

NODES AND CORRIDORS

A review of approaches to Nodes and Corridors planning and its potential application to Edmonton's context

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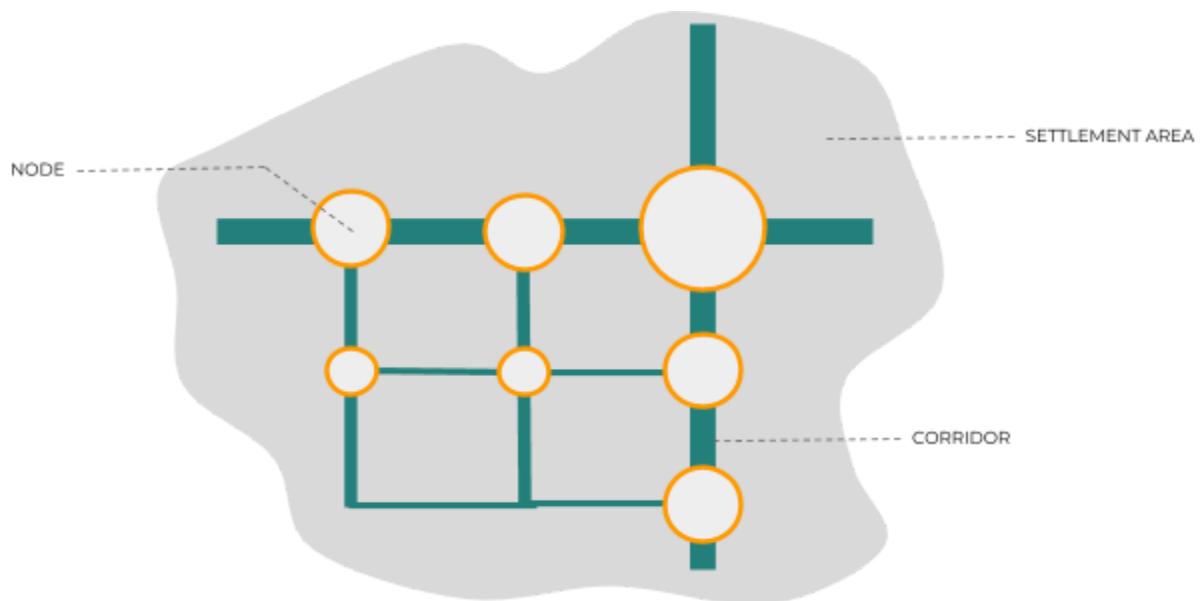


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1.0 Executive Summary

The purpose of this report is to provide a recommendation for a Nodes and Corridors approach to planning for the City of Edmonton. The findings of this report will be used to develop a current base network of Nodes and Corridors in Edmonton, as well as a hierarchical typology of Nodes and Corridors that will be used for spatial modelling of Edmonton's City Plan. The recommended approach to Nodes and Corridors planning is based on a synthesis of approaches from other municipalities in Canada and the United States.

An early Nodes and Corridors approach to planning, which can be defined as planning that considers how users interact with space through various activities, recognizing the importance of and relationship between connectedness, density, and diverse uses of space. It works to ensure that a city has the right balance and mix of development, and supports the development and implementation of long-term investment around LRT stations, transit hubs, and important destinations within a city. It can be seen when examining planning theories such as Christaller's Central Place Theory, and Harris and Ullman's Multiple Nuclei Theory.

Many municipalities in Canada and the United States have utilized a number of variations on Nodes and Corridors planning. This report studies the approaches of the following municipalities:

- City of Calgary
- City of Toronto
- City of Portland
- City of Austin
- City of Seattle

Through a policy review of these respective municipalities, the following questions were answered:

- How is the municipality or region using a Nodes and Corridors approach?
- What is the key goal(s)/vision the municipality is trying to attain by applying a Nodes and Corridors approach?
- What is the municipality's approach to applying Nodes and Corridors hierarchies?
- What is the approach to density targets/measures and policies for a diversity of activities/uses?

A number of similarities were found in the various approaches of the municipalities, such as:

- A hierarchical structure that defines a Nodes and Corridors typology
- The utilization of systems and networks to determine the location and define the typology of each Node or Corridor
- The Nodes and Corridors network being organized around the transit systems of each municipality
- A set of similar principles related to promoting a compact, vibrant, and connected city to become more environmentally and economically sustainable were utilized in each municipality to rationalize their respective network and typologies of Nodes and Corridors
- Locate a Nodes and Corridors network near existing assets as a means of leverage
- Downtowns have a regional role

As a result of this review and synthesis of other municipalities' approaches, a proposed framework for a hierarchical typology of Nodes and Corridors for Edmonton was developed, and is as follows:

Nodes

- **Centre City** is the business and cultural hub of the city, and is comprised of a wide-variety of land uses and destinations. The Centre City is also the predominant mixed-use area of Edmonton, and serves as a major mixed-use

residential community in the heart of the city. The Centre City is an important regional asset and hub for surrounding municipalities and Northern Alberta

- **Major (Metropolitan) Nodes** are strategically located throughout the city to serve as major mixed-use destinations to broad catchment areas. They are designed to function as an urban centre for a big part of the city, and people may travel to them from across the city or even metro region. Our city's big institutions may be located here
- **District Nodes** act as urban village centres for their district (grouping of neighbourhoods), with a variety of services being provided. These nodes have a mix of housing types. They are generally medium-density with opportunity for more density in some locations such as near major transit stations
- **Local Nodes** are central to residential neighbourhoods or areas of businesses, and act as neighbourhood-scale centres for local jobs, retail, services, and community gathering spaces, as well as providing additional opportunities to cluster housing

Corridors

- **Primary Corridors** are the largest, most vibrant, and most prominent urban streets in the city and region. They serve as destinations in and of themselves, but also provide critical connections between nodes, the rest of the city, and the region
- **Secondary Corridors** are vibrant residential and commercial streets smaller in scale to Primary Corridors, and are local destinations for surrounding communities

In addition to these typologies, two maps were developed as a result of this study:

The [first map](#) (*Typologies 2018*) produced is a reflection of Edmonton's current context in terms of Nodes and Corridors as it relates to the typologies developed in the previous section; this map is a preliminary notion of Edmonton's emerging nodes and corridors in 2018.

The [second map](#) (*Typologies Future*) produced is a reflection of Edmonton's planned future context in terms of Nodes and Corridors as it related to the typologies outlined in the previous section.

2.0 Introduction

2.1 Paper Structure

The **first section** of this paper features a review of planning theories and concepts that have informed or are related to the Nodes and Corridors approach to planning, which include:

- Central Place Theory
- Multiple Nuclei Theory

In addition to an overview of the academic literature associated with these two planning theories, an exploration of the literature associated with efficient/cost effective use of infrastructure and its relationship with density and diversity of housing will be included.

The **second section** of the paper will feature an in-depth exploration of the official/comprehensive plans for various municipalities. Specifically, for each of these plans, this review will seek to answer the following set of key questions:

- How is the municipality or region using a Nodes and Corridors (or similar) approach?
- What is the key goal(s)/vision the municipality is trying to attain by applying a Nodes and Corridors approach?
- What is the municipality's approach to hierarchies of these planning features?
- What is the approach to density targets/measures and policies encouraging a diversity of activities/uses?

Once completed, the similarities and differences of the various official/comprehensive plans will be analyzed.

In the **third section**, the typologies found in the City of Calgary's Municipal Development Plan and the City of Portland's Comprehensive Plan (The Portland Plan) will be synthesized to develop a Nodes and Corridors hierarchy that can be applied to Edmonton's context, in order to develop a base map of current Nodes and Corridors in Edmonton.

In the **fourth section**, three maps will be presented, as well as the methodology used to develop them. The first map (*Typologies 2018*) is developed using a qualitative approach by applying the criteria set out for each respective Node and Corridors typology in the previous section, and is a reflection of Edmonton in 2018. The second map (*Typologies Future*) has also been developed using the same qualitative approach, however in addition to those areas identified in the first map, it will identify planned sites that would qualify for a Node or Corridor, as well as sites that may be planned in the future. The third map (*Base Map 2018*) has been developed using a set of qualitative and quantitative indicators/measures to determine whether or not the Nodes and Corridors identified in the *Typologies 2018* map actually do meet the criteria for a Node or Corridor; this latter map will be advanced for more rigorous study which is outside the scope of this report.

2.1 Background & Context of Report

Beginning in 2018, the City of Edmonton began the process of renewing its Municipal Development Plan (MDP) and Transportation Master Plan (TMP) over a two year period. Combined, these efforts will form an integrated MDP/TMP, or The City Plan. It is anticipated that a "Nodes and Corridors" framework and approach will be applied to the development of The City Plan, and will serve as the key spatial structure and policy organizing element. With this in mind, a better understanding of a Nodes and Corridors approach to planning, specifically how other cities have applied it to their official/comprehensive plans, and how it can be applied in Edmonton's context, is needed.

2.2 Defining a Nodes and Corridors Approach to Planning

Before an exploration of the literature associated with a Nodes and Corridors approach to planning, as well as the subsequent policy review, can take place, it is important to have an understanding of what a Nodes and Corridors approach to planning is, and what constitutes a Node and what constitutes a Corridor.

Broadly defined, and Nodes and Corridors Approach to planning can be defined as such¹:

A Nodes and Corridors approach to planning considers how users interact with space through various activities, recognizing the importance and relationship between connectedness, density, and diversity in the uses of space. It works to ensure that a city has the right balance and mix of development, and supports the development and implementation of long-term investment around LRT stations, transit hubs, and important destinations within a city. In this, it seeks to recognize the importance of key locations in a city, which can be made up of meeting places, locations for cultural activities, public institutions, major services and transit hubs, and where a high concentration of residential and employment opportunities exist.

A **Node**, in its most general sense, is a place in a city where people and transportation routes congregate and converge, i.e. transit-oriented, pedestrian-friendly areas where high concentrations and a wide-variety of residential, employment, retail and other uses are located.

A **Corridor**, in its most general sense, is an important transportation route within a city that connects the Nodes of a city, i.e. a city area with street-oriented uses which incorporates mixed-used development, built at medium densities, located along arterial and collector roads, and serving as

¹ City of Edmonton, *Urban Planning Committee Report CR_5703 - 101 Avenue Corridor Study - (Update)*, June 5, 2018.

major transit routes.

3.0 Literature Review

3.1 Overview of Literature Review

This section features a review of the academic literature associated with planning theories and concepts that have informed or are related to the Nodes and Corridors approach to planning, which include:

- Central Place Theory
- Multiple Nuclei Theory

In addition to an overview of the academic literature associated with these two planning theories, an exploration of the academic literature associated with efficient/cost-effective use of infrastructure and its relationship with density/diversity of housing is included.

3.2 Planning Theories - Setting the Context

3.2.1 Central Place Theory

Background

In its broadest sense, Central Place Theory, which was originally published in 1933 by Walter Christaller, is a planning theory that aims to explain the spatial arrangement, size, and number of human settlements.

Christaller's theory was developed based on a number of assumptions, which state that all areas have the following:

- A flat surface
- An evenly distributed population
- Evenly distributed resources
- Similar purchasing power of all consumers and that consumers will shop at the nearest market
- Transportation costs are equal in all directions and proportional to distance

A central place, according to Christaller, is an area or settlement that provides one or more services to the surrounding population. Within these settlements, basic services are categorized into 'low order' and 'high order' services. An example of a low order service would be a restaurant, while a high order service would be a university or hospital. Additionally, having a high order service implies or signals that there are low order services around it, but it does not imply or signal a low order service having a high order service around it.

Christaller's theory is comprised of two basic concepts. The first concept is the idea of a threshold, which is the minimum distance required to bring about a certain good or service. The second concept is the idea of a range of goods or services, which is

the average maximum distance which people will travel to purchase a good or utilize a service.

In Christaller's theory, it was noted that central places were to be arranged according to the following principles:

- The marketing principle
- The transportation principle
- The administrative principle

The marketing principle rests on the assumption that the greatest provision of central-place goods and services form the minimum number of central places, and that central places will locate over the landscape in response to market forces. Additionally, each central place is located midway between three neighbouring centres of the next highest order. The marketing principle is based off of the $k=3$ principle, which states that one-third of a lower-order place is served by the next higher-order place, and so on.

The transportation principle states that the distribution of central places is most favourable when as many important places as possible lie on one traffic route between two important towns, the route being established as straight and as cheap as possible. In this, if a low-order central place is to be established, it will lie halfway between the next two higher-order places. Thus, the complementary region of the high-order places will be four times greater than that of the next level of lower-order places, or in other words, the $k=4$ system.

3.2.2 Multiple Nuclei Theory

Background

In its broadest sense, Multiple Nuclei Theory, which was originally published in 1945 by C.D. Harris and Edward Ullman, is based on the argument that cities have multiple growth points or 'nuclei' around which growth takes place.

In their argument, the authors noted that a city might start with a single central business district, but over time the activities disperse and change. Further to this, these dispersed activities attract people from surrounding areas and act as smaller nuclei in and of themselves. Subsequently, it is argued that these smaller nuclei gain importance and grow in size, and start influencing the growth of activities around them.

Like Christaller's Central Theory, the Multiple Nuclei Theory also relies on a number of assumptions, which include:

- Land is not flat
- There is an even distribution of resources
- There is an even distribution of people in residential areas
- There are even transportation costs
- Profit maximization exists, i.e., an activity will locate itself where maximum profit can be earned

In this model, a number of *Activities* are identified. The Activities in the model are considered as independent zones which influence activities around them, and are also formed because of their dependence on one another. When such Activities are located in proximity to one another, it can be said that a 'Nuclei' is formed. Activities identified in the model are as follows:

- Central Business District (CBD)
 - The CBD still exists as the primary nucleus, but multiple small business districts can develop, distributed around the metropolitan area. Some of these newer areas compete with the CBD for traditional businesses. The separate nuclei become specialized and differentiated, which reduces the pull of the CBD
- Light Manufacturing
 - These businesses are more consumer-oriented and near residential areas. Manufacturing goods that need small amounts of raw materials and space develop in this area.
- Low-class Residential
 - Next to the industrial corridors are the lower- or working-class residential zones. People who live here tend to be factory workers and live in low-income housing. Housing is cheap due to its proximity to industry where pollution, traffic, railroads, and environmental hazards make living conditions poor. Those who live in this sector do so to reduce the cost to commute to work.
- Middle-class Residential
 - This residential area is a bit more desirable because it is located further from industry and pollution. People who work in the CBD have access to good transportation lines, making their commute easier. The middle-class sector is the largest residential area.
- Upper-class Residential
 - High-class residential sectors tend to be quiet, clean, and have less traffic than the others. There is also a corridor that extends from the CBD to the edge of the city, where you find prime real estate.
- Heavy Manufacturing
 - This node is occupied by factories that produce material that is heavy like chemicals, steel, industrial machinery. Mining and oil refining industries also can be found in this area.
- Outlying Business District

- This district competes with the CBD for residents who live in nearby middle and high-class neighborhoods, offering similar services and products as the CBD.
- Residential Suburb
 - These suburbs are usually single-family homes on a small plot of land on the outskirts of the city. They tend to be laid out on roads with cul-de-sacs instead of following the traditional grid pattern.
- Industrial Suburb
 - This is a community created and zoned for industrial sources on the outskirts of the city.

3.2.3 Relations of the Two Theories to Nodes and Corridors

Planning

While there are certainly differences in scale and application with regard to the two planning theories overviewed, a number of inferences and parallels can be drawn from them to illustrate a theoretical background for the Nodes and Corridors approach to planning, which can be categorized into the following topics:

- Hierarchical structure
- Influence of consumer preference/choice
- Cities evolve and nuclei are continually being formed

Central Place theory, as well as the Multiple Nuclei Theory, have parallel applications to Nodes and Corridors planning through the delineation of a hierarchical spatial arrangement. In the Central Place Theory, cities, towns, market towns, and villages are arranged in a hierarchical fashion based on the types and order of services provided. Similarly, Nodes & Corridors are structured in a hierarchical fashion, with different levels of intensity in terms of built form, as well as the type and order of services that are provided. This notion of hierarchical structure, while not as prominent, can also be seen in the Multiple Nuclei Theory. The premise of this theory is that a city, in its infancy, may start with a central nuclei - its Central Business District - but over time, population and uses shift/relocate, and smaller-order nuclei eventually develop around the central nuclei. While this is true in theory, it is also important to note that as opposed to the Central Place Theory, land uses in the Multiple Nuclei Theory tend to be more segregated.

Consumer preference, and the threshold in which a consumer is willing to travel to consume a certain good or activity, is common to both theories explored. For the Central Place Theory, this notion or idea is central to its foundation in that places locate across the landscape in response to market forces. Additionally, larger or more central places form when there are higher-order goods being offered in them, and

consumers are willing to travel greater distances to consume them, which is the case for Primary Nodes anchored by large institutions such as a university or hospital. Similarly, consumer preference plays a role in the Multiple Nuclei Theory, but does so with regard to where people choose to live and where uses are located throughout the city as they tend to be more segregated in this theory.

4.0 Policy Review

This section will feature a review and in-depth exploration of various municipalities and their respective official/comprehensive Plans. Specifically, for each of these plans, this review will seek to answer the following set of key questions:

- How is the municipality or region using a Nodes and Corridors approach?
- What is the key goal(s)/vision the municipality is trying to attain by applying a Nodes and Corridors approach?
- What is the municipality's approach to applying Nodes and Corridors hierarchies?
- What is the approach to density targets/measures and policies for a diversity of activities/uses?

Once completed, the similarities and differences of the various official/comprehensive plans will be analyzed.

The following cities' official/comprehensive plans will be explored:

- City of Calgary
- City of Toronto
- City of Portland
- City of Austin
- City of Seattle

These municipalities were chosen to be reviewed through a cursory review of the comprehensive plans of major municipalities' throughout Canada and the United States.. The final list of five municipalities was chosen due to similarities to Edmonton's size in terms of population, as well as due to their well-known utilization of a Nodes and Corridors approach to spatial planning in their respective comprehensive plans.

4.1 City of Calgary (Municipal Development Plan)²

Background Information

Approved in September of 2009, Calgary's MDP aims to set a long-term 60 year strategy for sustainable growth, and the transportation systems needed to support this growth. The plan aims to accommodate growth of about 1.3 million new residents, eventually reaching an anticipated population of 2.4 million by 2041.

How is the municipality or region using a Nodes and Corridors approach?

The *Activity Centres and Main Streets* approach is being utilized as a **planning framework** to guide and foster the development of new housing and jobs within higher intensity, mixed-use areas that are well connected to the Primary Transit Network. It is also being used as a tool to delineate and define strategic locations where high-quality transit and diversity of commercial, residential and service uses currently exist, or where they could be developed over the long term.

Additionally, by focusing most intensification to defined areas, this approach is also being utilized as a tool that can offer communities more certainty about the kinds of future development their respective communities may experience. Through this, redevelopment has the potential to become more predictable for existing communities by lessening the impact on more stable, low-density areas.

What is the key goal(s)/vision the municipality is trying to attain by applying a Nodes and Corridors approach?

By using *The Activity Centres and Main Streets* approach to planning, Calgary's MDP is aimed at directing future growth to specific areas of Calgary in a way that fosters a more compact and efficient use of land. More specifically, the policies developed

² City of Calgary, *Municipal Development Plan*, 2009.

represent the city-wide land use framework for creating an urban structure for a city that is livable, healthy, and prosperous.

What is the municipality's approach to hierarchies?

Calgary's MDP delineates hierarchies through various typologies associated with distinct geographic and functional areas that share common attributes with each other. Specifically, the three broader typologies are:

1. **Centre City**
2. **Activity Centres**
3. **Main Streets**

Centre City (including Downtown)

"Centre City is the business and cultural heart of the city, the pre-eminent mixed-use area. The Centre City fulfills many functions. It has the largest employment concentration and is the location of highest density office developments; it offers the broadest variety of cultural activities and is an important high-density, mixed-use residential community. The Centre City is made up of diverse and unique "neighbourhoods" focused around the Downtown and includes Stampede Park. The Centre City is well connected with the rest of the city by multiple routes of the Primary Transit Network and high-quality pedestrian connections within and beyond its boundaries."

Generally, the Centre City aims to achieve the goal of accommodating at least **232,000 jobs** and **70,000 residents** over the course of the 60 years following the development of this plan.³

³ Ibid, 83.

Activity Centres

Activity Centres are identified in Calgary's MDP as a recognition that in the long term, there will be a need for strategic areas other than the Downtown and Centre City to be identified and planned for to support long-term employment and population growth in locations and at intensities to support the Primary Transit Network. Three scales of Activity Centres are identified based on the level and type of transit service, the expected level of intensity (density of jobs and population) and their citywide location and local context. The three Activity Centre types identified from largest to smallest are:

- **Major Activity Centres**
 - Located strategically across the city to provide a major mixed-use destination central to larger residential or business catchment areas
 - Located along one or more of the proposed Primary Transit Network routes
 - Builds upon existing concentration of jobs and/or population
- **Community Activity Centres**
 - Located central to a number of residential communities or business areas often on current shopping centre sites or around a specific employment area
 - May be located at transit stations or stops on the Primary Transit Network
- **Neighbourhood Activity Centres**
 - Exist primarily within the developed areas of the city in the form of smaller commercial sites, strip malls, or redeveloping public facilities
 - Typically served by base level of transit service, though some may be located along the Primary Transit Network

Main Streets

Main Streets identified in Calgary's MDP share many of the same attributes as Activity Centres, but are linear in nature, and are oriented along a street served by the Primary Transit Network. Main Streets provide the opportunity to integrated

adjacent land uses with a transit-oriented street framework. Two scales of Main Streets are identified in Calgary's MDP:

- **Urban Main Street**

- Provide for a higher level of residential employment along an urban boulevard, which is a multimodal street
- Emphasize a walkable pedestrian environment fronted by a mix of higher intensity residential and business uses

- **Neighbourhood Main Street**

- Provide a strong social and historical function for a neighbourhood or broader area within mature areas of the city
- Typically support a mix of uses within a pedestrian-friendly environment
- Provide opportunity for moderate levels of intensification of both jobs and population

What is the approach to density targets/measures/policies & diversity of activities/uses?

ACTIVITY CENTRES			
Type	Intensity (jobs and population per gross developable hectare)	Transit Service	Typical Key Uses
Major	200 (minimum)	One or more primary transit stations	One or more major institutional uses, business and employment, high and medium density residential, retail and supporting services

Community	150 (minimum)	Primary transit station	Institutional use (opt), retail centre, medium and high density residential, business and employment
Neighbourhood	100 (minimum)	Primary transit station or transit stop	Local retail and local services, medium density residential

MAIN STREETS			
Type	Intensity (jobs and population per gross developable hectare)	Transit Service	Typical Key Uses
Urban	200 (minimum)	Located on Primary Transit Network	Retail, office, mixed-use buildings, medium and high density residential
Neighbourhood	100 (minimum)	Located on Primary Transit Network	Low to medium density residential, retail, mixed use buildings

4.2 City of Toronto (Official Plan)⁴

Background Information

Originally approved in 2002, with further amendments made in 2006 and 2015, Toronto's Official Plan aims to set a long-term strategy for growth until the year 2031. The plan aims to accommodate growth of 537,000 new residents and 540,000 new jobs by 2031.

How is the municipality or region using a Nodes and Corridors approach?

In Toronto's Official Plan, a *Centres and Avenues* approach is being utilized as a **planning framework**, organizing principle, and a system to focus population and employment growth in strategic areas throughout the city.

What is the key goal(s)/vision the municipality is trying to attain by applying a Nodes and Corridors approach?

There are nine key policy directives to be achieved through directing growth towards Centres and Avenues, which are as follows:

- Use municipal land, infrastructure and services efficiently
- Concentrate jobs and people in areas well served by surface transit and rapid transit stations
- Create assessment growth and contribute to the City's fiscal health
- Promote mixed use development to increase opportunities for living close to work and to encourage walking and cycling for local trips, i.e. offer opportunities for people of all means to be affordably housed
- Facilitate social interaction, public safety and cultural and economic activity
- Improve air quality, energy efficiency and reduce greenhouse gas emissions
- Improve surface and groundwater quality and restore the hydrological

⁴ City of Toronto, *Official Plan*, 2015.

function and habitat of streams, rivers and wetlands

- Protect neighbourhoods, green spaces and natural heritage features and functions from the effects of nearby development

What is the municipality's approach to hierarchies?

Centres

Toronto's Official Plan has identified **four** key centres on their rapid transit system where jobs, housing, and services will be concentrated in dynamic mixed use settings with different levels of activity and intensity. These centres serve as focal points for surface transit routes drawing people from across the City and from outlying suburbs to either jobs within the centres or to a rapid transit connection.

Each centre is different in terms of its local character, its demographics, its potential to grow and its scale. A Secondary Plan (similar to an Area Redevelopment Plan) for each centre tailors an intense mix of urban activities to the individual circumstances of each location. These secondary plans have outlined a growth strategy, show how transportation and other local amenities can be improved, specify variations in the mix of land uses and intensity of activities within each of the centres and knit each centre into the surrounding fabric of the City.

The four distinct centres are as follows:

- **Etobicoke Centre**
 - Focused on two subway stations and as an interregional transit connection point can contribute to growth management objectives of the broader region.
 - Takes in a range of urban conditions including commercial office buildings, high rise apartments, auto oriented retailing and traditional main street shopping.
 - Significant development potential, particularly around its subway stations.

- Area will develop the feel and function of an urban core providing a wide range of housing, employment, shopping, recreation and entertainment opportunities
- Pedestrian-oriented communities through a series of well connected and well designed public sidewalks and walkways
- **North York Centre**
 - Focused on three subway stations on the Yonge Street spine, is served by both the Yonge subway and the Sheppard subway and is also a terminus for regional transit from communities to the north
 - Major concentration of commercial office space where businesses benefit from excellent transit service to the downtown core as well as from good highway access
- **Scarborough Centre**
 - Served by two stations with a third planned, and is the focal point of 13 surface TTC routes in the eastern part of Toronto
 - Focal point for the communities in the eastern part of the City, with a regional mall and municipal and federal government services drawing residents and workers alike
- **Yonge-Eglinton Centre**
 - Midtown Toronto with a more central location in Toronto's transit network
 - Important area of employment, highly accessible by transit to a large segment of Toronto's labour force. The residential population is found in older and more recent infill buildings
 - Has potential for new development through infill and redevelopment of key sites

Avenues

The Avenues are important corridors along major streets where urbanization is anticipated and encouraged to create new housing and job opportunities while improving the pedestrian environment, the look of the street, shopping opportunities and transit service for community residents.

Not all lands that fall within avenues are designated for growth. The avenues have been identified at a broad scale to help assess urban design, transit and service delivery issues.

Each avenue is different in terms of lot sizes and configuration, street width, existing uses, neighbouring uses, transit service and streetscape potential.

The growth and redevelopment of the avenues is supported by high quality transit services, including priority measures for buses and streetcars, combined with urban design and traffic engineering practices that promote a street that is safe, comfortable and attractive for pedestrians and cyclists.

The total length of all the City's avenues is approximately 162 km, which equates to 324 km of avenue "frontage". Approximately 75 percent of this frontage is designated for growth, while the balance will remain stable.

What is the approach to density targets/measures/policies & diversity of activities/uses?

Centres

- Each centre is expected to achieve a minimum combined gross density target of 400 jobs and residents per hectare

Avenue

Toronto's Official Plan does not delineate specific targets associated with the density of various land use categories, but rather stipulates that development should be contextual to the area, and regulations should be created to achieve high-quality development.

4.3 City of Portland (Comprehensive Plan)⁵

Background Information

Adopted in 2016, Portland's Comprehensive Plan is a long-range plan that helps the City prepare for and manage expected population and employment growth, as well as plan for and coordinate major public investments. The plan sets a long-term 20 year strategy which will ultimately see an additional 260,000 new residents, bringing the total 2035 population to 940,000, and 140,000 new jobs, bringing the total 2035 job total for Portland to 510,000.

How is the municipality or region using a Nodes and Corridors approach?

In Portland's Comprehensive Plan 2035, a *Centres and Corridors* approach is being utilized as a **planning framework** and organizing principle to focus population and employment growth in strategic areas throughout the city. Centres and Corridors, as identified in the plan, will be the primary areas for growth and change over the 20 years of the plan.

What is the key goal(s)/vision the municipality is trying to attain by applying a Nodes and Corridors approach?

In the Comprehensive Plan, the roles for Centres and Corridors have been delineated through various policy statements outlining the essential functions of Centres and Corridors. At a high-level, Portland's Comprehensive Plan (2035) and its key development framework of Centres and Corridors aims to achieve a built/urban form that:

- Fosters an equitable system of compact mixed-use and commercial centres across the city to increase access to community services and businesses, and create more low- carbon, complete, healthy, connected neighborhoods.

⁵ City of Portland, *The Portland Plan*, 2012.

- Improves Portland's major corridors so that they become vibrant urban places and key transportation connections.
- Enhances Portland's public realm, integrates nature into the city, and links people, places, and wildlife through active transportation facilities, green infrastructure investments, urban tree canopy, and habitat connections.

More specifically, the plan aims to achieve an urban form and a city that:

- Is designed for people
- Is climate and hazard resilient
- Focuses growth in strategic areas
- Connects the public realm and open spaces
- Supports employment growth
- Preserves the natural environment

What is the municipality's approach to hierarchies?

Portland's Comprehensive Plan (2035) delineates hierarchies through various typologies associated with distinct geographic and functional areas that share common attributes with each other. Specifically, the two broader typologies are:

- **Centres**
- **Corridors**

Centres

In a broad sense, *Centres* are identified as compact urban places that are pedestrian-oriented, connected to multi-modal transportation networks, and anchor complete neighbourhoods throughout Portland. Centres range in scale from the Central City's downtown to small neighborhood centers.

Four types of Centres have been identified as part of this plan, and vary in scale, size, service area, local versus regional role, and density of residents and businesses. The

four types are:

- **Central City**

- Role is to encourage continued growth and investment in the Central City
- Recognizes unique role as the regional centre for jobs, services, and civic and cultural institutions that support Portland and its surrounding region
- Acts as a multi-modal transportation hub
- Promotes public places by connecting the city and region to the Willamette River waterfront

- **Regional Centre (Gateway)**

- East Portland's major centre
- Includes city's largest transit hub outside of the Central City
- Provides access to regional facilities such as the Portland International Airport via freeways
- Encourages East Portland's largest concentration of high-density housing

- **Town Centres**

- Located throughout Portland to serve broader parts of the city
- Typically anchored by employment centres or institutions
- Feature a wide-range of commercial and community services, and have a wide-range of housing options
- Mid-rise in scale with larger scale buildings located primarily close to high-capacity transit stations, and typically five to seven storeys
- Serves the needs of the community and surrounding area
- Sufficient zoning capacity within a 800m walking distance of the town centre to support 7000 households

- **Neighbourhood Centres**

- Smaller, village-like centres that include a mixture of higher density commercial and residential buildings
- Generally intended to be low-rise in scale, although it is appropriate to locate larger scale buildings close to high-capacity transit stations or

near the Central City

- Typically includes buildings up to four storeys in height

Corridors

Corridors are busy, active streets with redevelopment potential. They are close to neighborhoods and are places with transit, stores, housing, and employers. They are to be planned, designed, and improved to be places that both benefit from and become successful additions to surrounding neighborhoods. The largest places of focused activity and density along these corridors are designated as centres.

There are two types of corridors:

- **Civic Corridors**

- Busiest, widest, and most prominent streets
- Provide major connections among centres, the rest of the city, and the region
- High levels of traffic and pedestrian activity
- Provide opportunities for growth and transit-supportive densities of housing, commerce, and employment
- Abundant trees and high-quality landscaping beautify civic corridors and offset the impacts of their large paved areas
- Safe for all types of transportation

- **Neighbourhood Corridors**

- Narrower main streets that connect neighbourhoods with each other and to other parts of the city
- Support neighborhood business districts and provide housing opportunities close to local services, amenities, and transit lines
- Streets that include a mix of commercial and higher-density housing development

What is the approach to density targets/measures/policies & diversity of activities/uses?

Portland's Comprehensive Plan has delineated a number of land use designations, and the land use designation that best implements the goals and policies of the overall plan is applied to each area of the city.

Each designation and its description includes:

- Type of place or pattern area for which the designation is intended
- General use and intensity expected within the area. In some cases, alternative development options allowed in single-dwelling residential zones (e.g. duplexes and attached houses on corner lots; accessory dwelling units) may allow additional residential units beyond the general density described below
- Level of public services provided or planned
- Level of constraint

The land use designations that are relevant to Centres and Corridors are:

LAND USE DESIGNATION	CHARACTERISTICS
Single-Dwelling (2500)	<ul style="list-style-type: none"> ○ Allows a mix of housing types that are single-dwelling in character ○ Intended for areas near, in, and along centres and corridors, near transit station areas, where urban public services, generally including complete local street networks and access to frequent transit, are available or planned ○ Generally don't have development constraints ○ Serves as a transition area between multi-dwelling and single-dwelling ○ The maximum density is generally 17.4 units per acre
Multi-Dwelling (3000)	<ul style="list-style-type: none"> ○ Mix of housing types, including multi-dwelling structures, in a manner similar to the scale of development anticipated within the single-dwelling (2500) designation ○ Intended for areas near, in, and along centres and corridors where urban public services, generally including complete local street networks and access to frequent transit, are available or planned ○ Maximum density is generally 14.5 units per acre, but may go up to 21 units per acre in some situations

Multi-Dwelling (2000)	<ul style="list-style-type: none"> ○ Allows multi-dwelling development mixed with single-dwelling housing types but at a scale greater than for single-dwelling residential ○ Intended for areas near, in, and along centers and corridors and transit station areas, where urban public services, generally including complete local street networks and access to frequent transit, are available or planned ○ Maximum density is generally 21.8 units per acre, but may be as much as 32 units per acre in some situations
Multi-Dwelling (1000)	<ul style="list-style-type: none"> ○ Allows medium density multi-dwelling development ○ Intended for areas near, in, and along centers and corridors, and transit station areas, where urban public services, generally including complete local street networks and access to frequent transit, are available or planned ○ Maximum density is 43 units per acre, but may be as much as 65 units per acre
High-Density Multi-Dwelling	<ul style="list-style-type: none"> ○ Intended for the Central City, Gateway Regional Center, Town Centers, and transit station areas where a residential focus is desired and urban public services including access to high-capacity transit, very frequent bus service, or streetcar service are available or planned ○ Allow high-density multi-dwelling structures at an urban scale ○ Maximum density is based on a floor-area-ratio, not on a unit-per-square-foot basis. Densities will range from 80 to 125 units per acre
Central Residential	<ul style="list-style-type: none"> ○ Allows the highest density and most intensely developed multi-dwelling structures ○ Limited commercial uses are also allowed as part of new development ○ Intended for the Central City and Gateway Regional Center where urban public services are available or planned including access to high-capacity transit, very frequent bus service, or streetcar service ○ Maximum density is based on a floor area ratio, not on a units-per-square-foot basis. Densities allowed exceed 100 units per acre ○ Generally accompanied by a design overlay zone
Mixed-Use Neighbourhood	<ul style="list-style-type: none"> ○ Mixed-use development in neighborhood centers and along neighborhood corridors to preserve or cultivate locally serving commercial areas with a storefront character ○ Intended for areas where urban public services, generally including complete local street networks and access to frequent transit, are available or planned, and development constraints do not exist

	<ul style="list-style-type: none"> ○ Predominantly built at low- to mid-rise scale, often with buildings close to and oriented towards the sidewalk
Mixed-Use Civic Corridor	<ul style="list-style-type: none"> ○ Allows for transit-supportive densities of commercial, residential, and employment uses, including a full range of housing, retail, and service businesses with a local or regional market ○ Intended for areas along major corridors where urban public services are available or planned including access to high-capacity transit, frequent bus service, or streetcar service ○ Civic Corridor designation is applied along some of the City's busiest, widest, and most prominent streets ○ Places that can succeed as attractive locations for more intense, mixed-use development ○ Places that are attractive and safe for pedestrians while continuing to play a major role in the City's transportation system ○ Expected to achieve a high level of environmental performance and design
Mixed-Use Urban Centre	<ul style="list-style-type: none"> ○ Intended for areas that are close to the Central City and within Town Centers where urban public services are available or planned including access to high-capacity transit, very frequent bus service, or streetcar service ○ Allows a broad range of commercial and employment uses, public services, and a wide range of housing options ○ Mixed-use and very urban in character ○ Range of zones and development scale associated with this designation are intended to allow for more intense development in core areas of centers and corridors and near transit stations, while providing transitions to adjacent residential areas
Central Commercial	<ul style="list-style-type: none"> ○ Intended to provide for commercial development within Portland's Central City and Gateway Regional Center ○ Development is intended to be very intense with high building coverage, large buildings, and buildings placed close together along a pedestrian-oriented, safe, and attractive streetscape

4.4 City of Seattle (Comprehensive Plan)⁶

Background Information

Approved in September of 2003, Seattle's Comprehensive Plan aimed to set a long-term 20 year strategy that articulates a vision of how Seattle will grow in ways that sustain citizens' values of community, environmental stewardship, economic opportunity and security, and social equity. The plan aimed to accommodate growth of 47 000 new households and 84 000 new jobs.

How is the municipality or region using a Nodes and Corridors approach?

In Seattle's Comprehensive Plan 2035, an *Urban Villages* approach is being utilized as a **planning framework** and organizing principle to focus population and employment growth in strategic areas throughout the city. Urban Villages, as identified in the plan, will be the primary areas for growth and change over the 20 years of the plan.

What is the key goal(s)/vision the municipality is trying to attain by applying a Nodes and Corridors approach?

The fundamental goal set out in the Plan was to steer the majority of the growth in population and jobs towards urban centres and urban villages, for the following reasons:

- Help preserve green spaces, forests, and farmlands outside of the urban growth area
- Preserve the character of Seattle's predominantly single-family neighborhoods
- Reduce dependence on private motor vehicles (the emissions from which are

⁶ City of Seattle, *Seattle Comprehensive Plan*, 2005.

the number one source of air pollution and climate-altering greenhouse gases in the Puget Sound region, as well as a major source of water pollution

- Use natural resources such as land, water, and energy efficiently
- Improve public health by promoting walking and bicycling
- Reduce the costs of building and maintaining public infrastructure and services, such as roads, water and energy supply, and waste management systems

Seattle's strategy for accommodating future growth and creating a sustainable city brings together a number of tools, such as:

- Diverse housing and employment growth
- Pedestrian and transit-oriented communities
- The provision of services and infrastructure targeted to support that growth
- Enhancements to the natural environment and the city's cultural resources

Together, these tools form the *Urban Village Strategy*. By concentrating growth in these urban villages, the aim of the plan is to build on successful aspects of the city's existing urban character, continuing the development of concentrated, pedestrian-friendly, mixed-use neighborhoods of varied intensities at appropriate locations throughout the city.

Seattle's 's Urban Village Strategy has 14 intended goals, which are as follows:

- Respect Seattle's human scale, history, aesthetics, natural environment, and sense of community identity as the city changes.
- Implement regional growth management strategies and the countywide centres concept through this Plan.
- Promote densities, mixes of uses, and transportation improvements that support walking, use of public transportation, and other transportation demand management strategies, especially within urban centres and urban villages.
- Direct the greatest share of future development to centres and urban villages

and reduce the potential for dispersed growth along arterials and in other areas not conducive to walking, transit use, and cohesive community development.

- Accommodate planned levels of household and employment growth. Depending on the characteristics of each area, establish concentrations of employment and housing at varying densities and with varying mixes of uses.
- Accommodate a range of employment activity to ensure employment opportunities are available for the city's diverse residential population, including maintaining healthy manufacturing and industrial areas.
- Use limited land resources more efficiently and pursue a development pattern that is more economically sound, by encouraging infill development on vacant and underutilized sites, particularly within urban villages.
- Maximize the benefit of public investment in infrastructure services, and deliver those services more equitably by focusing new infrastructure and services in areas that are expecting to see additional growth.
- Collaborate with the community in planning for the future
- Increase public safety by making villages places that people will be drawn to at all times of the day.
- Promote physical environments of the highest quality, which emphasize the special identity of each of the city's neighborhoods, particularly within urban centers and villages.
- Distribute urban villages around the city so that communities throughout the city have easy access to the range of goods and services that villages are intended to provide.
- Encourage development of ground-related housing, which is attractive to many residents including families with children, including townhouses, duplexes, triplexes, ground-related apartments, small cottages, accessory units, and single-family homes.
- Provide parks and open space that are accessible to urban villages to enhance the livability of urban villages, to help shape the overall development pattern, and to enrich the character of each village.

What is the municipality's approach to hierarchies?

Seattle's Comprehensive Plan has delineated three typologies of Urban Centres/Villages as follows:

- **Urban Centre**
 - Densest centres with the widest range of land uses
 - Concentrated employment and housing
 - Direct access to high-capacity transit and wide range of land uses
 - Regional significance in terms of housing and employment
- **Hub Urban Villages**
 - Villages located within the Urban Centre
 - Accommodate a broad mix of uses, but at a lower density than urban centre
 - Provide convenient locations for commercial services that serve populations of the village, surrounding neighbourhoods, the city, and the region
 - Accommodate concentrations of employment and housing at densities that support pedestrian and transit use, and increase opportunities within the city for people to live close to where they work.
- **Residential Urban Villages**
 - These are compact residential neighborhoods providing opportunities for a wide range of housing types and a mix of activities that support the residential population.
 - Densities in residential urban villages support transit use.

What is the approach to density targets/measures/policies & diversity of activities/uses?

	URBAN CENTRES	HUB URBAN VILLAGES	RESIDENTIAL URBAN VILLAGES
Size and Concentration	<ul style="list-style-type: none"> No minimum size, up to 960 acres Must support a minimum of 15,000 jobs within 0.5 mile radius of high capacity transit station 50 jobs/acre Employment Density 15 Households/acre overall 	<ul style="list-style-type: none"> 2,500 Jobs 25 jobs/acre 15 Housing units/acre overall Allows for at least 3,500 residential units 	<ul style="list-style-type: none"> Existing densities Potential for 8 housing units/acre under current zoning
Transit Routes and Access	<ul style="list-style-type: none"> Within 800m of existing or planned high capacity station Connection to existing or planned bike/ped facilities 	<ul style="list-style-type: none"> Frequent Transit service (15 minute peak), with access to one urban center Located on main transit network with regional connections Routes for goods transport (truck/freight route) Convenient and direct bike/ped connections to neighboring areas 	<ul style="list-style-type: none"> Served by transit with 15 minute peak direct access to at least one hub or center Connected to the surrounding neighborhood by existing or planned bike/ ped facilities
Zoning	<ul style="list-style-type: none"> Zoning allows for diverse mix of commercial and residential activities (uses) 	<ul style="list-style-type: none"> Zoning that allows for a broad range of housing types, commercial, and retail support services 	<ul style="list-style-type: none"> Residential emphasis, with limited commercial and retail 1800 Housing Units within 2000 feet of

			village center <ul style="list-style-type: none"> 10 acres of commercially zoned land within 2000 feet of village center
Unbuilt Development Capacity	<ul style="list-style-type: none"> 15,000 jobs within 800m of high capacity transit station 50 jobs/acre density 15 Households/ acres 	<ul style="list-style-type: none"> 2,500 Jobs 25 jobs/acre 15 Housing units/acre overall Allows for at least 3,500 res. units 	<ul style="list-style-type: none"> Existing densities and/or potential for 8 Housing Units/acre under current zoning

4.5 City of Austin (Imagine Austin)⁷

Background Information

Approved in 2012, Austin's Comprehensive Plan (Imagine Austin) sets out a strategic direction to the year 2039. It strives to become a "complete community" that is natural and sustainable, prosperous, livable, mobile and interconnected, educated, creative, and which values and respects all.

How is the municipality using a Nodes and Corridors approach?

An *Activity Centre and Corridor* approach is being applied as one part of the overall network planning system developed through Imagine Austin. Other networks include the transit network, pedestrian and bike network, environmental resource network, and roadway network.

What is the key goal(s)/vision the municipality is trying to attain by applying a Nodes and Corridors approach?

A number of goals have been identified as a result of the overall growth concept illustrated in Imagine Austin, which include:

- Promotes a compact and connected city
- Promotes infill and redevelopment as opposed to typical low-density "greenfield" development
- Focuses new development in activity corridors and centers accessible by walking, bicycling, and transit as well as by car
- Provides convenient access to jobs and employment centers
- Protects existing open space and natural resources such as creeks, rivers, lakes, and floodplains
- Improves air quality and reduces greenhouse gas emissions

⁷ City of Austin, *Imagine Austin Comprehensive Plan*, 2012.

- Expands the transit network and increases transit use
- Reduces vehicle miles traveled
- Reduces per capita water consumption
- Provides parks and open space close to where people live, work, and play

What is the municipality's approach to hierarchies?

Imagine Austin has assembled compact and walkable activity centres and corridors, and has coordinated them with future transportation improvements. Ultimately, these centres and corridors allow people to live, work, shop, access services, and recreate without having to travel far distances. They are connected to one another, the rest of the city, and the region by roads, transit, cycling infrastructure, and pedestrian networks.

Centres

Centres are generally focused on one or more major transit stops. The greatest density of people and activity will be located around these stops. Surrounding these dense hubs, Centres will feature a mix of retail, offices, open space and parks, public uses and services such as libraries and government offices, and a variety of housing choices.

Three types of Centres have been identified, which are as follows:

- Regional Centre
 - Most urban places in the region - the retail, cultural, recreational, and entertainment destinations for Central Texas
 - Greatest density of people and jobs and the tallest buildings in the region
 - Housing will mostly consist of low to high-rise apartments, mixed use buildings, row houses, and townhouses
 - Densities, building heights, and overall character of a Center depend on its location

- Regional centers range in size between approximately 25,000-45,000 people and 5,000- 25,000 jobs
- Town Centre
 - Places where many people will live and work
 - Have large and small employers, although fewer than in Regional Centers. These employers have regional customer and employee bases, and provide goods and services for the Center as well as the surrounding areas
 - The buildings found in a Town Center range in size from one-to three-storey houses, duplexes, townhouses, and row houses, up to low-to mid-rise apartments, mixed use buildings, and office buildings.
 - These Centers will also be important hubs in the transit system
 - These Centers range in size between approximately 10,000-30,000 people and 5,000-20,000 jobs
- Neighbourhood Centre
 - Smallest and least intense of the three mixed-use Centers. Neighborhood centers are walkable, bikeable, and supported by transit
 - Greatest density of people and activities in neighborhood centers are concentrated on several blocks or around one or two intersections
 - More locally focused than either a Regional or a Town Center
 - Businesses and services will generally serve the Center and surrounding neighborhoods
 - Neighborhood Centers range in size between approximately 5,000-10,000 people and 2,500-7,000 jobs

Corridors

While a corridor may feature the same variety of uses as a Center, its linear nature spreads uses along a roadway. Walking may be suitable for shorter trips, however, longer trips along the corridor can be made by cycling, transit, or automobile.

Along different segments of these corridors, there may be multi-storey mixed-use buildings, apartment buildings, shops, public uses, or offices, as well as townhouses, row houses, duplexes, and single-detached houses.

Corridors are also characterized by a variety of activities and types of buildings located along the roadway.

4.6 Consolidated Responses to Questions

A consolidated overview of the responses to each of the questions answered in the previous section for each municipality studied can be accessed [here](#).

4.7 Key Findings

Through the review of the Comprehensive Plans from five municipalities, specifically focusing on their approach to Nodes and Corridors planning, a number of key themes/finding emerged. The following section explores these key findings in detail.

Hierarchical structure of three Nodes

Of the plans examined, all but one (Toronto's Official Plan) developed a hierarchical structure of three Nodes, which, in a general sense, can be classified as Tier 1, Tier 2, and Tier 3 Nodes.

Similar and shared attributes for each of the three tiers of Nodes are as follows:

- **Tier 1**
 - Central Business District of each respective city
 - Serve as the employment and cultural hubs
 - Comprised of mainly high-density residential housing typologies
 - Has regional significance and prominence
 - The most “urban” areas of the city

- The most well-connected area in the city, where rail lines and primary bus networks converge, and serves as a multi-modal transportation hub for the city and region
- **Tier 2**
 - Major mixed-use destination central to larger residential or business catchment areas
 - Comprised of a variety of housing typologies
 - Located on or near one or more transit stations on the primary network
 - Serves a broader community than Tier 3 Nodes
 - Has some, but not as much regional importance when compared to Tier 1 Nodes, especially for Tier 2 Nodes located closer to surrounding municipalities
- **Tier 3**
 - Typically comprised of low to medium density housing types
 - Located near transit service
 - Serves as a hub for a limited number of neighbourhoods and are more locally focused
 - Services provided are more local in scale

Toronto's Official Plan identified specific areas in the City/Region to invest in and guide strategic growth, but did not delineate between importance or hierarchy. Rather, each of the four Nodes identified in Toronto's Official Plan was done based on their respective unique character and attributes. All of the Nodes identified in Toronto's case would closely align to the Tier 1 type expressed in the other cities' plans.

Networks are utilized to determine Node and Corridor locations

A number of networks were utilized to assist in determining the location and typology of the Nodes and Corridors for each of the respective cities studied. The networks included were as follows:

- Primary transit network
- Roadway network
- Open space network
- Pedestrian network
- Cycling network

It appears as though where a number of these networks converged or overlapped, a Node or Corridor was identified.

Transit system serves as an organizing principle

As previously mentioned, a variety of networks were utilized to develop and identify the various Nodes and Corridors throughout the respective Comprehensive Plans studied. However, the one network that was most prominent, and played the biggest role in this identification and development process, was the primary transit network for each municipality.

For example, it is stated in the City of Calgary's MDP that Nodes have been developed or identified to provide support to the Primary Transit Network. In Toronto's Official Plan, Nodes were strategically identified where two or more Rail Transit stations are present. In the Portland and Seattle plans, Nodes act as a hub for transit, but at varying scales depending on the classification of the Node.

Recommended densities differ from plan to plan, but guiding principles are similar

While the densities identified in the various Nodes and Corridors differ from city to city, which can likely be attributed to the differing sizes of the respective municipalities and what constitutes acceptable densities, the guiding principles used to develop the hierarchical structure of Nodes and Corridors share a number of similarities from city to city.

At a high-level, the shared notions for all of the plans examined for the purpose and rationale for utilizing a Nodes and Corridors approach are:

- Promote a compact, vibrant, and connected city
- Promote a more environmentally and economically sustainable city
- Promote the use of alternative modes of transportation
- Promote the enhancement of the public realm

Efficient use of land/resources is a driving factor

One of the main tenets of the plans studied was that a Nodes and Corridors approach was being utilized to move towards achieving a more economically and environmentally sustainable city. Each plan mentioned that by concentrating the planned growth of the city in strategic locations, where sufficient infrastructure (transit, roadway, drainage, etc.) was present, economic savings would be realized, as well as environmental concerns of expanded growth mitigated.

Strategic locations of Nodes and Corridors to leverage and promote assets

A number of Nodes and Corridors identified in the respective plans for each municipality sought to leverage and promote assets that the municipalities possessed. For example, Portland's Central City Node sought to leverage its proximity to the Willamette River, as well as promote it to a broader audience in order to create more of a connection to the river.

Downtowns, or first-tier nodes, have a regional role

It was recognized in each of the plans studied that the highest tiered Node serves a regional role in that it is the main hub for culture, employment, population, and services not only for the host city, but surrounding municipalities.

5.0 Edmonton's Proposed Hierarchy & Density Framework

Utilizing the information outlined in the previous section, the following section will synthesize the criteria utilized to develop the typologies found in the City of Calgary's Municipal Development Plan and the City of Portland's Comprehensive Plan (The Portland Plan). These approaches were most compatible with building an approach relevant for Edmonton.

As previously mentioned, a Node and a Corridor can be defined in the following fashion:

A **Node**, in its most general sense, is a place where people and transportation routes congregate and converge - i.e transit-oriented, pedestrian-friendly areas where high concentrations and wide-variety of residential, employment, retail and other uses are located.

A **Corridor**, in its most general sense, is an important transportation route within a city that connects the Nodes of a city - i.e. a city area with street-oriented uses which incorporates mixed-used development, built at medium densities, located along arterial and collector roads, and serving as major transit routes.

The City of Calgary and the City of Portland have delineated four distinct tiers or typologies of a Nodes, which can be synthesized as follows:

- Centre City
- Primary Node
- Secondary Node
- Tertiary Node

The City of Calgary and the City of Portland have delineated two distinct tiers or typologies of Corridors, which can be synthesized as follows:

- Primary Corridor
- Secondary Corridor

5.1 Nodes for Edmonton

5.1.1 Centre City (Downtown)

Description: The Centre City serves as the business and cultural hub of the city, and is comprised of a wide-variety of land uses. The Centre City is also the predominant mixed-use area in the city, and serves as a major mixed-use residential community in the heart of the city. The Centre City also serves as an important regional asset and hub for surrounding municipalities and Northern Alberta.

Land Use and Built Form

- The Centre City is, or is planned to be, the densest employment, residential, and commercial centre in the city
- The Centre City is comprised of mixed-use high-density buildings typically in the form of towers
- The Centre City has the highest intensity of building heights, site coverage, and Floor Area Ratio (FAR)
- The Centre City has an appropriate mix of housing tenure and affordability to facilitate demographic diversity

Mobility

- The Centre City is a transportation hub that is connected to the rest of the city and region
- The Centre City is serviced by one or more rapid transit lines, as well as one or more cross-town high frequency bus lines
- The Centre City is connected, both internally and externally, with a strong cycling and pedestrian network

Public Realm

- The Centre City is the cultural hub for the city and region, which is reflected in the design of buildings and public spaces
- The Centre City provides for a strong and vibrant pedestrian realm that encourages street level comfort and safety for users of the space
- The Centre City offers a variety of formal and informal gathering spaces through the provision of public parks and plazas, and private establishments
- The Centre City has strong linkages that connect the space and allow for efficient movement of people and goods
- The Centre City promotes strong and attractive interfaces between buildings and the streetscape

5.1.2 Major (Metropolitan) Node

Description: *Primary Nodes are strategically located throughout the city to serve as major mixed-use destinations to broad catchment areas of the city, and are designed in a way where they function as an urban centre for a sub-region of the city.*

Land Use & Built Form

- Major Nodes typically comprise of a district or area, and not a specific location
- Major Nodes are typically anchored by a large institution, employment centre, or commercial amenity
- Major Nodes have the highest density and mix of uses outside of the Centre City
- Major Nodes have height limits to allow for the tallest buildings outside of the Centre City to accommodate higher-density development
- Major Nodes are comprised of a variety of housing typologies, predominantly on the higher-to-medium density scale
- Major Nodes have an appropriate mix of housing tenure and affordability to facilitate demographic diversity
- Major Nodes should be located in areas where an appropriate transition to its surrounding areas are present or can be created

Mobility

- Major Nodes are well-connected to the Centre City through a network of multimodal transportation options
- Major Nodes are serviced by a rapid transit station as well as high-frequency/cross town bus lines
- Major Nodes provide for high-quality internal and external pedestrian and cycling facilities, while maintaining automobile circulation

Public Realm

- Major Nodes are established through their own local identity, and provide for comfortable and interesting spaces
- Major Nodes promote and enhance the public realm through human-scale design and high-quality pedestrian facilities
- Major Nodes provide ample informal and formal gathering spaces (parks, plazas, etc.)

Potential Examples

University of Alberta District • Old Strathcona • Blatchford • Exhibition Lands

5.1.3 District Node

Description: Secondary Nodes act as small urban village centres, with a variety of low-order services being provided. Secondary Nodes are comprised of a variety of housing types are typically medium-density with opportunity for higher density being located near high-capacity transit stations.

Land Use

- District Nodes are comprised of a variety of housing typologies, predominantly medium density (high-density housing should be located predominantly near transit stations or major arterial roadways)
- District Nodes have heights that are compatible with surrounding areas, but facilitate medium-high density housing opportunities
- District Nodes provide for a variety of commercial uses
- District Nodes have an appropriate mix of housing tenure and affordability to facilitate demographic diversity
- District Nodes should be located in areas where an appropriate transition to its surrounding areas are present or can be created

Mobility

- District Nodes are well-connected to their surrounding areas through a network of multimodal transportation options
- District Nodes are serviced by a rapid transit station and/or high-frequency/cross town bus lines
- District Nodes provide for high-quality internal pedestrian and cycling facilities, while maintaining automobile circulation

Public Realm

- District Nodes are established through their own local identity, and provide for comfortable and interesting spaces
- District Nodes promote and enhance the public realm through human-scale design and high-quality pedestrian facilities
- District Nodes provide ample informal and formal gathering spaces (parks, plazas, etc.)

Potential Examples

Bonnie Doon Redevelopment • Mill Woods Town Centre Redevelopment •
Heritage Valley Town Centre • Century Park Redevelopment

5.1.4 Local Node

Description: *Tertiary Nodes are central to residential neighbourhoods or areas of businesses, and act as neighbourhood-scale centres for local jobs, retail, services, and community gathering spaces.*

Land Use

- Local Nodes are located on smaller commercial lots
- Local Nodes are comprised of uses that are diverse and offer a mix of uses to fit with the scale and character of the surrounding neighbourhood
- Local Nodes provide for small-scale local neighbourhood amenities
- Local Nodes do not offer significant intensification opportunities, but do provide for the opportunity for moderate mixed-use intensification

Mobility

- Local Nodes are connected to their host neighbourhood or community through strong pedestrian and cycling linkages

Public Realm

- Local Nodes, through their design and uses, create local-scale public gathering spaces

Potential Examples

Petrolia Mall • Lendrum Strip Mall • Ritchie Market • 112 Ave & 65 Street

5.2 Corridors for Edmonton

5.2.1 Primary Corridor

Description: Primary Corridors are the largest, most vibrant, and most prominent streets in the City and region. They serve as destinations in and of themselves, but also provide critical connections between Nodes, the rest of the city, and the region.

Land Use & Built Form

- Primary Corridors provide the opportunity for a broad range of employment, commercial and retail, and housing (form, tenure, and affordability)
- Primary Corridors have the highest intensity of building heights, site coverage, and FAR
- Primary Corridors are often mixed-use in nature

Mobility

- Primary Corridors are serviced by a rapid transit line, as well as one or more cross-town high frequency bus lines
- Primary Corridors are multimodal in nature and offer facilities for all types of movement
- Primary Corridors are well connected to adjacent communities through other streets that facilitate pedestrian and cycling

Public Realm

- Primary Corridors are Main Streets in terms of design and treatment
- Primary Corridors provide for strong linkages that connect the space and allow for efficient movement of people and goods
- Primary Corridors provide for a strong and vibrant pedestrian realm that encourages street level comfort and safety for users of the space
- Primary Corridors promote and enhance the public realm through human-scale design

Potential Examples

Jasper Avenue • Stony Plain Road • Whyte Avenue • 124 Street • 109 Street

5.2.2 Secondary Corridor

Description: *Secondary Corridors are vibrant residential and commercial streets smaller in scale to Primary Corridors, and serve as local destinations for surrounding communities.*

Land Use

- Secondary Corridors provide the opportunity for a broad range of employment, commercial and retail, and housing (form, tenure, and affordability)
- Secondary Corridors have heights that are compatible with surrounding areas, but facilitate medium-high density housing opportunities
- Secondary Corridors provide for a variety of commercial uses
- Secondary Corridors are mixed-use (vertically and/or horizontally) in nature

Mobility

- Secondary Corridors are serviced by high-quality public transit
- Secondary Corridors are multimodal in nature and offer strong pedestrian and cycling facilities
- Secondary Corridors are well connected to adjacent communities through other streets that facilitate pedestrian and cycling

Public Realm

- Secondary Corridors are Complete Streets in terms of design and treatment
- Secondary Corridors provide for strong linkages that connects the space and allows for efficient movement of people and goods
- Secondary Corridors provide for a strong and vibrant pedestrian realm that encourages street level comfort and safety for users of the space
- Secondary Corridors promote and enhance the public realm through human-scale design

Potential Examples

104 Street (Downtown
91 St)

95 Street (Little Italy)

34 Avenue (west of

6.0 Applying Nodes & Corridors to Edmonton

In the following section, an overview of each map developed as part of this project, as well as the methodology used to develop it, is presented.

6.1 Nodes & Corridors in Edmonton (Typologies 2018)

The [first map](#) (*Typologies 2018*) produced is a reflection of Edmonton's current context in terms of Nodes and Corridors as it relates to the typologies developed in the previous section; this map is a preliminary notion of Edmonton's emerging nodes and corridors in 2018.

This map was developed using a qualitative approach whereby the report writer, using the typologies identified in the previous section, systematically went through the various neighbourhoods in Edmonton using Google Maps, as well as his ~30 years of experience with Edmonton, to identify areas that broadly reflected the criteria outlined in the previous section.

6.2 Nodes & Corridors in Edmonton (Typologies Future)

The [second map](#) (*Typologies Future*) produced is a reflection of Edmonton's planned future context in terms of Nodes and Corridors as it related to the typologies outlined in the previous section.

This map was developed using a qualitative approach whereby the report writer, using the typologies identified in the previous section, systematically went through the various neighbourhoods in the city using Google Maps, as well as his ~30 years of experience with Edmonton, to identify areas where planning, zoning, and future development intentions reflected the criteria outlined in the previous section.

This map represents Edmonton's opportunities as it identifies previously zoned parcels of land that have the potential for significant density increases, as well as other large land parcels that could potentially be rezoned in the future.

6.3 Nodes & Corridors in Edmonton (Base Map 2018)

Once the base lists (5.1 and 5.2) were established, metrics needed to be developed to confirm the identification of each Node and Corridor, and whether or not the Node or Corridor should be advanced for further study in the City Plan project. The metrics developed are related to three categories: land use and built form, mobility, and the public realm. The metrics below have been applied to and a [summary table](#) has been developed. Out of this exploration, the final map (Base Map 2018) has been developed, which is a reflection of Edmonton's current Nodes and Corridors network. An explanation of each metric for the three respective categories can be found below:

Land Use & Built Form

For the purposes of this work, four specific metrics have been identified for land use. These metrics as well as their definitions are as follows:

- **Housing:** defined as whether or not a mix of housing typologies (single detached/multi-dwelling) is present along the corridor or within the node's surrounding area
- **Employment:** defined as whether or not a mix of employment opportunities is present along the corridor or within the node's surrounding areas
- **Commercial:** defined as whether or not a mix of commercial typologies is present along the corridor or within the node's surrounding areas
- **Mixed Use:** defined as whether or not mixed use development(s) is present along the corridor or within the node's surrounding areas

Mobility

For the purposes of this work, four specific metrics have been identified for mobility. These metrics as well as their definitions are as follows:

- **LRT:** defined as the Node or Corridor having direct access (a station located within the identified area) to the LRT system
- **Bike:** defined as the Node or Corridor having direct access to Edmonton's primary network of cycling infrastructure
- **Bus:** defined as the number of bus lines the Node or Corridor has direct access to

Public Realm

For the purposes of this work, five specific metrics have been identified for the public realm. These metrics as well as their definitions are as follows:

- **Walkscore:** defined using the scoring criteria set out by the Walk Score organization, which is:⁸
 - 0-24 Car - Dependant (Almost all errands require a car)
 - 25-49 Car - Dependant (A few amenities within walking distance)
 - 50-69 Somewhat Walkable (Some amenities within walking distance)
 - 70-89 Very Walkable (Most errands can be accomplished on foot)
 - 90+ Walker's Paradise (Daily errands do not require a car)
- **Open Space:** defined as simply a yes or no metric as to whether or not open space (such as parks or naturalized areas) is immediately available
- **Mainstreet:** defined as simply a yes or no metric as to whether or not the street is classified as a Main Street per City of Edmonton's Main Street Guideline.⁹ This previous City policy project used several criteria to determine the Main Street list.
- **Car or Pedestrian Priority:** defined as simply a qualitative determination as to whether or not the Node or Corridor currently prioritizes pedestrians or moving cars
- **Flex Space:** defined as simply a yes or no as to whether flexible space is available in the pedestrian realm (patios, transit shelters, parklets, boardwalks, venues for temporary businesses).

⁸ Walkscore, *Walkscore Methodology*, 2018

⁹ City of Edmonton, *Main Street Guidelines*, 2015.

7.0 Conclusion and Next Steps

The roots of a Nodes and Corridors approach to planning can be seen when examining various planning theories in the academic literature. Christaller's Central Place Theory highlights the spatial relationships between human settlements and the market forces that drive development patterns, and Harris and Ullman's Multiple Nuclei Theory highlights the notion that over the course of a city's evolution, activities disperse and change.

Many municipalities throughout North America have applied a Nodes and Corridors approach in terms of policy planning, and these networks show up in the municipalities' respective comprehensive plans as a guiding framework for their cities' spatial plans. Although these municipalities use varying terms to describe their networks of Nodes and Corridors, and varying approaches to how municipalities apply Nodes and Corridors to their respective plans, there are many similarities shared when it comes to common objectives.

While there are differences in how cities describe and apply Nodes and Corridors, most cities apply a hierarchical approach to Nodes and Corridors, with differing policies and/or targets for each level.

Out of the research conducted through the development of this report, an approach for Edmonton's Nodes and Corridors hierarchy was developed - Primary and Secondary Corridors, as well as Primary, Secondary, and Tertiary Nodes. Through a qualitative process and criteria, this hierarchy was applied to various locations throughout Edmonton. The resulting mapping identified a base network of Nodes and Corridors already present in Edmonton. The Edmonton hierarchy, as well as the base mapping, will be applied to further develop the Nodes and Corridors concept in the City Plan.

8.0 References List

The City of Austin, *Imagine Austin Comprehensive Plan*, 2012.

The City of Calgary, *Calgary Municipal Development Plan*, 2009.

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The City of Edmonton, *Committee Report CR_5703 - 101 Avenue Corridor Study - (Update)*, June 5, 2018.

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Walkscore, *Walkscore Methodology*,
<https://www.walkscore.com/methodology.shtml>, 2018.