Mixed Industrial and Residential Development

The challenge of housing affordability in the region has sparked consideration of combining residential and industrial uses in some locations. The premise is that adding residential (rather than replacing industrial with residential use) can add housing capacity, locate housing near employment, and perhaps improve the financial performance of redevelopment (with residential revenues helping to offset the high construction cost of industrial space within higher density buildings), all while maintaining or increasing the physical capacity to accommodate employment.

This approach can produce interesting results in some locations. However, there are some implications for the industrial component of such projects:

- The floor plates of these buildings tend to be more similar to office and residential floor plates (say less than 25,000 square feet), which works for smaller scale industrial uses but does not work for industrial uses that need large flat floor areas (e.g. large manufacturers or large distribution centres).
- These buildings tend to be located in higher density, urban locations so the industrial uses at grade have to "fit" into this context, in terms of impacts such as noise, odours, or truck traffic.
- The rents tend to be higher for the industrial space in such projects than in typical low density industrial buildings, so the space tends to attract users with some kind of commercial element (e.g. bakery with café or craft brewery with tasting room). This is good in terms of providing space for such uses and in terms of maintaining employment capacity and diversity in urban areas, but it does not replace the lost capacity for the larger industrial users that formerly occupied the land.

This approach is worth considering in locations that are expected to transition to higher density whether or not residential is included. This is not a good approach for lands that are intended to continue to provide capacity for large scale manufacturing and warehouse/distribution uses.

6.1.5 Taking a Lower Mainland Perspective on Land Supply

Metro Vancouver's Industrial Land Inventory does not include the communities in the eastern Fraser Valley.

This is a jurisdictional approach to land use monitoring that does not reflect the fact that the Lower Mainland is increasingly a single large urban region. As shown in Exhibit 18 and Exhibit 19, the annual average percentage rate of industrial floor space growth has been much higher in Abbotsford and Chilliwack than in Metro Vancouver. This is largely because new industrial users are having a hard time finding large vacant industrial sites in the western, more urbanized part of the Lower Mainland. This trend is likely to continue and it is important to realize that industrial development in the eastern Fraser Valley benefits the entire region, not just the local communities. The gradual movement of industrial activity eastward has been going on for decades within Metro Vancouver; the fact that it is now spilling over the Metro Vancouver boundary into areas to the east is just an extension of this trend.

So, the ability to accommodate industrial development can be looked at through a whole-region lens: adding in the industrial capacity of the eastern communities either reduces the challenge, if they have ample capacity, or increases the urgency of the situation if the eastern communities cannot continue their recent role in helping offset the diminishing industrial capacity in Metro Vancouver.

Unfortunately, the two largest industrial markets in the eastern Fraser Valley do not have large inventories of vacant industrial land. Abbotsford's 2017 study ("Abbotsford Industrial Land Capacity Analysis", Urban Systems) found an "on paper" inventory of about 625 acres of vacant industrial land, but after deducting riparian setbacks and deducting land with too much slope for large industrial users found a working inventory of only about 220 acres of vacant industrial land. Brokers working the Chilliwack market estimate that there are less than 200 acres of vacant industrial land in that community.

This additional 420 acres does not significantly alter the picture for the whole Lower Mainland. At recent rates of regional land take-up, this additional supply is only equivalent to about two years of capacity.

This is a significant concern for the whole Lower Mainland. Currently, the eastern Fraser Valley is enabling the Lower Mainland to absorb some new industrial growth that cannot be accommodated in Metro Vancouver. But the Valley does not have enough land to continue this trend in the long term. At some point, firms needing large industrial sites will have no choice but to look to other urban regions.

6.1.6 Finding "New" Industrial Land or Capacity

If lands currently designated for agricultural and open space (recreation, conservation) remain as such, there are limited options for increasing the physical capacity to accommodate new industrial development:

- **Densification.** One option is to increase the density of use of industrial land. This has been occurring over the long term, but it is important to note that significantly increased density tends to accompany a shift in the nature of industrial use. Industrial uses able to occupy multi-storey buildings can intensify, but heavy industry and some kinds of large warehouse/distribution uses have a harder time adapting to multi-floor space. The overall average density of industrial land use will continue to increase, but vacant land will still be taken up and some new industrial uses will continue to require lower density forms of development because of the need for continuous production lines, storage, large vehicle/equipment parking, or very high ceiling heights with large clearspans.
- **Replotting.** There are industrial parcels that are inefficiently used, with parking and outdoor storage occupying more land than functionally necessary. However, it appears to be rare that such parcels could (on their own) accommodate an entirely new use just by reconfiguring current land use. If two or three adjacent parcels are looked at together, though, there are instances in which a reorganization of site use and a re-subdivision could allow for the accommodation of a new industrial user. As shown in Exhibit 12, outdoor storage use and parking occupy about 800 acres of industrial land and this likely does not include portions of developed sites used for these purposes. Finding new development capacity on these lands will take work, but as industrial land value rises and vacant land becomes scarcer it may be profitable for industrial land owners to explore this potential
- **Fill or piling.** As land values rise, it can become economic to create new land by filling or by piling to create new decked areas. However, the only places this could occur are in the marine environment, which has ecological and other implications.
- **Major landform alteration**. There are non-agricultural vacant lands in the region that could be used for industry except for current slope conditions. Such lands could only be suitable for large industrial users if major earthworks are completed to level the sites. This has cost, environmental, and aesthetic implications that will limit the amount of land that could be made available this way.

Densification can add total employment capacity, but so far densification has not eliminated the take-up of new vacant industrial land. Over the long term, denser forms of industrial development are likely to account for an increasing share of total floor space and total employment, but do not appear likely to eliminate the need for larger, level, vacant industrial parcels for some kinds of users.

Creating new lands by levelling hillsides or constructing in the marine environment has environmental and economic challenges that will constrain the land area that could be created in this way.

6.1.7 Rising Sea Level and Flooding

Climate change will cause ocean levels to rise and contribute to increased risk of flooding, especially along the Fraser River.

Ocean levels are expected to rise significantly as polar ice melts and rising ocean temperatures increase water volume. Metro Vancouver and the City of Vancouver have published predictions of a rise of 1 meter by 2050. Fortunately, a 1 m rise in sea level does not appear to affect a large land area in Metro Vancouver, but there are some comparatively low elevation industrial areas (some parts of Richmond and Delta) that may become unsuitable for continued industrial use unless they are protected by diking.

The Regional Industrial Land Strategy considers a horizon of 2050 and for most factors this is already longer than can be confidently predicted. However, sea level rise is perhaps in a different category. While there is uncertainty about the rate at which average temperature will rise and polar caps will melt, it appears certain that in the long-term sea level will continue to rise and that flood risk will increase. Based on mapping that has been produced for this region, as sea level rises above 1 meter, in the absence of major diking some industrial lands in Richmond and Delta appear to be at greatest risk.

The land areas affected cannot be quantified at this time for two reasons:

- Mapping has not been produced at a fine enough scale to measure land areas that will be affected by sea level change or flood risk in the short term.
- There will likely be diking and other measures to mitigate some of the impacts.

However, it is clear that climate change is a risk factor that is likely to make the industrial land supply situation in the region more challenging.

6.1.8 Implications

The preceding factors can be summarized in terms of their implications for the available supply of land for new industrial use, as shown in Exhibit 22.

Exhibit 22: Directional Impact on Land Available for Industrial Development

Factor	Direction of Impact on Land Available for Industrial Development	Comments
Occupancy of industrial land by industrial/commercial use	Down ⇩	
Occupancy of industrial land by office use	Down ⇩	
Redevelopment of industrial land for residential use	Down ⇩	
Mixed industrial and residential development	Neutral ⇔	
Availability of land in Fraser Valley	Slightly Up ⇧	The Fraser Valley can accommodate some Metro Vancouver "overflow" for a few years
Densification	Neutral ⇔	Encouraging denser development will increase the ability of industrial land to accommodate employment, but it does not affect the pace at which new land will be taken up by industries needing large parcels and large floor areas
Opportunities for creating new industrial lands	Slightly Up ⇧	The potential for adding new land is very limited within existing land use policy
Rising sea level and flooding	Down ⇩	

Competition for industrial land from non-industrial uses is likely to increase in the region, as total population and non-industrial employment continue to grow. The available supply of industrial land, both vacant and occupied, is certain to decrease as these other uses displace traditional industrial use in many parts of the region. Rising sea level rise may seem like a more gradual and long-term concern, but it is likely to either decrease the supply of land or trigger expensive dyke construction that may lead to pressure to convert industrial land to higher value use to help fund the infrastructure.

The supply of vacant industrial land is shrinking as each year more land is developed or shifted to an alternate use. The most likely long-term outlook for the region is continued reduction in the total land available for industrial development, especially for large users, to the point where new users can no longer be

accommodated. There are no easy solutions to significantly increasing the inventory of industrial land in Metro Vancouver or the Fraser Valley.

6.2 Factors Affecting the Demand for Industrial Land in the Region

Diminished industrial land supply is less of a concern if there is likely to be a commensurate reduction in the need for industrial land in the region. This section examines factors that might change (up or down) the region's requirement for industrial land.

6.2.1 Global Economic, Demographic, and Physical Changes

Metro Vancouver has a particular bundle of economic roles in a global or national context. For example:

- As a gateway for products leaving the country (which tend to be raw or partially processed materials) Metro Vancouver requires extensive land for rail yards, intermodal transfer, commodities terminals, docks, and other facilities associated with exports of resources (e.g. lumber, logs, grain, food products, minerals, coal) and manufactured products.
- As a gateway for products entering the country (mostly manufactured products not made domestically), Metro Vancouver requires land for facilities including container terminals and warehouse and distribution. Fruits and vegetables, motor vehicles, consumer electronics, building materials, and furniture are just a few of the things that are shipped through Vancouver in large volumes to supply the regional population and markets to the east and north.
- Metro Vancouver is not a major manufacturing centre. It is not a large enough regional market to warrant the large-scale local manufacture of things like cars or appliances and it is not close to raw materials for most manufactured goods, except for some agricultural products and some wood products. Manufacturing here tends to be small scale, aimed mainly at a regional market, or in some cases intended for export (e.g. some agricultural products using local raw material). Much offshore manufacturing is controlled from Vancouver but that is a different role that does not require industrial land in this region.
- Vancouver is a tech centre, although not on the scale of giants like Silicon Valley or Massachusetts. The sector is growing and is occupying large amounts of office space.
- Vancouver is a film, television, and digital media centre, not at the scale of Hollywood but large enough to support several film studio locations and substantial employment.
- Vancouver is a major tourist destination and staging point for travellers to points east and north.

All these activities flow from the region's role in a global context. This role could change:

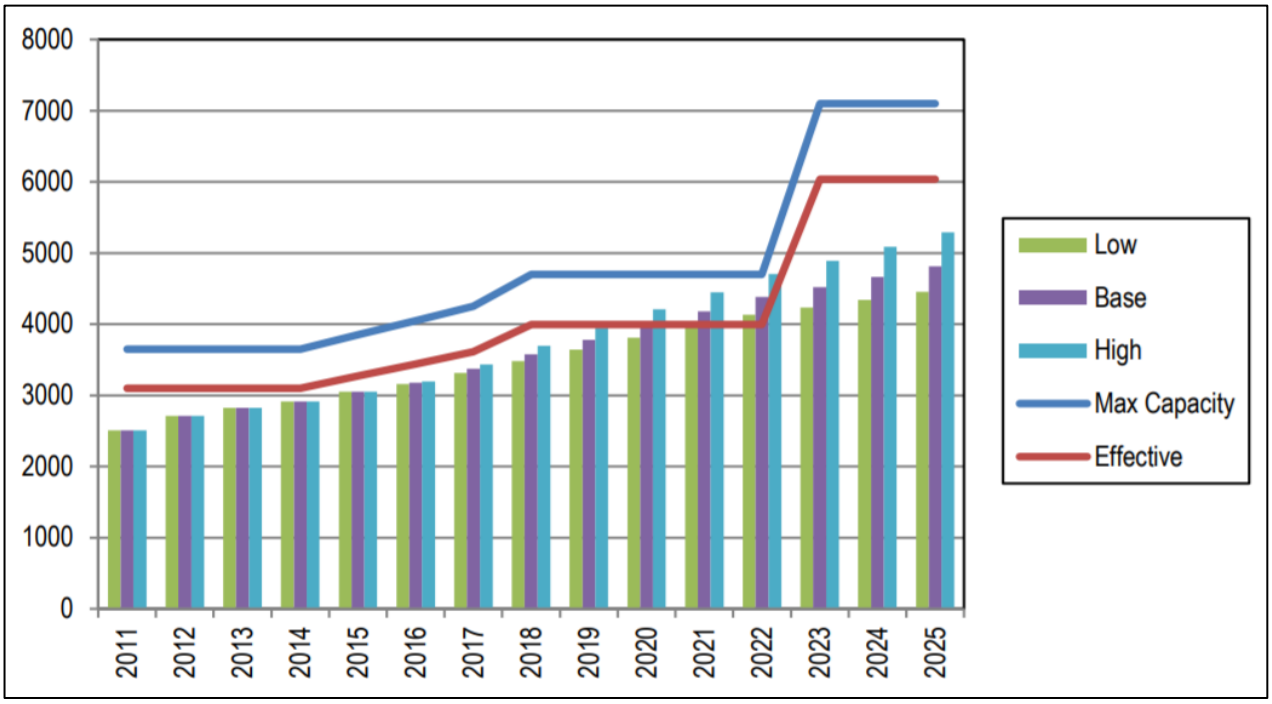
- Favourable trade relationships could increase the need for transportation and warehouse lands and facilities. Isolationism, tariffs, and trade wars could have the opposite effect but could also increase the need for land and facilities for local manufacture of previously imported goods.
- Continued immigration supports population growth, which adds to the domestic demand for locally manufactured goods and imported goods, adding to demand for industrial land in this region.
- Climate change could accelerate the rate at which people and businesses want to relocate from the worst-affected areas around the globe, adding to the demand for industrial land and for other uses.

These possible outcomes are difficult to predict but based on the trends of the last few decades it seems likely that international trade and immigration are more likely to maintain or increase demand for employment lands of all kinds in this region than to reduce the demand. As shown in Exhibit 23, Vancouver Fraser Port Authority's 2015 Trade Growth report anticipates continued long term growth in port traffic which means continuing need for lands to support the region's marine, rail, road, and air gateway functions.

One factor that might drop demand is a major earthquake, but such an event will either be so large it is no longer necessary to worry about industrial land demand or it will cause a temporary hiatus in development before things return to normal.

On balance, Metro Vancouver's role in the global economy will likely maintain or increase the need for industrial land.

Exhibit 23: Port of Vancouver Capacity & Demand Development to 2025 ('000 TEU)



Source:https://www.portvancouver.com/wp-content/uploads/2015/05/2016-Container-Traffic-Forecast-Study-Ocean-Shipping-Consultants.pdf

6.2.2 Changing Structure of the Regional Economy

One of this region's great economic strengths is diversity, relying a little on many sectors rather than relying entirely on one or two. The angst caused in southern Ontario by reductions in auto manufacturing does not have a parallel here.

Economic development efforts in the region tend to focus on knowledge sectors and the "new economy" including media, tech (clean tech, biomed, IT) and green jobs (recycling, alternative energy). Employment is growing quickly in these areas and they are supportive of the densification of employment, although some of these new economy jobs rely on industrial land for manufacturing.

The economy also continues to shift toward the service and professional sectors, which are almost entirely accommodated in office-like and retail-like space. This is partly due to changes in consumer behavior and due to Vancouver's attractiveness to professional firms that export services such as design, engineering, accounting, and law.

Expansion of the knowledge industries and the service sector mean that traditional industry makes up a smaller share of total employment and employment growth. However, there are two important facts to keep in mind:

- The "old economy" which includes many manufacturing uses (e.g. food processing, building materials, printing, steel products, equipment manufacture), warehouse/distribution, and goods movement is still growing, albeit more slowly, and contributes to economic diversity. While these uses vary in their operational characteristics and land requirements, they generally require large sites and tend to have a single storey building form.
- Some of the new economy relies heavily on old-school industrial uses that have been given fancier names. What used to be called a warehouse and distribution centre is now more likely to be called a logistics operation or a fulfillment centre. These facilities may have more robots, slicker systems, and more efficient operations, but they are still large, mostly single storey, grade level buildings with a lot of goods coming in and going out.

Amazon is an excellent example of this mixed old/new business format. Amazon arrived in BC in 2012. It has two Metro Vancouver fulfillment centres in operation (Delta, New Westminster) and a third underway on Tsawwassen First Nation land near DeltaPort. This new operation has a 450,000 square building on a 10-acre site.

Amazon's estimated total employment at the three fulfillment centres will be around 1,500 people. Amazon employs another 1,500 people in Downtown Vancouver, in software, management, administration, and other office-based jobs.

In Amazon's case, the new economy of e-commerce is driving demand for office space and traditional warehouse space.

A 2019 report by the Lincoln Institute and PWC, "Emerging Trends in Real Estate, Canada and United States, 2019" ranks real estate investment and development prospects by type of use. Industrial type uses that are considered fair to good prospects include fulfillment centres, warehouse, research and development, flex space, and manufacturing.

The Lincoln Institute report notes that emerging industrial niches include "cannabis production facilities, data centers, and spaces with large electrical capacity for cryptocurrency mining."

These are national scale trends which may not all apply to Metro Vancouver. However, the important message is that factors such as new technology, e-commerce, big data, and emerging sectors all point to a growing demand for industrial type space rather than a complete shift to higher density office-like employment space.

Even though job growth in Metro Vancouver has been faster in "new economy" jobs than in traditional industrial sectors, the growth in industrial floor space will probably continue as long as land supply allows.

6.2.3 Changing Nature of Industry

There are changes within the industrial business clusters that are also affecting the form of industrial development, the location of industrial uses, and the need for industrial land.

One trend is the rise of smaller, specialized manufacturers. The Vancouver Economic Commission estimates that over 70% of manufacturers in the City are less than 20 years old and are expanding. The Commission attributes this to growing global demand for specialized goods (e.g. high-performance apparel, clean technology), growing demand for artisan products (e.g. furniture, craft beer, custom building products, processed foods), and interest in "made in Vancouver" products.

These manufacturers can occupy relatively small spaces, can fit into urban neighbourhoods, and (in some cases) can occupy space in multi-storey buildings because of their scale and their physical nature (which does not rely on large shipments, large heavy equipment, or processes that cause excessive noise or odour). For these uses, rent can be a challenge, but the physical availability of land is less of a concern than it is for very large manufacturers.

As older industrial areas are being redeveloped to higher density employment districts, with more office-like accommodation, this type of manufacturing can be accommodated by requiring that the ground floor be industrial-like, with high ceilings and loading facilities. This is why the Vancouver Economic Commission (in "3 Manufacturing Myths and What They Mean for Metro Vancouver", November 2015) calls it a myth that "industrial activities belong on the outskirts of the City. They are loud, polluting, and incompatible with dense urban living." This is a myth…but only if considered with reference to what the Vancouver Economic Commission considers the "small scale, clean" urban manufacturers who on average occupy "less than 9,000 square feet and employ less than 50 people". The Commission makes this point because it wants to protect industrial land in the region's core; the Commission is concerned that treating manufacturing as a suburban land use can be used as a rationale for converting city centre industrial lands to housing and commercial use. This is an important consideration in regional industrial land policy: it is not only good economic policy to only consider the need for large, vacant, highway-accessible industrial land in the outer parts of the region.

However, it is important to not misinterpret the message regarding the nature of manufacturing. There is still a need for sites for large scale manufacturers that cannot fit in a dense urban area, because of their size, volume, or externalities. Large scale food processors, mass timber manufacturers, steel fabricators, modular construction component makes, and boat builders do not typically fit into a dense urban context.

The same kind of differentiation occurs in the goods movement sector. There are small scale importers and suppliers that can operate in an urban setting. Auto parts, appliance parts, courier/delivery, and housewares distribution are examples of goods movement operations that can fit into higher density urban settings. But furniture sales/distribution operations of Ikea scale, large food terminals, fulfillment centres, auto imports, and grain terminals are just a few examples of the kinds of goods movement/distribution industrial uses that cannot fit (and would not be welcome) in urban neighbourhoods.

The changing nature of some kinds of manufacture and distribution is creating demand for industrial-type space and land in urban settings. To foster this employment growth and diversity, it is important to plan for accommodating these uses when older industrial areas densify. It will also continue to be important to plan for the location of the larger non-urban industrial uses that are an important part of the diversity and strength of the regional economy.

6.2.4 Technology

The 2019 report by the Lincoln Institute and PWC lists what it calls “real estate industry disruptors”. Of the thirteen listed disruptors, twelve involve changing technology and one is the shift to the sharing economy and short term “gig” jobs.

Some of the technology factors listed seem likely to affect the design of workspaces and equipment (e.g. cybersecurity, internet of things, blockchain) or employment (e.g. workplace automation and big data analytics), but some could affect demand for industrial land. These include drone technology and autonomous vehicles, which could change the storage and delivery of goods, and 3D printing which could change the size and location of manufacturing.

This section explores the potential for technology to change demand for industrial land.

Technology that Affects Transportation and Logistics

One technology change that sparks much speculation about impacts on city spatial structure and employment is driverless vehicles. Such vehicles rely on advances in artificial intelligence, electronics, GPS systems, and robotics. It is likely that most or all of these vehicles will be electric, which also has environmental implications.

Some sources say these vehicles will be common on the road within 5 years, while others point to various challenges including weather (especially fog and snow), the continued presence of many human drivers, unexpected conditions, and the intricacies of making left turns in traffic that will push the horizon out longer. But it seems likely that such vehicles will affect city-building within the 2050 time frame of the Regional Industrial Land Strategy.

This technology has the potential to cause a large decrease in some kinds of jobs such as truck drivers, transit drivers, couriers, taxi (and ride-hailing) drivers, and could presumably extend indoors to operators of indoor equipment such as forklifts. But will the technology change the demand for industrial space?

New kinds of vehicles will affect how and when goods are moved but will not likely affect the type and number of goods that have to be shipped from manufacturer to staging point (warehouse or fulfillment centre) to end user. In theory, driverless vehicles could support a shift to continuous delivery streams from source to end user but considering that most customers live a long way from where most products are made, this would not be consistent with the trend to faster and faster delivery times. The Amazon business model depends on anticipating the regional demand for goods and ensuring that enough of them are on hand to supply customers quickly. Even items that have to be “ordered in” presumably come in batches from one centre to another.

If delivery of some goods switches to drones (for which there are still major regulatory and safety hurdles), there will be a need for loading and dispatch terminals.

Changes in the supply chain appear likely to increase demand for industrial land, not shrink it. If there are losses in floor space, it seems likely that retail space will be the main victim if consumers rely more and more on home delivery.

Driverless vehicles may result in a reduced need for on-site parking in some areas, freeing up space for employment occupancy. But vehicles not parked on site will either be constantly circulating the streets or when not required will need to be parked (and serviced) in remote locations. It is possible that a new need for industrial land emerges, for parking and maintaining autonomous vehicles not on duty.

Technology that Affects Manufacturing Processes

Driverless vehicles may affect manufacturing, if there is an increase in shared use rather than private ownership, because fewer vehicles would be needed (unless of course driverless cars add to the number of vehicles because they take rides away from transit, but that is a topic for a different discussion paper). If vehicle manufacturing demand falls, it will hurt Ontario but not Metro Vancouver.

One technology likely to disrupt manufacturing is 3D printing, which has sparked a whole industry in prophesy about radical change in production.

While industry watchers estimate that 3D printing currently accounts for a small share of total manufacturing output (some put it as low as 1%), they also anticipate massive disruption to traditional manufacturing and distribution because of the flexibility, diversity, short-cycle prototyping, cost savings, waste reduction, and small-run capability of the technology.

Here are some typical quotes from industry analysts:

- *"The implications of emerging technologies such as 3D printing on the industrial manufacturing sector are often hotly debated. Some experts in the industry feel that it will be hugely disruptive, while others believe the technology is decades away from viability". ("How 3D Printing Will Impact the Manufacturing Industry", Barrett Thompson, January 2016)*
- *"3D printing is one of the potential game changers that could completely disrupt the manufacturing value chain, allowing a shift from mass production to full customization, from centralized to distributed production…It will deeply impact the way products are manufactured, delivered, and maintained." ("3D Printing in Manufacturing Industries", Stefan Zimmerman, March 2018)*

One recent study estimates that some of the major current users (based on total revenue) are consumer electronics (20%) and automotive industries (20%), but they primarily use it for prototyping.[4] The medical industry accounts for about 15% of total revenue, for customized finished medical goods. For example, about 98% of hearing aids worldwide are manufactured using 3D printing.

This is the sort of technology that invites forecasts that can go horribly wrong, as when the advent of personal computers was proclaimed as the beginning of the paperless office.

However, the nature of the Metro Vancouver economy combined with the inherent advantages of 3D printing for some if not all kinds of manufacturing, supports these observations:

- Metro Vancouver is not a major manufacturing centre and is not likely to become one because of the cost of land, the price of housing, the relatively small in-region market, the distance to major consumer markets, and the distance to raw materials. It seems highly unlikely that mass producers of autos, appliances, consumer electronics, furniture or other products will locate here. These kinds of manufacturers are one major source of demand for 3D printed products, either for prototypes or specific components suited to 3D manufacturing. So, it seems more likely that firms supplying large numbers of 3D products to these major manufacturers would locate near them rather than in a location like Metro Vancouver. Metro Vancouver is unlikely to gain or lose from shifts in large-scale manufacturing.

[4] "3D Printing: The Next Revolution in Industrial Manufacturing", Consumer Technology Association and UPS, 2014

- On the other hand, the ability of 3D printing to decentralize production (because it is amenable to small-run and customized production) could allow local production of some kinds of goods that are currently imported to Metro Vancouver. Products such as small replacement parts, medical devices, or household products could be made on demand locally more cost-effectively and with better customer service rather than being made elsewhere, shipped here, and stored here for distribution.

Technology is unlikely to reduce the demand for manufacturing sites in this region, because there is not much manufacturing activity here that could be negatively affected. The technology could lead to an increase in local demand if the technology allows for local small-run production of goods that would otherwise be imported.

Other Technological Change

There are other kinds of emerging technology that will cause profound changes to work, lifestyle, health/medicine, construction, communication, cities. Nanotechnology, quantum computing, new materials, 5G, the internet of things…the list is long and growing. But drawing a straight line between these technologies and the take-up of industrial land is not easy.

As an analogy, smart phones have had a huge impact on communication, access to knowledge, entertainment, socializing, politics, and other parts of life, but has there been an observable impact on the amount of land needed to store rail cars, ship wheat, manufacture bathtubs, build sofas, or store and distribute consumer electronics including the phones themselves?

Emerging technology will certainly change some parts of industrial development, but not affect the demand for others.

6.2.5 Changes in Consumer Behaviour

The Lincoln Institute report notes that the *"rising popularity of online retail is driving an unprecedented need for more industrial space for distribution and return centres across Canada."* [5]

The report also states that a *"long and broad-based economic expansion has generated demand from the makers, movers, and sellers of goods"*, fueling demand for *"faster delivery, greater product variety, and consistently in-stock inventory" which results in "demand for logistics space, especially at the consumption end of the supply chain."*[6] This demand is coming from transportation companies (parcel delivery) and fulfillment centres.

Changes in consumer preferences for food is another potential influence on industry. There is a shift away from animal-based foods to plant-base foods which will affect farming and food processing. The effects on industrial land could include:

- More greenhouse operations.
- More processing facilities for making plant-based foods including meat and dairy substitutes.
- Fewer processing facilities for meat and dairy products.

[5] Lincoln Institute and PWC, "Emerging Trends in Real Estate, Canada and United States, 2019", page 14.

[6] Ibid, page 73.

Metro Vancouver already has major greenhouse operations and fruit/vegetable processing facilities so these may increase.

There are egg, chicken, milk, and cheese producers in Metro Vancouver, but local production of pork, lamb, and beef is mainly by smaller specialty suppliers. The impacts of changes in these sectors are more likely to be felt in places with higher animal production.

Finally, the new cannabis industry will be taking up land for growing (outdoor or more likely indoor in greenhouse facilities) and processing a wide variety of smokable, edible, and drinkable products.

6.2.6 Land Values

Some local realtors and developers provide anecdotal evidence that high land values and high rents are causing some industrial uses to shy away from Vancouver.

The Lincoln Institute report anticipates that in the Vancouver regional industrial market *"warehousing and fulfillment property will continue to be a top performer. There is little industrial land to be found, and landlords are holding on to what they have or redeveloping old assets to meet changing demands."* [7]

There is no question that industrial land values will continue to rise over the long-term if there are no significant additions to supply. Rising land values will have these impacts:

- Growing pressure to convert older, low density uses to higher density, higher value uses.
- Closure of older traditional industrial operations in high value, high density areas and relocation to lower density areas. Some operations will locate further east in Metro Vancouver or the Fraser Valley and some will move away from the Lower Mainland, to the interior of BC or to Alberta.
- It will be increasingly difficult for service commercial industrial uses such as glass repair, auto body repair, and tire shops to find affordable premises in suitable ground-oriented configurations in core or near core locations.
- At some point, land values will be so high that some kinds of industrial uses will not be able to afford to locate in the region. This would reduce the need for land for large site, low density, ground oriented large-scale manufacturing and warehouse spaces, but at the cost of diminished economic and employment diversity.

6.2.7 Population Growth

The regional resident population is a significant source of demand for many products manufactured in the region. Visitors to the region also add demand for locally manufactured goods. Residents and visitors add to the total demand for goods that are imported.

Population and total visitor volumes are projected to continue to grow in Metro Vancouver (and the rest of the Lower Mainland), so this will have an upward influence on the pace of industrial floor space development and the take-up of industrial land.

[7] Ibid, page 16.

6.2.8 Implications

The preceding factors can be summarized in terms of their impact on the rate of take-up of industrial land, as shown in Exhibit 24.

Exhibit 24: Directional Impact on the Rate of Take-Up of Vacant Industrial Land

Factor	Directional Impact on Rate of Land Take-Up by Industrial Use	Comments
Global changes	Up ↑	On balance, global economic and demographic trends are likely to favour continued growth in Vancouver
Changing structure of the regional economy	Neutral ↔ or Up ↑	The growth of non-industrial sectors and smaller scale industrial users is not linked to a decline in the need for traditional industrial land and also supports the continued use of existing industrial land in urban areas
Technology	Neutral ↔ or Up ↑	Technology is more likely to increase industrial growth than decrease it in this region
Consumer behaviour	Up ↑	While there may be declines in the demand for retail space, there will be increased need for warehouse/distribution space
Land values	Down ↓	Rising land values will lead to industrial relocation and will deflect interest to other regions. This reduces demand for traditional industrial land, but at the cost of reduced economic diversity
Population growth	Up ↑	Regional population growth and increased visitor numbers will add demand for industrial land

Based on this review, it is possible that industrial land demand will accelerate, and it seems unlikely that in the foreseeable future there will be a decline in the pace of industrial floor space growth or reduced need for industrial land to accommodate industrial development. The only factors that might put significant downward on industrial land requirements are high industrial land values that chase away industrial prospects and high housing prices that limit the supply of skilled labour.

7.0 Possible Futures

7.1 General Outlook

The overall outlook for industry and industrial land in Metro Vancouver can be summarized as follows:

- The region will continue to be constrained by mountains, the ocean, and the US border, which create hard limits on the land base in Metro Vancouver. Taking a Lower Mainland perspective adds capacity for the broader region to absorb industry, but the Fraser Valley also has limited land supply and probably only adds a few years of capacity at recent rates of take-up. Regional and provincial designations (such as the Urban Containment Boundary, Agricultural Land Reserve, and parks/conservation areas) further constrain the land available for urban use, so there will continue to be increasing competition among uses for the limited available land area.
- The development of industrial floor space will continue at least at the present rate and possibly greater over the long term. This development will include the densification of existing industrial lands and development on vacant lands including single storey low density development as well as higher density development.
- Some industrial land will continue to transition to other uses. In some cases, the land will no longer be suitable for industrial use (because of difficulty with access or incompatibility with adjacent uses). In other cases, the need for some other use will be given higher priority. The previous industrial occupants of such lands will either cease operations, leave the region altogether, or relocate within the Lower Mainland. The mix of these outcomes is unknown, but it is certain that a portion of the "lost" land must be made up elsewhere through the use of existing vacant land or the addition of new supply.
- Changes in technology will have huge impacts on the number and type of jobs, the design of workspaces, the density of industrial development, the structure of the regional economy, and the compatibility of some forms of industrial use with other land uses, even in high density urban areas. Traditional industrial sectors (resource jobs and some types of heavy manufacturing) will continue to shed jobs and require less space. But overall, the demand for industrial floor space and industrial land appears far more likely to continue or increase, rather than decrease. Driverless vehicles, 3D printing, drones, e-commerce, and other factors seem more likely to increase the demand for warehouse-type space than to reduce the demand.
- Climate change could reduce the supply of industrial land (due to sea level rise and Fraser River flooding), while potentially leading to increased demand, as people and businesses leave locations that are affected even more than Metro Vancouver.
- Some countries are in a protectionist frame of mind these days, with implications for trade and the volume of product moving through Metro Vancouver's ports. Canada's disputes with the US and China have affected a wide range of products. Such events have happened in the past and will happen again, but the long-term trend is for more global trade. It would seem short-sighted to hamstring Metro Vancouver's capability as a gateway, by constricting the ability to expand rail, air, truck, and marine goods movement.
- Industrial land prices are likely to continue to rise because of the dwindling supply of available sites. Higher prices will cause some industries to relocate, to take advantage of the lift, and may prevent some industries from locating in the region. There could be a loss of economic diversity and a loss of employment diversity.

As a counterpoint to some of these trends, some kinds of technology (e.g. robots, AI) will likely mean that the number of industrial type jobs could decline even while growth in the volume of production and the demand for land continues to be strong. Providing sufficient land to accommodate industrial growth will provide tax base, capital investment, construction activity, and some ongoing employment but not as many jobs as in traditional manufacturing, transportation, warehouse/distribution, and other industrial sectors. So, facilitating industrial development will help maintain the diversity of the regional economy but perhaps not offer the same degree of support for employment diversity.

Because the supply of industrial land cannot be significantly increased (barring significant changes to regional and provincial land designations), scenarios for the future differ only in terms of the pace of land take-up.

To explore the implications of different trends, we consider three scenarios for industrial land:

- Present trends continued
- Slower take-up of industrial land
- Faster take-up of industrial land

In all three scenarios, we make the same assumption about the availability of land. Metro Vancouver has about 5,500 acres of undeveloped land but only about 3,700 of this is vacant and the balance is used for a non-industrial purpose and *may* transition to industrial use.

It is highly unlikely that all the land currently classed as undeveloped will actually become available for new industrial development. It is also likely that some industrial land will continue to be shifted to non-industrial use.

For illustrative purposes, we use an estimated "working inventory" of 4,500 acres as the amount of land available to accommodate new industrial growth (that is not accommodated in redevelopment and densification) in Metro Vancouver.

In addition, the Fraser Valley has about 420 acres of available vacant land, but this is being depleted and, in any case, would only about two years' worth of Metro Vancouver industrial land take-up.

7.2 Present Trends Continued

The present trends continued scenario can be summarized as follows:

- The rate of vacant land take-up in Metro Vancouver over the last decade or so has averaged about 210 acres per year and some analysts regard this as a conservative estimate of future absorption. Adding in conversion of industrial land to other uses increases the total draw-down of the industrial land inventory by another 250 acres per year, but much of this comes from the developed inventory, not the vacant inventory. Forecasts by the Port put the rate of land take-up at about 250 acres per year.
- The average density of industrial development will continue to increase, for some uses but not others. The demand for large site, large floor plate uses may slow in the future for major manufacturing, but it appears likely to continue for transportation and logistics. Some kinds of development are shifting to the east, where large parcels of land are available.
- The declining availability of land will mean that prices will rise and some kinds of industrial activity will leave (or not come to) the region, with implications for the diversity of the economy and employment.

- While the take-up of land by new development is likely to continue, it is possible that conversion to other uses slows in response to the concern about industrial land supply. It is also possible that some conversions to other uses are offset by the required inclusion of ground floor industrial space in new higher density projects. Therefore, we use an average of 225 acres per year as the present trends continued rate of undeveloped industrial land take-up. We realize that this may be a conservative estimate.
- If the working inventory is 4,500 acres and the average annual rate of take-up is 225 acres per year, the land inventory will last for about 20 years.

7.3 Slower Take-up of Industrial Land

There are some trends that could have a downward influence on the rate of land take-up, including:

- Accelerated densification of industrial development (presumably in response to higher land values, changing nature of industrial work, and technology), could allow more jobs to be accommodated on the available land base.
- Technology could reduce total demand for industrial land without reducing the value of goods production or total employment. A post-industrial region might use land more effectively without impairment to the economy.

On balance, though, based on the review of factors we have examined we do not see much likelihood of a scenario with significantly slower take up of industrial land in the foreseeable future. The way industrial land is used will change, for the better whenever employment density increases, but the average annual absorption over the next several decades is not likely to be materially less than at present. It is noteworthy that some of the above forces are already at work but the region continues to take up 200+ acres per year of vacant land for new industrial floor space.

To show the implications of a slower rate of take-up, we can test a possible reduction in take-up. In our view, a reduction of 10% would be significant (and unlikely). A reduction of 10% from our “present trends” number of 225 results in a rate of take-up of 200 acres per year. At this pace, the estimated working inventory of 4,500 acres would last about 22 years.

7.4 Increased Industrial Land Take-Up

Could the situation become even more challenging for industrial development?

There is a potential scenario with more rapid take-up, driven largely by growth in logistics, trade, technology, and some kinds of specialized manufacturing.

Some forms of industry, especially those needing large sites, are shifting east to Fraser Valley locations so it is possible that some of the pressure on Metro Vancouver industrial land is alleviated by this trend, but such development still draws down the total Lower Mainland capacity to absorb new development.

There are factors that could increase the rate of take-up including:

- Growth in the land requirement for logistics space
- Population growth, which creates more demand goods manufactured in the region

- More specialized manufacturing, supported by technology and changes in consumer preferences
- Growth in imports and exports

Some forecasts already put the rate of take-up at 250 acres per year, so for a more aggressive scenario we increase this by 10% to reach 275 acres per year. It is important to note that this increased rate of take-up could have two different but important components:

- An increase in the rate of transition of industrial land to other uses, leading to an increase in relocations of existing industries to occupy vacant land elsewhere in the region.
- An increase in the pace of new industrial floor space for new users.

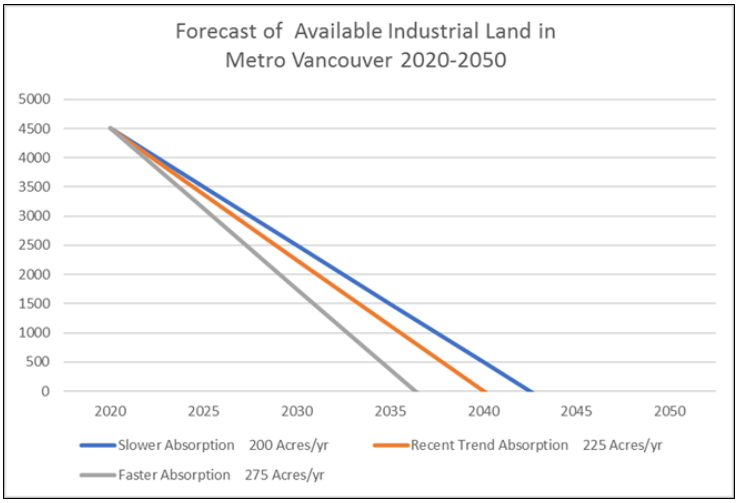
At 275 acres per year, the assumed working inventory of 4,500 acres would last 16 years.

7.5 Comparison and Conclusions

The three scenarios are compared in a simple model and in graphic form in Exhibit 25, which shows the year in which the working inventory would be depleted based on the assumed rates of take-up.

Exhibit 25: Forecast of Available Industrial Land in Metro Vancouver 2020-2050

Assumptions:			
Starting Inventory 2020	4500 acres		
Annual absorption of industrial land:			
Slower Absorption	200 acres/yr		
Recent Trend	225 acres/yr		
Faster Absorption	275 acres/yr		
Forecast:			
	Available Industrial Land in Metro Vancouver (Acres)		
Year	Slower Absorption 200 Acres/yr	Recent Trend Absorption 225 Acres/yr	Faster Absorption 275 Acres/yr
2020	4500	4500	4500
2025	3500	3375	3125
2030	2500	2250	1750
2035	1500	1125	375
2040	500	0	-1000
2045	-500	-1125	-2375
2050	-1500	-2250	-3750



The graph shows that it is highly likely that during the decade 2035 to 2045 Metro Vancouver will have exhausted its inventory of vacant or undeveloped industrial land. Of course, redevelopment and densification will continue to accommodate much of the region's employment growth, but there will little or no remaining ability to accommodate large, new industrial uses. Adding in the few hundred acres of industrial land in the Fraser Valley does little to help the situation, extending by only a couple of years the ability of the entire Lower Mainland to accommodate large manufacturing or logistics users. The model also shows the magnitude of land deficit that will accrue by 2050 after available land is developed.

We are not the first to reach this conclusion. Many commentators have identified this concern and have pointed to loss of opportunity as a result. For example, Tom Hutton and Trevor Barnes ("Metro Vancouver Industrial Lands Report 2018: Industrial Lands and the Innovation Economy", June 2018) concluded that "…to maintain a prosperous and growing Metro Vancouver region it is crucial to retain and manage the region's industrial land supply" and "…warehousing, wholesaling and distribution activities require on-going industrial land". The Vancouver Economic Commission, in its 2018 Industrial Insights report notes that "…a diminishing supply of industrial land limits the ability of industrial businesses…from accessing affordable spaces to operate." Media commentators, industrial real estate brokers, academics, and industrial businesses have all pointed to increasing challenges with finding locations for new industry.

In our view, the most likely outlook for the future lies between the "present trends continued" and the "faster take-up" scenarios, which reduces the time horizon to 2035 to 2040 or so. However, even if the "slower take-up" scenario happens, it does not buy much extra time.

8.0 Policy Implications

1. The inventory of vacant industrial land in Metro Vancouver (as well as the Fraser Valley) is likely to be used up within the 2050 planning horizon of the Regional Industrial Land Strategy. However, more work should be done to understand the inventory and the rate of draw-down. The Strategy should include a more detailed analysis of the rate of take-up of industrial land by category (development on vacant land, development for industry of lands occupied by other uses, industrial land lost due to transition to other uses), by location, and by parcel size for a greater understanding of the rate of draw-down of the whole inventory and the vacant inventory. Also, the inventory of undeveloped land should be examined more carefully to identify lands that are not likely to actually transition to industrial use.
2. While the average density of industrial development is increasing, on greenfield sites and in the redevelopment of occupied industrial land, there is still a requirement for sites for large, ground level, relatively low-density manufacturing, warehouse, transportation, and utility uses. These forms of development are finding it challenging to find available sites in the region.
3. The total supply of industrial land in Metro Vancouver will continue to decline because of transitions to other uses and the take-up of vacant land. This will put pressure on the remaining inventory, so industrial land values will continue to rise. In the longer-term sea level rise and flooding could further decrease the supply of usable industrial land.
4. Industrial and industrial/commercial uses that function well in high density, urban settings will not have difficulty finding land and space, because of the redevelopment of former low-density industrial land. However, diminishing availability of land for larger users (that require sites of 10 acres or more, good road access, and large grade level floor area) and increasing land price will likely lead to some forms of manufacturing and warehouse/distribution activity shifting away from the region.
5. In urban areas, industrial/commercial uses (e.g. auto repair, printing) will compete for space with small specialized industrial users (e.g. bakeries, laundries). Zoning will need to accommodate a variety of uses, but commercial businesses can pay more rent than industry so zoning will have to be carefully crafted if the goal is to protect some ground level space for small manufacturing.
6. Global economic trends, new technologies, changing consumer behaviours, and other prospects over the next few decades are more likely to increase demand for industrial land in Metro Vancouver than decrease demand, including demand for large scale uses.
7. Our estimate that the current inventory of undeveloped industrial land meets requirements to about 2035 to 2045 could be optimistic in some important ways. Some large industrial uses are already having difficulty finding sites in the region. New development, rising land value, and loss of inventory to other uses are likely to mean this challenge will increase. Also, much of the remaining land is in relatively small parcels which cannot accommodate large users.
8. These trends are not a problem if the region is prepared to accept some restructuring in the economic base, with less employment in manufacturing and logistics, but this will reduce the diversity of the regional economy and the range of employment opportunities.
9. Assuming Metro Vancouver (and the Fraser Valley) want to continue to accommodate a wide range of industrial uses, the Regional Industrial Land Strategy should consider these policy directions:

a. Greater measures to protect the existing inventory of industrial land, including revising municipal zoning bylaws to reduce the allowable non-industrial uses of industrial land in locations where existing and new industrial development are still functional and economically viable. Many retail and office uses have options for where they locate (albeit at a higher land or rent cost), but large industrial uses do not, so zoning could be revisited to reduce or eliminate some kinds of retail, service commercial, and office use in solidly industrial areas.

b. Explore possible ways to use industrial land more intensively, without compromising the ability to accommodate larger manufacturing and logistics uses. The kind of densification that involves replacing industrial users with higher density office type environments increases total employment capacity and can provide ground level space for small scale industrial users, but it does not help accommodate very large manufacturing or logistics uses. For these, intensification means using land more efficiently (e.g. reducing/consolidating storage and parking, higher site coverage). It is worth examining some of the region's large, uniform, industrial areas to explore the potential for intensification without transitioning to different land use.

c. Explore options for increasing the inventory of vacant industrial land, particularly for large-site users. This will clearly be a challenging policy direction as there are no un-controversial ways to shift land from other uses to industrial. However, if the region wants to maintain the full dimensions of its economic and employment diversity, it is necessary to confront the challenge of being able to accommodate large manufacturing and logistics users.

10. Protecting the existing land inventory and encouraging more dense and efficient use of the available industrial land will maintain and extend the ability to accommodate employment and floor space for some kinds of industrial users. However, these strategies do not extend the region's ability to accommodate large industrial users on large sites. So, the policy direction to explore ways to increase the industrial land inventory, for a wide range of user including those that require large floor area on large sites, should be a key element in the Regional Industrial Land Strategy.

    An urban region with a constrained land supply cannot accommodate new industrial development on greenfield land forever. There will be a limit on the land area that can be shifted from other urban uses, agriculture, conservation, or open space. Given the need to eventually confront a near-zero inventory of greenfield industrial land, an obvious policy question is *"how far into the future is it appropriate to try to accommodate new industrial absorption?"*

    There are three possible answers to this question:

    a. *Only as long as the present inventory will last* – As shown in Section 7.5, this means the inventory of greenfield industrial land will be exhausted during 2035 to 2045. This option avoids the need to confront the challenge of finding additional lands, but it risks the economic implications of not being able to accommodate large industrial users in the Lower Mainland within the next fifteen to twenty years.

    b. *Indefinitely* – This means an ongoing shift of land from non-urban use to urban use, which has significant impacts for residential capacity, food security, green space, and the natural environment. This is not a sustainable approach and, in any case, is not necessary. The rate of change in technology, climate, global economic and political conditions, and other factors is such that the world, and individual urban regions, may become so different from the present that it is not possible to anticipate very long term future industrial land needs in this region.

c. *Somewhere between* – A land supply horizon of fifteen years is uncomfortably close, as this is not long enough for a radical transformation of the Metro Vancouver economy to take hold and does not leave much time to fully address the environmental, economic, planning, and political challenges of actually finding new industrial land. On the other hand, there is no point in trying to gauge the need for industrial land in say fifty years, as this is long enough for major changes to occur. A planning horizon of say thirty years is perhaps a reasonable balance. If one accepts this argument, then it would be appropriate to expect the Regional Industrial Land Strategy to explore ways to fully accommodate projected Lower Mainland industrial land absorption to the year 2050. Based on the scenarios in Section 7.5, this means aiming to identify about 2,000 to 4,000 acres of potential new industrial land.

Attachment 1: Estimate of Metro Vancouver Employment by Business Cluster (2011)

Business Groups	Metro Vancouver[b]		Notes
	Number of Jobs in 2011	% of Total Metro Jobs	
Community-Oriented	550,000	47%	1a-g
Transportation, Warehousing & Logistics	65,000	6%	2
Manufacturing	65,000	6%	3
Wholesale	60,000	5%	4
Tourism	75,000	6%	5
Technology	65,000	6%	6
Commercial Services	85,000	7%	7
Higher Education & Hospital	45,000	4%	8
Construction	80,000	7%	9
Resource	20,000	2%	10
FIRE Specialized	40,000	3%	11
Film and Television	15,000	1%	12
Government Headquarters	15,000	1%	13
Total Number of Jobs	1,180,000	100%	14

Estimated by Coriolis using a variety of sources (e.g. 2011 National Household Survey from Statistics Canada, data from BC Stats and regional hospitals and post-secondary institution websites, industry association reports, and interviews with industry representatives). The Metro Vancouver total is all jobs in Metro (including jobs at a fixed location and jobs with no fixed workplace address).

Notes

1. This includes a portion of 44-45 Retail trade, FIRE (52 Finance and insurance and 53 Real estate and rental and leasing), 54 Professional, scientific and technical services, 56 Administrative and support, waste management and remediation services, 61 Education Services, 62 Health care and social assistance, 772 food services and drinking places, 81 Other Services, and 91 Public Administration. The major assumptions are as follows:
   a) Assumes that about 85% of retail employment (44-45 Retail Trade) is community-oriented (108,082) and 15% is specialty retail and tourism-oriented (19,073). This is based on the share of the regional retail floorspace located in Downtown Vancouver and the Broadway Corridor based on BC Assessment floorspace data.
   b) Assumes that about 50% of FIRE (52 Finance and insurance and 53 Real estate and rental and leasing) is community-oriented (46,493). This is based on the share of the regional office floorspace located in Downtown Vancouver (about 47%) and elsewhere in the region (53%) based on the Cushman & Wakefield Office Market Report Q1 2013 for Greater Vancouver.
   c) Assumes that about 50% of commercial services (54 Professional, Scientific and technical and 56 Administrative and support, waste management and remediation services) is community-oriented (84,065). This is based on the share of the regional office floorspace located in Downtown Vancouver (about 47%) and elsewhere in the region (53%) based on the Cushman & Wakefield Office Market Report Q1 2013 for Greater Vancouver.
   d) Assumes that about 80% of 61 Education Services and 62 Health care and social assistance employment is community-oriented (169,204). We assume that about 20% of employment in these industries is supported by specialized and region-serving services such as university-related and hospital-related activities (42,301).
   e) Assumes that about 50% of the 772 Food Services and Drinking Places employment is community-oriented (38,693) and 50% is tourism-oriented (38,693).
   f) Assumes that all employment in the 81 Other Services category is community-oriented (58,555).
   g) Assumes that 75% of 91 Public Administration employment is community-oriented (44,895) and 25% is related to high-order and specialized functions (e.g. government headquarters, custom and border services).

2. This is our estimate based on information from Destination British Columbia and BC Stats ("Vancouver, Coast & Mountains Tourism Region. Regional Tourism Profile 2011"), which suggests that there were about 80,000 tourism jobs in the Vancouver, Coast and Mountains Tourism Region (VCMTR) in 2011. We assumed that about 86% (the Greater Vancouver Area's share of the VCMTR population in 2011) of tourism jobs are located in the Greater Vancouver Area.
3. Includes all employment in the "31-33 Manufacturing" category as reported by Statistics Canada (76,940), minus 10,000 jobs which are High-Tech Manufacturing jobs.
4. This includes all jobs in the "Transportation, Warehousing, and Logistics" category as reported by Statistics Canada.
5. This includes all jobs in "23 Construction" as reported by Statistics Canada.
6. This includes all jobs in "41 Wholesale Trade" as reported by Statistics Canada.
7. This is our estimate based on information from BC Stats ("BC Labour market Scenario Model. High Technology Occupations. Issue: 2010-1, July 2010"), which suggests that there were about 73,500 high-tech jobs in the Mainland & Southwest Development Region in 2009. We assumed that about 86% (Metro Vancouver's share of the Mainland/Southwest Development Region population in 2009) of high-tech jobs are located in Metro Vancouver (i.e. about 65,000 jobs)
8. This is our estimate, which is 50% of our estimate of jobs in the following categories as reported by Statistics Canada: 54 Professional, Scientific and technical and 56 Administrative and support, waste management and remediation services. The other 50% is included in Community-Oriented jobs.
9. Given that we assumed that about 80% of employment in 61 Education Services and 62 Health care and social assistance is Community-Oriented, this is the remaining 20% which we assume is made up of specialized and region-serving services such as university-related and hospital related activities (42,301).
10. Given that we assumed that about 50% of FIRE (52 Finance and insurance and 53 Real estate and rental and leasing) is Community-Oriented, this is the remaining 50% which we assume is made up of specialized and high-order services (46,493).
11. This includes all jobs in the following categories as reported by Statistics Canada: 512 Motion picture and sound recording industries and 515 Broadcasting (except Internet) (12,215).
12. This includes all jobs in the following categories as reported by Statistics Canada: 11 Agriculture, forestry, fishing and hunting, 21 Mining and oil and gas extraction, and 22 Utilities (22,635).
13. Given that we assumed that 75% of 91 Public Administration employment is Community-Oriented, this is the remaining 25% which we assume is made up of specialized and high-order services associated with government headquarters (14,965).
14. This is the total number of jobs in all industries in the Vancouver CMA in 2011 as reported by Statistics Canada (1,182,390). Note that for Metro Vancouver, this includes all jobs "at a fixed workplace address", "work at home" jobs, and "jobs with no usual place of work".

To: Industrial Lands Strategy Task Force

From: Gord Tycho, Senior Planner, Regional Planning

Date: July 29, 2019 Meeting Date: September 12, 2019

Subject: **Task Force Workshop on Addressing the Industrial Lands Supply Challenge: Summary**

RECOMMENDATION
That the Industrial Lands Strategy Task Force receive for information the report titled "Task Force Workshop on Addressing the Industrial Lands Supply Challenge: Summary" dated July 29, 2019.

PURPOSE
To provide the Industrial Lands Strategy Task Force (Task Force) with a summary of the Task Force workshop addressing the industrial land supply challenge in Metro Vancouver.

BACKGROUND
The Regional Industrial Lands Strategy seeks to ensure sufficient industrial lands to meet the needs of a growing and evolving regional economy to the year 2050. It is centred around four main topics: addressing the land supply constraint, pressures on industrial lands, site and interface issues, and coordination challenges. As part of stakeholder engagement in the development of the strategy, two workshops on addressing the land supply constraint were held in spring 2019, first with regional stakeholders on May 29, 2019, and then with the Industrial Lands Strategy Task Force on June 20, 2019. This report provides both a summary of the Task Force workshop as well as a comparison of the findings from the May stakeholder event.

METRO VANCOUVER REGIONAL INDUSTRIAL LANDS STRATEGY: LAND SUPPLY
At both of the workshops, seven policy options were introduced:

- Provincial Industrial Land Reserve
- Strengthening Regional Policy;
- Trade-enabling Zoning Districts;
- Zoning Consistency for Industrial Lands;
- Regional Land Use Assessment;
- Encouraging Intensification; and
- Mixed Use – Allowing Residential.

Feedback on each policy option was obtained by first utilizing the Mentimeter, a tool that tracks participant preferences in real time. Participants were asked to assess both the *feasibility* of implementing the policy option in addressing the land supply challenge and the *effectiveness* of the policy option in addressing the land supply challenge. Results were shown in real time, providing a

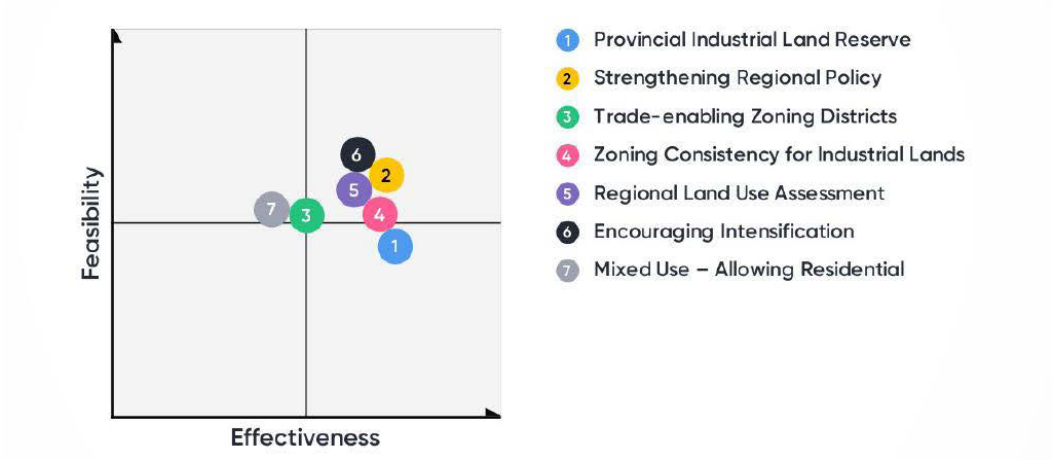
visual that set the stage for discussing the 7 options. Subsequent discussion on each of the policy options is summarized in the Attachment.

Consistent themes from both events include:

- multiple policy options will be required to address the land supply issue;
- consensus at the local and regional level is essential;
- strengthening regional policy seems to be the most feasible and effective policy option;
- trade-enabling zoning (while good for the port) may put pressure on small and medium industrial users – would have to be carefully applied with sufficient space for local and region servicing activities;
- there is a clear need to address zoning inconsistencies and employment activity creep into industrial lands;
- a regional land use assessment is most effective as a companion piece to other policy options, a good tool to help us use our existing land base in a more efficient way; and
- although costs may limit the development feasibility of some industrial parcels in transit-oriented areas, there was minimal support for mixing residential uses on industrial lands, as it was seen as a slippery slope to the eventual loss of such industrial lands.

Industrial Lands Strategy Task Force Workshop
As reminder, the Mentimeter tool was not used to vote for preferred policy options, but rather to spark conversation about the effectiveness and feasibility of different policy options. Task Force members strongly expressed a need for a package of policy options – that no one option would address the supply challenge.

Task Force Mentimeter Results



Participants at the Task Force Workshop expressed that a 'Provincial Industrial Land Reserve' would likely be the most effective tool, but the least feasible to implement. 'Encouraging Intensification', 'Strengthening Regional Policy', and 'Achieving Zoning Consistency' were seen as the most feasible and effective options, with the need for a 'Regional Land Use Assessment' also ranking high. 'Trade-enabling Zoning Districts' and 'Mixed Use' industrial areas that would allow residential were seen as

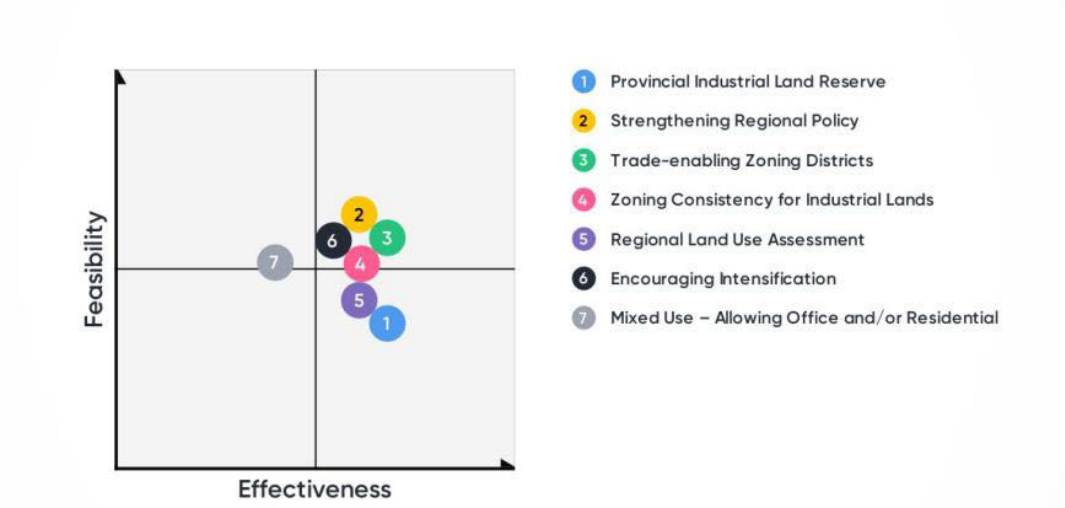
the least effective tools to address the land supply constraint. Through discussion about each policy option, members noted that:

- If a 'Provincial Industrial Land Reserve' were to be advanced, it would need to be informed by the 'Regional Land Use Assessment' at a minimum. Members expressed a desire to work at local and regional level to achieve a solution rather than seeking, or relying on, a strong provincial response.
- Members expressed that 'Strengthening Regional Policy' offers comprehensive tools while building consensus at the local level as part of updating the regional growth strategy. This option would also benefit from a Regional Land Use Assessment to guide policy development. Concern was expressed that there may not be sufficient 'teeth' in the policy to significantly impact land protection.
- In considering 'Trade-enabling Zoning Districts' members discussed the level of flexibility in permitted uses so as to also permit and support region serving industrial uses providing regional jobs, the need to consider the characteristics of the land or parcel, and the fact that this may be a good direction for large users, but could put pressure on small and medium sized industrial businesses. The Port of Vancouver noted that this policy option is critical for protecting remaining larger flat parcels next to trade-enabling logistics infrastructure.
- Many members acknowledged the need for greater zoning consistency and more regional congruency of a definition of industrial and permitted uses. Task Force members expressed concern about the infiltration of non-industrial uses in industrial areas, and asked the means by which local governments can incentivize non-industrial users to re-locate to other employment lands. There was discussion about how fragmented government can create a lowest common denominator situation.
- Regarding the 'Regional Land Use Assessment', this policy option was seen by many members as a key linchpin for other policy options. It was noted that it must be done in a comprehensive manner, with a broad approach to multiple land uses regardless of municipal, and potentially regional, boundaries. It would be a critical information tool, identifying key issues and pinch points.
- In terms of 'Encouraging Intensification', there was a widespread acknowledgement that the region as a whole needs to use our existing land base in a more efficient manner, and that there are a number of good examples across the region on industrial land, including in trade-enabling uses. Making changes to zoning to remove barriers to intensification was seen as a necessary quick move. There was recognition by Task Force members that financial incentives may be necessary in order to overcome the high capital costs of multi-level industrial development, but also some concern about how much would be necessary and who would be responsible for offering these incentives.
- And finally, in discussing permitting residential uses on industrial land, members expressed that high land values can limit the feasibility of industrial developments in transit oriented areas, and that allowing residential into certain employment areas might facilitate redevelopment with a focus on employment and affordable rental housing, although only in close proximity to rapid transit stations. Members expressed concern that this policy option creates a slippery slope, and that if used, would require clear and hard criteria and boundaries, and that it will likely still affect other industrial uses and encourage speculation in more than the identified area.

Stakeholder Workshop Mentimeter Results

As comparison, Mentimeter results from the May 29 Stakeholder Workshop are also provided. Forty-eight attendees participated. Participants expressed that 'strengthening regional policy' seemed the most feasible and effective option. 'Trade-enabling Zoning' (and zoning consistency generally) and financial incentives to 'Encourage Intensification' also were seen as more effective and feasible policy options. A 'Provincial Industrial Land Reserve' was seen as the least feasible option, despite effectiveness, and allowing 'residential uses' was seen as the least effective tool to address supply. Subsequent discussion reinforced the notion that multiple policy options are required to address the land supply issue.

Stakeholder Workshop Mentimeter Results



There are many similarities between the Mentimeter results of the Task Force Workshop and Stakeholder Workshop. Notable differences are that the Stakeholder Workshop participants ranked 'Regional Land Use Assessment' lower in terms of feasibility, and ranked 'Trade-enabling Zoning Districts' higher in terms of both feasibility and effectiveness.

Regarding allowing residential mixed-use, there were similar concerns that detriments outweigh benefits, and that if contemplated, it would need to be done in very limited scope in specific locations/ circumstances. Key takeaways also included considering a phased approach to policy implementation, and the importance of recognizing regional considerations at the local scale and local considerations/ variations at the regional scale (i.e. no one size fits all).

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

There are no financial implications associated with this report.

SUMMARY / CONCLUSION

In 2018, the Task Force expressed interest in exploring the land supply challenge. At a Task Force workshop on June 20, staff and their consultant presented seven land supply policy options for

discussion and comment. This report provides an overview of the workshop summary for Task Force consideration. The *feasibility* of implementing the policy option in addressing the supply challenge was graphed against the perceived *effectiveness* of the policy option in addressing the supply challenge. Participant comments from the ensuing discussion were compiled for each policy option. Comparisons with the Stakeholder Workshop on May 29 were also provided.

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Regional Industrial Lands Strategy

REGIONAL INDUSTRIAL LANDS STRATEGY WORKSHOP

September 12, 2019 I Metrotower III, 4730 Kingsway, Burnaby I 28th Floor, Committee Meeting Room (2816)

WORKSHOP OUTLINE

1. INTRODUCTION

Workshop Introduction and Objectives – Lucy Duso

2. POLICY OPTIONS TO ADDRESS SUPPLY

2a Draft Recommendations to Address the Industrial Land Supply Challenge
Designated Speakers: Russell Mathew and Adam Mattinson, Hemson Consulting Ltd.
That the Industrial Lands Strategy Task Force receive for information the report titled "Draft Recommendations to Address the Industrial Land Supply Challenge" dated September 3, 2019.

2b Draft Policy Options to Address Industrial Land Challenges – Pressure, Site Issues, and Coordination
Designated Speakers: Russell Mathew and Adam Mattinson, Hemson Consulting Ltd.
That the Industrial Lands Strategy Task Force receive for information the report titled "Draft Policy Options to Address Industrial Land Challenges – Pressure, Site Issues, and Coordination" dated September 3, 2019.

3. NEXT STEPS

4. CLOSING COMMENTS

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Industrial Lands Strategy Task Force

From: Gord Tycho, Senior Planner, Regional Planning

Date: September 3, 2019 Meeting Date: September 12, 2019

Subject: **Draft Recommendations to Address the Industrial Land Supply Challenge**

RECOMMENDATION
That the Industrial Lands Strategy Task Force receive for information the report titled "Draft Recommendations to Address the Industrial Land Supply Challenge" dated September 3, 2019.

PURPOSE
To provide an opportunity for the Industrial Lands Strategy Task Force (Task Force) to provide input and feedback on a set of draft recommendations to address the land supply challenge in advance of inclusion in a draft Regional Industrial Lands Strategy.

BACKGROUND
At its June 20, 2019 meeting, the Industrial Lands Strategy Task Force reviewed a set of policy options to address the land supply constraint issue facing the Metro Vancouver region. The same set of policy options were also discussed at a May 26, 2019 stakeholder workshop, and similar workshops with the Gateway Council and Greater Vancouver Urban Freight Council. In advance of presenting recommendations as part of a draft Regional Industrial Lands Strategy, staff is seeking early feedback on a set of draft recommendations from the Task Force.

ADDRESING THE LAND SUPPLY CONSTRAINT
At the Task Force Workshop on June 20, seven policy options were introduced:

- Provincial Industrial Land Reserve
- Strengthening Regional Policy
- Trade-enabling Zoning Districts
- Zoning Consistency for Industrial Lands
- Regional Land Use Assessment
- Encouraging Intensification, and
- Mixed Use – Allowing Residential.

Staff and the consultant team have responded to the feedback received in the first round of engagement, and have developed a set of draft recommendations for discussion (Attachment). The majority of the recommendations flow directly from previous feedback received from engagement, including the need to recognize the complexity of the issues facing industrial lands and the need for multiple, connected actions by many actors to effectively address them. While the recommendations attached are presented as stand-alone, once embedded into the Strategy, they will be consolidated into a cohesive package.

There are two policy areas where staff are seeking more guidance, particularly with respect to the scope and extent to which these areas should be addressed. The first is Zoning Consistency throughout the region, and whether a recommendation in this area should be limited to the

development of best practices for municipalities to consider, or to more actively push for amendments to municipal zoning bylaws. And second, whether a recommendation regarding a Provincial Industrial Land Reserve should include all industrial lands or be limited to trade-enabling lands only.

NEXT STEPS

Staff and the consultant team are intending to gather and will incorporate feedback from: Task Force members at the September 12, 2019 Industrial Lands Strategy Task Force meeting; the September 11, 2019 Stakeholder Workshop; and a Subject Matter Expert Panel (a panel of experts being brought in to review the draft recommendations in early October). Staff will then return with a draft Strategy for Task Force and MVRD Board consideration in November.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The development of the Regional Industrial Lands Strategy is part of the Board approved 2019 Regional Planning budget. Metro Vancouver retained the services of a consultant, Hemson Consulting Ltd., to develop the Strategy and conduct the engagement throughout its development. The cost of this contract is $75,000, which is within the approved budget.

SUMMARY / CONCLUSION

At its June 20, 2019 meeting, the Industrial Lands Strategy Task Force reviewed a set of policy options to address the land supply constraint. In advance of presenting recommendations as part of the draft Regional Industrial Lands Strategy, staff are seeking early feedback on a set of draft recommendations. The majority of the recommendations flow directly from previous feedback received from the Task Force, including the need to recognize the complexity of the industrial lands issue and the need for multiple, connected actions by many parties to address the issue. Staff will return with a draft Strategy for Task Force consideration in November.

Attachment

Summary titled, “Draft Policy Recommendations to Address the Industrial Land Supply Constraint”, dated August, 2019

Draft Policy Recommendations to Address the Industrial Land Supply Constraint

1.0	**Regional Land Use Assessment**
1.1	*That Metro Vancouver, in consultation with member jurisdictions, First Nations, other Task Force members and other relevant stakeholders, conduct a comprehensive assessment of current land uses and designations in identified areas of interest across the region.* *This assessment will identify, based on a defined set of criteria, opportunities for more optimized locations and uses to support regional and local policy objectives and to inform policy changes.*
Rationale:	• Frequently noted as being a key component to informing other policy changes. • To manage scope, key study areas should be identified in collaboration with member jurisdictions and Task Force members. • A defined set of criteria (i.e. site size, location, adjacent uses, clustering, infrastructure, etc.) will be necessary for transparency and equity.

2.0	**Strengthen Regional Policy**
2.1	*As part of the Metro 2040 Industrial and Mixed Employment Policy Review, that Metro Vancouver consider the following:* *a) Changing the minor amendment type for conversions from Industrial and Mixed Employment to another regional land use to a Type 2 minor amendment, effectively increasing the voting threshold to support an amendment to a 2/3 weighted vote of the Board and the addition of a regional public hearing;* *b) Improving the definitions and permitted uses on Industrial and Mixed Employment lands* *c) Amending the regional land use designations to include Trade-Enabling, Region Serving Industrial, and Employment designations* *d) Allowing mixed-use with residential on Employment lands immediately proximate* (distance to be determined – suggest 200m) *to Rapid Transit Stations as long as base plate industrial / employment space is maintained or expanded and other Metro 2040 objectives are met (e.g. affordable, rental housing)* *e) Finding a way to limit stratification on Trade Enabling lands and explore no net loss as part of the amendment criteria for Industrial lands, requiring conversions be offset by land-swaps in suitable locations within the region.*

Rationale:	• Currently, changing Industrial and Mixed Employment designations to any other urban regional land use designation requires a Type 3 amendment (50% + 1 weighted vote at the MVRD Board and no pubic hearing). • Type 2 amendments require a 2/3 weighted vote at the MVRD Board, and a regional public hearing, increasing the onus when considering conversions. • Given the broad scope permitted uses, the current Mixed-Employment and Industrial designations fail to distinguish and protect for key regional economic activities in optimal locations. • More nuanced designations should reflect the findings of a regional land use assessment, and may provide for more flexibility in certain locations, while providing greater protection for specific uses in others. • Only to be considered in proximity to rapid transit stations on land with a regional Employment designation. • Must maintain or expand upon existing employment uses. • Cannot be implemented in Trade-enabling areas or areas with a regional Industrial designation.

3.0	**Zoning Consistency for Industrial Lands**
3.1	*Option 1: That Metro Vancouver, in collaboration with member jurisdictions and other regional agencies, develop a consistent definition of 'industrial', and best practices for zoning definition and permitted uses.* *Option 2: That Metro Vancouver in collaboration with member jurisdictions and other regional agencies, develop a consistent definition of 'industrial', and lead a subsequent exercise requesting that member jurisdictions amend their zoning by-laws to reflect the new definition and permitted uses.*
Rationale:	• Ensuring non-industrial uses are not permitted within local zoning permissions consistently across the region will protect for the intended industrial function of the land. • Feedback suggests that guidelines are insufficient to achieve this goal.

4.0	**Provincial Industrial Land Reserve**
4.1	*Option 1: That the Province of BC consider the establishment of an Industrial Land Reserve in the Metro Vancouver region. This would be akin to the Agricultural Land Reserve (ALR), and designed to curtail industrial land conversions and provide clear land use permissions and restrictions. These lands would be designated in accordance with a comprehensive regional land use review and in consultation with local municipal government.* *Option 2: That the Province of BC consider the establishment of an Industrial Land Reserve for Trade-Enabling Lands in the Metro Vancouver region. These lands would be designated in accordance with a comprehensive regional land use review and in consultation with local municipal government.*
Rationale:	• Feedback suggests this approach would be effective at protecting the remaining supply, and provide a regional outlook to industrial land management. • There were concerns that an approach similar to the ALR would be cumbersome and potentially inequitable by restricting the autonomy of local municipalities, specifically those that already have a large amount of industrial land and land in the ALR. • Must be informed by a thorough review of regional land needs, and must involve input from the local jurisdictions that it would affect. • This recommendation is consistent with the Final Committee Report to the Minister of Agriculture on the Revitalization of the Agricultural Land Reserve.

5.0	**Trade-Enabling Zoning Districts**
5.1	*That the Province, via the Local Government Act, grant municipalities the legislative powers to define permitted forms of tenure (i.e. leasehold versus stratified freehold) on industrial land through local zoning bylaws.*
5.2	*That municipalities, in collaboration with Metro Vancouver, identify and designate areas as Trade-Enabling Zoning Districts. These areas should feature large sites and access to major infrastructure, such as navigable waterways, railroads and highways. Non-industrial uses and stratification of units are to be restricted within these areas in order to maximize the use of these strategically located areas for industrial and trade-focused activity.*
Rationale:	• Presented as a 'bottom-up' option for municipalities with trade enabling lands to implement. • Limit to stratification likely required to ensure continued trade opportunities. • Province has enabled rental tenure zoning, which could be used as a model

6.0	**Encouraging Intensification**
6.1 6.2	*That municipalities facilitate the physical intensification of industrial built forms where possible by:* • *Reviewing and loosening any unnecessary restrictions to density or height limits, where contextually appropriate; and* • *Explore opportunities to encourage intensification in preferred locations through financial incentives, such as tax abatements or reductions to Development Cost Charges.* *That the Province consider granting local municipalities additional financial powers under the Local Government Act, such as Tax Increment Equivalent Grants, to encourage specific industrial redevelopment in locations and forms designed to optimize the use of the region's remaining supply of industrial land.*
Rationale:	• Relaxing some development restrictions may be enough to enable intensified development in certain locations in the region. • Where market conditions have not quite reached the tipping point, targeted financial incentives may make the difference in enabling the development of intensified industrial uses.

Additional policy options were also identified as part of the engagement process. Recommendations from these additions include:

7.0	**Identify New Options for Land**
7.1	*As part of the Regional Land Use Assessment, Metro Vancouver and member jurisdictions work with the Provincial and Federal governments, the Port of Vancouver, and YVR to identify if there are any areas for the creation of new land through fill or if other industrial functions can be integrated or accommodated by other public works. This includes examining the potential for land swaps or joint use for large non-intensive land uses such as extractive activities, airports, public rights-of-way, and others.*
Rationale:	• Seek to find cooperative synergies between different regional land owners and industrial users. • Conduct a pragmatic assessment of where new opportunities can be created within the region.

8.0	**Preventing and Removing Non-Industrial Uses**
8.1	*As part of the Regional Land Use Assessment, when considering more restrictive provisions on retail, services or recreational uses located in industrial areas, that Metro Vancouver also assess whether or not there are sufficient supplies of suitable land outside of industrial areas to reasonably accommodate these uses.*
Rationale:	• To respond to more restrictive land use policies as part of ensuring zoning consistency in industrial lands and removing non-industrial uses from the scarce supply of industrial lands.
8.2	*Should more restrictive provisions on retail, services or recreational uses within industrial areas be put in place, municipalities will be encouraged to investigate the potential to establish an incentive program to encourage the relocation of existing non-industrial tenants to other suitable areas where they are permitted and encouraged.*
Rationale:	• Only for uses that are legal non-conforming. • Development Cost Charge reductions or property tax benefits could act as an incentive, but not cover the cost of relocation.

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Industrial Lands Strategy Task Force

From: Gord Tycho, Senior Planner, Regional Planning

Date: September 3, 2019 Meeting Date: September 12, 2019

Subject: **Draft Policy Options to Address Industrial Land Challenges – Pressures, Site Issues, and Coordination**

RECOMMENDATION

That the Industrial Lands Strategy Task Force receive for information the report titled "Draft Policy Options to Address Industrial Land Challenges – Pressures, Site Issues, and Coordination" dated September 3, 2019.

PURPOSE

To provide an opportunity for the Industrial Lands Strategy Task Force (Task Force) to consider and provide feedback on a set of draft policy options to address ongoing pressures on industrial land, site issues, and regional coordination challenges.

BACKGROUND

At its June 20, 2019 meeting, the Industrial Lands Strategy Task Force reviewed a set of policy options to address the industrial land supply constraint issue facing the Metro Vancouver region. A second set of policy options to address the three other Regional Industrial Land Strategy issue areas – i.e. pressures on industrial land, site issues and a complex jurisdictional arena – are now ready for Task Force consideration and discussion (Attachment).

POLICY OPTIONS FOR CONSIDERATION

This is the second of two Task Force meetings focused on reviewing and discussing a range of policy options which will become part of the Regional Industrial Lands Strategy. As reminder, the objectives of the policy option discussion are to:

- explore the effectiveness and feasibility of a range of policy options to address ongoing pressures on industrial lands, site level challenges and governance issues;
- identify opportunities and challenges associated with each policy option; and
- identify any policy options that may have been missed.

A description of each policy option, including information about who would be responsible for implementation and management, the opportunities and challenges associated with the policy option, and examples of where it has been undertaken elsewhere, is provided in the attachment.

The 10 policy options for discussion at the September 12, 2019 Task Force meeting are:

Addressing Ongoing Pressure on Industrial Lands

1. Clarity on Agri-Industrial Uses in the Agricultural Land Reserve
2. Regional Flood Management Strategy

Addressing Site issues

3. Land Use Policy as a Buffering Tool
4. Regional Guidelines for On-site Buffering
5. Warnings on Title for Sensitive Uses
6. Local Bring-to-Market Strategies

Regional Coordination / Governance

7. Shared Vision and Principles
8. Improved Data Sharing and Standards
9. Regional Collaboration, and
10. Coordination with Neighbouring Regions.

The format for the discussion will be the same as at the June 20, 2019 Task Force meeting. Staff and consultants will present the 10 policy options, then Task Force members will be asked to 'vote' on the effectiveness and feasibility of each option using the Mentimeter tool. This will be followed by a facilitated discussion on the policy options.

Staff are seeking feedback on the opportunities and challenges associated with each of the policy options and whether there are any options missing that would help address the ongoing pressures on industrial land, site issues, and coordination challenges.

These same policy options will be explored and discussed at a stakeholder workshop that is to be held on September 11, 2019, the day before the Task Force meeting. This will be the second stakeholder workshop, and follow the same format as the May 26, 2019 stakeholder workshop and the two Task Force workshops. Given the timing of the stakeholder workshop, staff will verbally provide a brief summary of the outcomes of the workshop at the Task Force meeting.

NEXT STEPS

Based on any Task Force feedback, staff and Hemson Consulting, will prepare a set of draft recommendations to address the land pressures, site issues, and regional coordination / governance challenges for consideration by the Task Force at a subsequent meeting.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The development of the Regional Industrial Lands Strategy is part of the Board approved 2019 Regional Planning budget. Metro Vancouver retained the services of a consultant, Hemson Consulting Ltd., to develop the Strategy and conduct the engagement throughout its development. The cost of this contract is $75,000.

SUMMARY / CONCLUSION

At its June 20, 2019 meeting, the Industrial Lands Strategy Task Force reviewed a set of policy options to address the land supply constraint issue facing the Metro Vancouver region. A second set of policy options to address the three other Regional Industrial Land Strategy issue areas – i.e. pressures on industrial land, site issues and complex jurisdictional arena – are attached. Staff are seeking feedback on the opportunities and challenges associated with each of the identified policy options and whether there are any policy options missing. As with the last set of policy options discussed, staff will return to the Task Force with recommendations based on any Task Force feedback, the input received at the September 11, 2019 stakeholder workshop, and other engagement opportunities.

Attachment

Draft Policy Options to Address Industrial Land Challenges – Pressures, Site Issues, and Coordination

Draft Policy Options to Address Industrial Land Challenges: Pressure, Site Issues and Coordination

1. Clarity on Agri-Industrial Uses in the Agricultural Land Reserve

Description
Just as speculation for other land uses is driving up real estate prices on industrial lands, so too is speculation impacting lands designated for agricultural uses across the region. While these lands are subject to provincial law as part of the Agricultural Land Reserve (ALR), which regulates non-agricultural uses, speculation from various land uses is raising land costs, undermining the feasibility of using these lands for their intended agricultural use and driving pressure for conversion and use for non-agricultural purposes.

While both industrial and agricultural lands are under pressure to convert to other land uses, there is also pressure between the two land bases. The two types of land uses are often posited against one another, with agricultural interests advocating that agri-industrial uses be located on industrial lands, and industrial interests advocating that they be allowed on agricultural lands.

Currently, ALR regulations limit industrial and commercial uses from locating on agricultural land, requiring that 50% of the product involved in these activities be grown/raised on site. This "50/50 rule" plays a critical role in determining what agri-industrial activities are permitted on ALR land, barring approval from the Agricultural Land Commission (ALC). Limits to infrastructure, servicing and transportation in the ALR regulations also direct many agri-industrial uses to industrial areas instead. Given the comparatively high cost of industrial land, agri-industrial activities that qualify as a farm use (or successfully apply to the ALC for an exception) will usually locate on agricultural land instead.

Two key issues related to agri-industrial uses were identified as part of a white paper prepared as part of the development of the Regional Industrial Lands Strategy:

- Organic waste management facilities in the ALR are expanding beyond permitted uses to an industrial scale while existing regulations have limited the ability of agricultural producers to pursue innovative opportunities for waste management. There is a need to clarify under what conditions, if any, these large processing facilities are permitted in the ALR

- There is a lack of clarity and consistent application when measuring the 50/50 rule (i.e. volume, weight, etc.) and there is a need to limit value-added infrastructure of an approved use to a portion of the parcel and cap on building footprints in order to maintain the agricultural nature of the site.

Who Would Be Responsible
British Columbia Ministry of Agriculture, Agricultural Land Commission.

Opportunities

- Provides greater clarity on what agri-industrial uses can locate within the ALR, and which would need to locate in designated industrial areas; and,
- Helps to protect the agricultural nature of lands in the ALR while allowing a reasonable amount of flexibility for innovative agri-industrial uses.

Challenges

- May limit the flexibility of certain agri-industrial business from operating in the ALR, or may prevent them from expanding their operations on-site.

2. Regional Flood Management Strategy

Description

Climate change and the impacts of rising sea levels are likely to be one of the greatest challenges of our time, and their potential impact on the industrial land supply cannot be ignored. A significant portion of the region's industrial land supply, including most major port and airport facilities, are located within low lying areas.

Detailed climate change projections have been completed for the Metro Vancouver region, and significant work is underway to understand the likely impacts, including increased flood risk. Assuming only one metre of sea level rise, many of the region's industrial areas would be vulnerable to major coastal flood events in the absence of considerable mitigation measures. Should sea level rise continue as projected, significant portions of the industrial land supply may no longer be considered viable for long-term development, further reducing opportunities for growth and economic resiliency.

While there is more work to go in terms of understanding the full extent, developing a flood adaptation strategy for the Metro Vancouver's low lying areas, including its many industrial lands, will be critical to ensuring the continued economic resiliency of the region. Such a strategy will be necessary to identify where improved mitigation measures, such as grading, diking, and other infrastructure investments will have the greatest impact, while also serving to potentially identify where funding for such investments may be found.

Who Would Be Responsible

Fraser Basin Council is leading this work currently with input from federal and provincial governments, Metro Vancouver, municipalities and others.

Opportunities

- May help manage risk of flood events impacting or compromising industrial activities.

Challenges

- Full extent of risk and infrastructure need is currently unknown;
- Cost of necessary mitigation measures likely very expenses; and
- Funding sources for improvements unknown.

3. Land Use Policy as a Buffering Tool

Description
Managing the interface between industrial uses and other sensitive land uses, particularly residential, is a significant issue when it comes to preserving the functionality of existing industrial uses, while also protecting for future economic activity. A broad range of planning tools exist that may contribute to the mitigation of potential, existing or perceived nuisances, offering varying degrees of flexibility or conversely, prescriptiveness. Member jurisdictions across Metro Vancouver incorporate a range of approaches to managing this interface. However, while there are common elements amongst these approaches, there is no single approach that meets the context and needs of each community.

While there is little appetite for a "one-size-fits-all" approach to interface management, both locally and in other jurisdictions, there are certain leading practices which could be formally recognized through regional and local policy to encourage more effective management of industrial edges and conflict prevention.

The formal recognition and promotion of land use buffering is one such approach that can be encouraged and applied at both a local and regional level. This type of buffering occurs at the city or neighbourhood scale and relies on high-level land use policy and zoning to create a transition area between existing or planned industrial and residential uses. It typically requires a portion of land along the industrial edge to be designated specifically for lighter industrial or employment uses, and is often associated with additional requirements or guidelines such as location of loading or vehicular access points.

Directing land uses which are less likely to cause nuisance to sensitive neighbours into a transitional buffer area is a common practice in many urban jurisdictions, and is already applied by a number of member jurisdictions within Metro Vancouver. Formal recognition of the approach, including at the regional land use structure level, could provide stronger direction for developing and protecting industrial uses in other parts of the region, while still promoting a range of flexible employment uses.

Who Would Be Responsible
Municipalities and potentially Metro Vancouver.

Opportunities
- Allows for flexibility at the edges of industrial areas as a transitional employment use between industrial and sensitive uses.

Challenges
- May take time to establish desired buffering uses;
- More difficult to implement in built-out areas where uses are already established; and
- Risks losing industrial uses currently located on the edges of areas.

Examples in Action: Los Angeles County, City of Seattle, City of Toronto

Examples of land use buffering through explicit policy direction are quite common amongst many large North American jurisdictions. For example, Los Angeles County's zoning codes include categories explicitly intended as 'buffer employment zones', intended to be allowed on the edge of existing and planned industrial areas with permissions limited to light industrial and commercial land uses.

Similar direction is noted in the City of Seattle's General Plan, which calls for the establishment of industrial buffer zones between industrial areas and adjacent residential or pedestrian-oriented commercial zones. These buffer zones are intended for the widest range of manufacturing uses and related industrial and commercial activities while ensuring compatibility with the activity and physical character of neighbouring less intensive zones. Compatibility, in this case, is measured in terms of performance standards for height, visual quality, and built scale.

The City of Toronto also amended its own Employment Area designations to distinguish between "Core" and "General" employment areas under much the same intent. Where Core area permissions are limited to more industrial uses in nature, General areas permit a wider range of employment uses, including major retail, which is to be directed towards the edge of the industrial area and serve as a buffer between more intensive and sensitive uses.

4. Regional Guidelines for On-Site Buffering

Description

While physical separation via geographic features or transitionary land uses are a preferred method for mitigating conflict between uses, there are many cases in urban contexts, like those found across Metro Vancouver, where industrial uses may directly abut sensitive uses. In these cases, on-site mitigation measures are commonly required, and may take the form of a number of different approaches.

The most common amongst many of Metro Vancouver's member jurisdictions is to require physical separation of uses through increased setbacks, landscape screens and other site planning measures which locate potential nuisances away from residential areas. The benefit of this approach is that it provides a clear, measurable action which is easily implemented through zoning requirements and development permitting, and may also create opportunities for other municipal objectives to be met, such as using the setback space to provide connections to a greenway network. The challenge is this approach requires that substantial amounts of industrial land be left undeveloped, which may limit or prevent some types of development. There is also no guarantee that physical separation will address certain nuisances, such as reducing noise or odors. Differing minimum setback requirements between municipalities has also been cited as a challenge facing the development of some of the region's industrial lands.

Some municipalities also require other types of on-site mitigation measures which typically occur at the design and site planning phase. These can include visual screening of mechanical equipment, requirements to place industrial uses and other activities within enclosed structures, special fixtures for lighting, and landscaped screens to provide a visual buffer. These provide a greater degree of flexibility in addressing potential concerns, but may also present a degree of ambiguity in terms of achievable targets. In many cases, targets such as "reducing noise impact" lack measurable goals. At the same time, there is often a lack of clarity as to whether new residential development would be subject to the same criteria.

To provide greater clarity for all parties involved, the establishment of an actionable guideline, or potentially minimum performance standards, may be beneficial. Such an approach would still permit local municipalities to define their own, context specific requirements, but would help to alleviate some of the risks for industrial operators and developers. While most policy puts the onus for mitigation on the industrial uses, there are also examples of some of these requirements being placed on residential / more sensitive uses, particularly in areas where the preservation of industrial uses is seen as a priority while also seeking to create more complete communities in the vicinity.

Who Would Be Responsible

Metro Vancouver in collaboration with municipalities.

Opportunities

- Provides clear regional expectation for minimum separation of uses and / or mitigation standards; and
- Still allows for greater context specific requirements, as necessary.

Challenges

- May be more stringent than some current local requirements;
- Could make development of some sites less feasible; and
- Difficult to quantify some performance standards.

Examples in Action: Milwaukie, Oregon

The City of Milwaukie, Oregon identifies employment, manufacturing and industrial land as having substantial value within the community, with the subject of employment and manufacturing jobs a central topic for planning in the City. Recently a new LRT line connected Milwaukie to the Metro Portland area, prompting additional consideration of the type, nature and intensity of industrial uses and how these uses are being interfaced with residential areas.

In one such industrial area – the North Milwaukie Innovation Area – new multi-family residential uses are incorporated into mixed-industrial areas. Zoning ordinance in this area allows for various on-site mitigation measures, including screening for mechanical equipment on rooftops and enclosures for industrial activities. However, equipment used to generate green energy, such as solar and wind, are exempt from this requirement. While landscaped screening, fences, and additional fences are noted as tools for contextual buffering between uses, the obligation to develop these measures is placed on the new residential development being introduced where industrial uses already exist.

5. Warnings on Title for Sensitive Uses

Description
Related to issues regarding interface between residential and industrial users, many industrial stakeholders note concerns that encroaching residential uses may hinder their existing operations, along with their potential to expand and intensify their business. In many cases, industrial operators report having to spend significant time responding to complaints even though they are located within defined industrial areas and operating within environmental requirements. Municipalities may also have to spend a considerable amount of time dealing with complaints from residents in new residential areas located in close proximity to existing industrial uses.

To proactively address some of these concerns, some jurisdictions place warning clauses on the title of properties containing any sensitive land use locating within a defined area of influence of an existing industrial operation. By registering the warning on title, both municipalities and industrial operators are able to curtail some of the more vexatious complaints, while also ensuring that such a warning is attached to the property through changes in ownership and that subsequent purchasers are aware. This certainly will not address all potential conflicts between uses. Industrial users and municipalities will still have to respond to complaints, and political pressures for conversion may still occur through other channels. However, having a warning on title will provide a degree of legal protection for industrial users facing encroachment by residential uses and be transparent about the possibility of a nuisance / conflict to prospective property owners.

Who Would Be Responsible
Province, municipalities, with input from Metro Vancouver.

Opportunities
- May help to mitigate some complaints from encroaching residential uses; and
- Provides a degree of legal recourse for existing industrial users.

Challenges:
- Complaints and political pressure still likely to persist.

Examples in Action: Ontario D-6 Environmental Guidelines
In the province of Ontario, as part of the Ministry of the Environment's guidelines for compatibility between industrial facilities and residential uses, there is a specific policy for issuing warnings for sensitive land uses being developed in proximity to existing industrial uses. Whenever a new sensitive use is being developed in such an area, the Ministry recommends that a warning of anticipated nuisance effects be included in any offers of purchase and sale, the means of notification being determined by the local municipality. According to the Ministry of Consumer and Commercial Relations, this warning may be included in a document which can be registered on title for the property to ensure the warning persists regardless of potential change of ownership.

6. Local Bring-To-Market Strategies

Description
There are various examples of municipalities and regions developing bring-to-market strategies for the lands within their purview. These strategies may be developed by the local government or through partner organizations, such as economic development-focused not-for-profit groups. In the case of Metro Vancouver and its industrial lands, such a strategy could be conducted at a regional level, but could also be undertaken at the municipal level to better align with the local vision for industrial employment within each community.

A key component of these strategies is an assessment of current strengths, weaknesses, opportunities and challenges as they relate to the region's or municipality's economic goals. In the case of industrial lands in Metro Vancouver, a bring-to-market study would do well to assess opportunities to consolidate some of the remnant undersized or underutilized industrial sites within different industrial areas to better position them for development by desired employment sectors or uses. It may also identify areas where additional infrastructure investment is required to attract the kind of uses the community is prioritizing. A regional or municipal development arm may be required to facilitate such investments in order to realize the potential of these lands.

Who Would Be Responsible
Municipalities, with input and assistance from Metro Vancouver.

Opportunities
- Helps to identify priority moves to bring vacant and underutilized lands to market; and
- Provides better regional understanding of where and how to attract investment.

Challenges
- Some moves may require significant capital investment or take considerable time to implement; and
- Cost of conducting local study may be prohibitive for some member municipalities.

Examples in Action: City of Calgary, AB
As part of the City of Calgary's 2013-2022 Industrial Land Strategy for City Owned Lands, the strategy identified a number of policy recommendations related to using the City's remaining industrial lands to achieve the City's economic objectives. This included an assessment of opportunities to acquire additional land parcels that meet the strategic needs of the City's Industrial Land Development Program, which serves to consolidate and market the sites within the City's industrial land portfolio. It also promoted the timely on-site development of City supplied lots by suggesting building time commitments, with options for the City to repurchase lots from purchasers that are not meeting their commitments.

7. Shared Vision and Principles

Description
A frequently stated issue through consultation with stakeholders is the lack of a regional outlook for Metro Vancouver's industrial lands and the broader economy. The Regional Industrial Lands Strategy is being designed to provide a cohesive vision, while also including a set of principles to be adopted by the region, its member jurisdictions, and other members of the Task Force guiding its development. By gathering sign-on from these parties, these principles will serve as the foundation on which the other parts of the strategy are based.

These principles will include:

- A commitment to collaboration among different levels of government and other organizations;
- Recognition that industrial lands play an important role in supporting the broader regional economy;
- Industrial policies must respect local context and needs;
- Protections for industrial lands must be balanced with opportunities for innovation; and
- The needs of other land uses and policy objectives must be respected.

Who Would Be Responsible
Metro Vancouver, municipalities, Port of Vancouver, Agricultural Land Commission, and other stakeholders.

Opportunities

- Establishes baseline for regional cooperation and sets expectation for future action.

Challenges

- Balancing onus of expectation with political feasibility; and
    - Principles and vision tend to be high level in nature, with more context specific policies applying to different areas separately.

8. Improved Data Sharing and Standards

Description
A challenge for the effective planning for and management of industrial lands is timely access to reliable quality data. The unique context of Metro Vancouver's constrained and finite land supply makes this challenge all the more relevant. Currently, the region conducts its Industrial Lands Inventory every five years. However, market conditions can vary significantly in a five-year period, leading to a bit of a blind spot when formulating policy responses, particularly when the remaining inventory of vacant land is so limited. A system which allows for more up to date reporting and tracking of land development applications would help to address this challenge.

Similarly, fine grained data related to employment and economic activity from traditional sources like the Canadian Census is limited in its availability, and also published in 5-year periods. More frequent economic reporting, such as Statistics Canada's Labour Force Survey, is typically provided at the regional or provincial level, preventing more land-use specific assessments for the purposes of policy review. To address this issue, many municipalities are now conducting their own annual or biennial employment surveys to help fill in the gaps. Depending on how they are conducted, these surveys can allow for a much timelier assessment of employment and economic indicators within the region and within local municipalities. They also enable analysis that ties employment and businesses to built space, allowing for the assessment of land use policy and its impact on specific areas, such as industrial. By ensuring consistent methodology between surveys, it is also possible to asses the changing nature of industry and work over time, as well as across municipal boundaries.

Who Would Be Responsible
Metro Vancouver in collaboration with municipalities, brokerage firms, the Port of Vancouver and others.

Opportunities:
- More up to date tracking of employment activity, characteristics and land take-up; and
- Allows more effective policy responses in future.

Challenges:
- Cost and staffing required to implement; and
- Hesitance to share data between competing jurisdictions or organizations.

Examples in Action: Halton Region, ON
Following the example set by the City of Toronto, which started conducting its own employment survey in 1983, the Region of Halton recently committed to conducting an annual employment survey as part of its Regional Economic Development Strategy. These surveys often serve as the core data source for employment land planning, enabling the monitoring of sector composition and change in employment and land absorption over time. In the case of Halton Region, this data is also being made available to the public as a resource for economic research and investment information.

9. Regional Collaboration

Description

Regional collaboration to advance shared economic objectives is a common practice amongst North American metropolitan regions, and is a long-standing objective and challenge in Metro Vancouver. Both the Regional District and its member jurisdictions have a vested interest in attracting new investment and accommodating new economic activity to within their borders, many of which feature their own respective economic development arms or departments. These organizations play a leading role in promoting their jurisdiction as a place to do business, while also often helping potential employers to navigate the local development system. However, where other North American economic regions tend to work together at a regional level, inter-jurisdictional competition for investment has meant that cooperation and collaboration between economic agencies in Metro Vancouver has historically been somewhat limited.

By following the example set by other successful economic regions and taking a more holistic regional approach to economic collaboration, Metro Vancouver and its member jurisdictions could potentially improve their ability to promote business across all parts of the region. Doing so could help to identify new economic opportunities in line with local and regional economic objectives, while also better guiding prospective investors to identify and develop suitable locations within the region's industrial land supply.

One possible way to achieve this collaboration is via Metro Vancouver's emerging Regional Economic Prosperity Service. The Service, which received formal endorsement from the Metro Vancouver Board at its meeting on July 26, 2019, will follow the model of various other regional prosperity initiatives and groups by focusing on attracting strategic investment in priority sectors, promoting the region while working in collaboration with existing economic development bodies at the local level. While the scope of the Service is still being determined, it could present one potential approach to attract and coordinate investment across Metro Vancouver's industrial lands, while also providing valuable data collection for comparison, monitoring and land management purposes.

Who Would Be Responsible

Metro Vancouver, in collaboration with municipalities and other partner organizations.

Opportunities

- More competitive and cooperative approach to marketing remaining industrial lands; and
- Better direction allows for clearer expectations regarding development process and timeline.

Challenges

- Cost and staff required to implement;
- The Regional Economic Prosperity Service's current scope is uncertain; and
- Still some degree of inter-municipal competition.

Examples in Action: Various Regions Across North America

As part of the original 2015 Green Paper which developed the initial framework for a Regional Prosperity Initiative in Metro Vancouver, various prosperity and economic development initiatives were researched. These included:

- Greater Victoria
- Greater Seattle
- Greater Portland
- San Francisco Bay Area
- Los Angeles County
- Greater San Diego
- Calgary Region
- Metro Denver
- Greater Austin
- Greater Minneapolis-St. Paul
- Waterloo Region
- Greater Toronto
- Greater Montreal
- New York Region

The form, composition and mission of the initiatives in each of these case study areas spanned a broad spectrum, though most are focused on attracting new business and investment to the region through greater promotion of the region's economic assets and quality of life. Retention and expansion of existing businesses are also common objectives, as is workforce development. Many of these organizations serve a key role in collecting and assessing data, undertaking research and formulating regional economic strategies and cluster-based strategies. This typically includes some form of business advisory service, primarily focused on helping newcomers find appropriate sites within the region.

10. Coordination with Neighbouring Regions

Description

In the case of population and economic growth in an area of finite land capacity, pressure for industrial land will likely spill over into neighbouring regions. The Fraser Valley Regional District (FVRD) and Squamish Lillooet Regional District (SLRD) located adjacent to Metro Vancouver, are feeling the pressure of Metro Vancouver's land supply crunch. However, much like Metro Vancouver, their supply of vacant industrial land is limited and finite, facing competition from other land uses and are also experiencing their own growth pressures.

While there is some evidence of industrial growth being directed south of the border or inland to areas such as Calgary, there may be opportunities to proactively manage local demand at a supra-regional level between Metro Vancouver and its neighbouring regional districts. In addition to the FVRD, highway and rail linkages to the SLRD could unlock industrial potential along the Highway 99 corridor. At the same time, shipping activity for inter-regional logistics activity could potentially be expanded to ports and industrial lands in the Capital Region District and Nanaimo Region.

Collaborative approaches planning, research, land use, infrastructure and economic development between these regions, including improved consultation, data sharing and transportation management, could serve to ensure southwestern British Columbia is able to continue to attract and accommodate investment for years to come. In order to develop an actionable framework for cooperation between regions, a formal Memorandum of Understanding that identifies areas of shared economic interest, opportunities for collaboration, and directions for future study is recommended to serve as a formal starting point.

Who Would Be Responsible

Metro Vancouver, Fraser Valley Regional District, Squamish-Lillooet Regional District, Nanaimo Region, Capital Regional District, the Province of BC and municipalities.

Opportunities

- More collaborative approach to inter-regional economic planning; and
- Better understanding of supra-regional land supply and investment opportunities.

Challenges

- Developing capacity and cooperation between regions; and
- Inter-regional competition for investment.

Additional Resources

For more information on the Regional Industrial Lands Strategy, please visit:
http://www.metrovancouver.org/services/regional-planning/industrial-lands/regional-strategy/Pages/default.aspx
For additional information, including previous reports and studies completed in support of the Regional Industrial Lands Strategy, please visit:
http://www.metrovancouver.org/services/regional-planning/industrial-lands/regional-strategy/