

Targeted OCP Review

TRANSPORTATION WHITE PAPER

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FOR WORKSHOP DISCUSSION



Prepared by Urban Systems Ltd.

for

the District of North Vancouver

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OFFICIAL COMMUNITY PLAN

TRANSPORTATION GOAL

Provide a safe, efficient and accessible network of pedestrian, bike and road ways and enable viable alternatives to the car through effective and coordinated land use and transportation planning.

Source: Our Official Community Plan for a Sustainable Future, 2011



1. INTRODUCTION

As part of the District of North Vancouver’s Targeted Official Community Plan (OCP) Review, White Papers have been developed for:



The purpose of each White Paper is to provide important background information on each topic area. Each White Paper also includes a list of possible actions the District could take to address key issues. District Council will use the White Papers to inform the development of an Action Plan.

TRANSPORTATION AFFECTS DISTRICT RESIDENTS IN MANY WAYS

District residents rely on the transportation network every day. Whether they are walking to the neighbourhood park, biking along the Spirit Trail, taking the bus to work, driving across town to a kid’s soccer game, or receiving a home delivery, people are using the transportation system. Given that transportation is core to everything people do, it is no surprise that residents have identified transportation as the most important issue in the District (Mustel Group, 2019).

Transportation affects more than the ability to get around. Transportation also affects health and well-being. Walking, cycling, and transit have all been linked to positive health outcomes, while time sitting in traffic has been linked to negative impacts on personal well-being. The air contaminants and noise created by transport vehicles can also negatively affect public health. Moreover, our transportation choices have a significant impact on climate change. 52% of the District’s greenhouse gas emissions are generated by transportation, 96% of which are from passenger vehicles (Integral Group LLC & District of North Vancouver, 2019).

TRANSPORTATION HAS EQUITY IMPLICATIONS

Transportation impacts affordability and quality of life. Car ownership, insurance, and fuel costs can be a high financial burden for some households. Time spent travelling – either due to congestion or to circuitous, unreliable, and / or infrequent transit – is time that cannot be spent with family, on work, or pursuing other interests. Residents who cannot afford to drive and who do not live near frequent transit may be captive to infrequent and unreliable transit routes. These residents often sacrifice more time to transportation, further reducing their time available for work, family, and other priorities.

DIFFERENT RESIDENTS HAVE DIFFERENT TRANSPORTATION NEEDS

Our transportation system must respond to transportation needs that vary from individual to individual. A senior might rely on transit because she no longer feels comfortable driving, a teen might use cycling as his primary mode of transportation, and someone in a wheelchair might rely on a complete and accessible sidewalk network.

RELIABLE AND EFFICIENT TRANSPORTATION IS KEY TO A STRONG ECONOMY

Reliable and efficient transportation is important for individuals and for the economy. Both employers and employees need effective transportation systems to keep businesses operating successfully. District residents enjoy the benefits of a strong local economy that provides local services and amenities. These benefits are at risk if businesses cannot retain employees due to transportation challenges. At the same time, the cost and reliability of goods movement can be a risk to local business. Mobile services and trades, such as plumbers and electricians, lose time (and money) when they are caught in congestion. Many industries rely on cost-effective just-in-time delivery to maintain a healthy bottom line.



2. KEY TERMS

Transportation choice

The number and quality of transportation options available. Transportation choice can be limited by the infrastructure and services available, travel distance, a person's ability, socio-economic conditions, or other factors.

All Ages and Abilities (AAA)

The idea that everyone – from ages eight to eighty-eight, of different abilities, and with different needs – can safely and comfortably travel. This idea is typically applied to the planning and design of walking and cycling infrastructure.

Reliability

The certainty with which you can travel between two points within an expected amount of time. If getting to work takes you 20 minutes some days, and 40 minutes other days, that trip is **not** reliable.

Delay

The difference between the acceptable or expected travel time and the actual travel time.

Mode share

The percentage of all trips completed by a given mode of transportation. For example, the transit mode share is the percentage of all trips within a given time period that were completed using transit. When multiple modes are used for a trip, the mode used for the longest portion of the trip is considered the primary mode and the whole trip is assigned to that mode share. For example, a person who walks to the bus stop and then takes the bus to work, their whole trip would be counted as part of the transit mode share.

3. CONNECTIONS TO OTHER TOPIC AREAS



HOUSING

Safe, comfortable, and reliable transit and active transportation connections increase housing affordability by decreasing the overall cost burden of housing and transportation.

Reliable public transit can reach more people when residential growth is concentrated in compact, connected centres.



ECONOMY & EMPLOYMENT LANDS

Businesses locate in areas where their employees can get to work easily and where they are able to get goods to market efficiently.

Lack of efficient and reliable transportation options (to and within the District) is cited by the business community as a key barrier to attracting and retaining employees.

Businesses are leaving the District because their employees can't get to work.



Transportation accounts for 52% of GHG emissions in the District, 96% of which is from passenger vehicles (Integral Group LLC, 2019).

Increased use of sustainable transportation choices will reduce GHG emissions.



CLIMATE EMERGENCY

4. CURRENT CONDITIONS AND PROGRESS SINCE 2011

Key Statistic¹

What is Important to Know?

760 Casualty Collisions per 100,000 people (2017)

39 Casualty Collisions per 100,000 Vehicle Kilometres Travelled (VKT) (2017)

- The number of casualty collisions per 100,000 people in the District has been increasing over the past 5 years, from 580 in 2013 to 760 in 2017.
- In 2017, there were 29 casualty collisions in DNV for every 100,000 vehicle kilometres travelled (VKT) by DNV residents. This is an increase of about 27% from 30 casualty collisions per 100,000 VKT in 2013.
- Casualty collisions per person increased at a higher rate than casualty collisions per VKT – this can be attributed to a higher number of vehicle kilometres travelled per resident. More kilometres driven typically leads to more collisions.
- In 2018 there were approximately 1,000 casualty crashes per 100,000 people across the Lower Mainland. The District's casualties are lower than the Lower Mainland average. (ICBC recorded 28,000 casualty crashes in the Lower Mainland and BC Stats reports a population of approximately 2.8 million).

11.2% Walk Mode Share in 2017

- Up from 7.8% in 2011.
- This is approximately 15,000 new walk trips per day in the District.
- May reflect increasing density, investments in transportation infrastructure, and the impact of transportation demand management programs.
- Aligns with regional patterns – across Metro Vancouver, walk mode share increased from 10.0% to 13.9% from 2011 to 2017.
- By comparison, City of North Vancouver walk mode share was 16.2% in 2017.

¹ Sources of statistics in this table include: TransLink Trip Diary (mode share, number of trips by mode, vehicle kilometres travelled, trip distance, origins and destinations), ICBC (number of casualty collisions), BC Statistics (population), TransLink (bus boardings).

Key Statistic¹

What is Important to Know?

1.5% Bike Mode Share in 2017

- Up from 0.7% in 2011.
- Although this is still a small share of overall trips, it represents an increase of approximately 3,000 cycling trips per day by District residents.
- Regional average in 2017 was 1.6%, down slightly from 1.8% - this indicates that the District is one of the leading municipalities in Metro Vancouver in enabling growth in cycling by residents.
- Areas with higher bike mode share have typically made substantial investments in safe, comfortable bicycle infrastructure and have supportive land use patterns.

7.2% Transit Mode Share in 2017

- Down from 9.0% in 2011.
- The actual number of transit trips per day decreased from 24,000 to 23,000.
- Although both the transit mode share and actual number of transit trips per day by District residents decreased between 2011 and 2017, bus boardings² within the District have increased by about 9% between 2012 and 2017 (from around 6.5 million per year in 2012 to 6.9 million per year in 2017).
- Transit mode share in Metro Vancouver was 11.6% in 2017, down from 12.4% in 2011, although the actual number of trips per day increased by around 120,000.
- Areas with high transit mode share typically have frequent, reliable service and compact, complete communities.

62.5% Auto Driver Mode Share (i.e. percentage of trips taken as the driver of a private vehicle) in 2017

- Down from 65.5% in 2011.
- This is moving towards the District's goals, but the change in mode share is not sufficient to offset the growth in overall trips due to more trips per household and new households.
- Although the percent of all trips made by driving has decreased, the overall number of driving trips and the length of those trips has increased. The number of vehicle

² Bus boardings are the number of passengers who enter a bus. The annual number of bus boardings for the District is the total number of passengers who entered a bus from any stop within the District. If a single passenger took two buses within the District to make their trip – i.e. they boarded one bus near their house and then transferred to a second bus at Phibbs Exchange – that is counted as two bus boardings.

Key Statistic¹

What is Important to Know?

	<p>trips per capita by District residents increased from 3.1 in 2011 to 3.6 in 2017. As a result, the total number of vehicle trips by District residents increased from 174,000 to 199,000 (approximately 14%).</p> <ul style="list-style-type: none"> • The District's mode share of 62.5% for driving a private vehicle is higher than the regional average of 55.3% in 2017. • The absolute number of auto driver trips per day in the region increased by 14% - this is the same growth rate as auto trips in the District.
17.1% Auto Passenger Mode Share in 2017	<ul style="list-style-type: none"> • Up from 16.4% in 2011. • Slightly higher than regional average of 16.6%. • Increased auto passenger mode share reflects an increase in vehicle occupancy.
8 km Average Trip Distance in 2017	<ul style="list-style-type: none"> • The average trip distance for all trips in the District was 8 km in 2017. This is a decrease of almost 5% from 8.4 km in 2011. • Most trips starting in the District stay within the District (52%) and even more stay on the North Shore (an additional 24%). Only around 24% of trips have destinations on the other side of the Burrard Inlet. • The percent of trips staying within the District and on the North Shore has been increasing over time – in 2011, 48% of trips starting in the District stayed in the District, while 26% of all trips starting in the District crossed the Burrard Inlet.
1.78 Million Total VKT per day in 2017	<ul style="list-style-type: none"> • Up from 1.61 Million in 2011. • Increasing total VKT increases the overall demand on the road network.
VKT per capita of 19.9 km per day in 2017	<ul style="list-style-type: none"> • Up from 18.7 km per person in 2011. • Higher than the regional average of 18.5 km per person. • The City of North Vancouver had a VKT per capita of 15.7 km in 2017. • Lower VKT per capita is a sign of complete, compact communities, and strong networks for non-auto modes.

5. COMMON MISCONCEPTIONS

MISCONCEPTION: Growth in population and employment in the District – including recent development in Town Centres – is a fundamental cause of worsening traffic congestion on the North Shore.

FACT: Although travel within the North Shore makes up a substantial component of traffic on Highway 1 (almost 25%), there are other drivers of growth in highway traffic volumes and delay throughout the District.

Increasing delay and variability on the road network predates occupancy of the new buildings in the Town and Village Centres and is not closely tied to overall population and employment growth, housing starts on the North Shore or occupancy of new buildings in the Town Centres. Analysis completed for the Integrated North Shore Transportation Planning Project (INSTPP) indicates that traffic over the Ironworkers Memorial Bridge and Lions Gate Bridge began to increase in 2012. Traffic volumes have increased 9% between 2013 and 2018 (equivalent to an increase of more than 10,000 vehicles per day). Housing starts were relatively stable until 2015 and do not correlate to increasing traffic volumes. This means that, although construction traffic may have contributed to congestion, it was unlikely to be a major component of increasing traffic volume on the bridges.

Residents of the Town and Village Centres are more likely to walk, bike, or take transit than residents in the rest of the District and therefore contribute fewer VKT per capita to congestion than people living outside of the Urban Centres.

Other factors have contributed to growing traffic volumes, delay, and decreasing reliability,

including more kilometres travelled per person by all District residents, including those living in historic single-family neighbourhoods. The number of VKT per capita by District residents increased by 6.4% from 18.7 km in 2011 to 19.9 km in 2017.

Other factors that have contributed to congestion include the growing populations of communities along the Sea-to-Sky Corridor, and growing ferry traffic. Daily traffic volumes on Highway 99 north of Horseshoe Bay increased by more than 30% between 2011 and 2017 (by approximately 5,000 vehicles per day).

MISCONCEPTION: A new 10-lane Ironworkers Memorial Bridge would have enough capacity to ‘solve’ congestion.

FACT: According to INSTPP, increasing the Ironworkers Memorial Bridge crossing to 10 lanes could reduce peak hour travel times by a few minutes in current conditions, but by 2045 the majority of benefits will have dissipated.

Increasing road capacity without travel restrictions or mobility pricing is known to increase travel demand. This increased demand can cause congestion in other areas of the network – without other changes, increasing the capacity of the Ironworkers Memorial Bridge would add even more pressure to the routes that connect to Highway 1, including Main Street, Dollarton Highway, Mount Seymour Parkway, East Keith Road, and Mountain Highway.



MISCONCEPTION: No one would ever choose to take transit, walk, or bike, if they have the option of driving.

FACT: There are many reasons that a person with access to a vehicle and the ability to drive might choose to take another mode, including to:

- Improve their health – walking and cycling contribute to reaching the recommended amount of daily physical activity. Driving is stressful and has been linked to negative health outcomes.
- Experience their community, connect to nature, or spend time with their loved ones while travelling.
- Reclaim their travel time to accomplish another activity – such as reading, working, sleeping, exercising, etc.
- Reduce their financial burden of transportation due to fuel, insurance, car payments, and parking.
- Minimize their personal environmental footprint.

6. KEY ISSUES

Key Issue	Why is it Critical to Address this Issue?
It is difficult for people to move around the District quickly and reliably.	<ul style="list-style-type: none"> • Effective, safe, accessible, and reliable transportation is central to getting people to work, to accessing services, to connecting communities, to recreating, to almost everything that people need to do to maintain a high quality of life for themselves and their families. • There is limited east-west road capacity across the North Shore. Because of this, Highway 1 serves a substantial component of local traffic – almost 25% of traffic on the Upper Levels Highway is internal to the North Shore (INSTPP Staff Working Group, 2018) – and the municipal and highway networks are highly interdependent. As a result, queues at the approaches to the Lions Gate and Ironworkers Memorial Bridges contribute to queues, congestion, delay and low reliability on municipal arterial roads – especially Main Street, Dollarton Highway, Mount Seymour Parkway, Mountain Highway, East Keith Road, Marine Drive, and Capilano Road. • Daily traffic volumes over the Ironworkers Memorial Bridge have increased by approximately 9% over the past five years (2013 to 2018), with most growth happening due to peak spreading, as the bridge is at capacity in both directions during the peak hours. Because of peak spreading, the time periods where travel speeds are slow and / or unreliable are longer now than they were in 2013. Daily traffic volumes over the Lions Gate Bridge have remained relatively stable over the past eight years.³ • Weekend traffic is getting worse, with more and more people travelling to and through the North Shore for recreation, errands, and other trips. Weekend traffic volume over the Ironworkers Memorial Bridge increased 4.5% between Fall 2016 and Fall 2017 while weekday traffic increased by only 0.5% in the same time period.⁴ • Based on analysis done for INSTPP, travel time from Lonsdale to Hastings on Highway 1 is approximately 22 minutes during the afternoon peak hour, compared to

³ Based on data from the BC Ministry of Transportation's Permanent Count stations.

⁴ Based on data from the BC Ministry of Transportation's Permanent Count stations.

Key Issue

Why is it Critical to Address this Issue?

	<p>around five minutes in free flow conditions. The travel time is also highly variable – small fluctuations in traffic volumes, incidents, and inclement weather conditions can result in much longer travel times (District of North Vancouver, 2019).</p> <ul style="list-style-type: none"> • Because buses also use general purpose lanes on Highway 1 and on most municipal roads, transit travel times and reliability are also negatively impacted by slow and highly variable conditions (TransLink, 2019).
Unreliable transit service that does not compete with driving	<ul style="list-style-type: none"> • Transit reliability is largely within municipal control – providing transit priority measures, such as transit lanes, transit queue jumps, transit signal priority, and other road network changes are the responsibility of the road authority. TransLink is willing to partner with municipalities on making transit reliability improvements. • For many people, transit is the only viable alternative to driving, especially for trips over 8 km in length. The average trip length of driving trips in the District in 2017 was 8.9 km; shifting mode share away from driving relies on growing the mode share for transit (TransLink, 2019). • Mode shift to transit can reduce congestion because frequent bus service can move more people per hour than private vehicles. Buses travelling along routes with effective transit priority can move more people, faster, and with more consistent travel times (TransLink, 2019). • For people with the option of driving, unreliable transit is not attractive – long and unpredictable wait and travel times make it difficult to choose transit for work, appointments, or other activities with fixed start times. Along with frequency and directness, improving reliability is one of the most important steps to making transit an attractive option for drivers that have other choices. • Transit is a key component of equity, affordability, and a strong economy. An accessible, reliable transit network allows residents, students, and employees to reach destinations on time in an affordable way. This is especially important for ‘captive’ transit riders. • Six of the top 20 least reliable transit corridors in Metro Vancouver impact District residents. Two of these six

Key Issue

Why is it Critical to Address this Issue?

corridors are within the District's municipal boundaries (Marine Drive / Main Street and Lonsdale Avenue) (TransLink, 2019).

- Transit that is caught in traffic congestion becomes unreliable and is expensive to provide. More buses per hour are required to maintain the same frequency of service when every trip takes longer due to congestion. Between 2014 and 2019, TransLink has added \$19.6 million in annual operating costs to offset the impacts of traffic congestion regionally. If the road network is not reliable due to congestion, more buffer time is required to maintain on-time schedules. 80% of bus routes provided by TransLink are slower today than they were five years ago, impacting as many as 85% of customers.
- The public wants more transit, more transit options, and more reliable transit.

Unfinished development in Town and Village Centres has delayed realization of transportation improvements.

- Meeting the District's transportation goal of "...enable[ing] viable alternatives to the car through effective and coordinated land use and transportation planning" hinges on building out the Town and Village Centres - there is no substitute. Concentrating development in these areas will:
 - Shorten trip distances because more people will live near complete communities. Shorter trips are more likely to be made by walking and cycling and cause less congestion and fewer emissions across all modes.
 - Significantly increase transit ridership because the Town and Village Centres (e.g., Lynn Valley) are located along the Frequent Transit and future RapidBus networks.
 - Improve equity because walking, cycling, and transit are affordable transportation choices that are accessible to people of a wide range of ages and abilities.
 - Improve the vibrancy and livability of communities because more people are using the public right-of-way outside of their cars over a smaller area.

Key Issue

Why is it Critical to Address this Issue?

	<ul style="list-style-type: none"> The full network planned in the Town Centre Transportation Plans and Functional Designs, as well as other needs that have been identified along important transit routes, cannot be delivered without fully realizing development in the Village and Town Centres. Redevelopment in the Town Centres allows the District to acquire land and funding to support transportation priorities, including AAA cycling and pedestrian networks, transit priority lanes, bus queue jumpers, signal improvements, turn lanes, and other improvements.
Public dissatisfaction with the transportation network is fueling concerns with the pace of change and conflicts between different stakeholders, demographics, and user groups.	<ul style="list-style-type: none"> Currently, District residents are dissatisfied with the transportation system, with 29% of residents ranking transportation as their biggest concern in 2019 (Mustel Group, 2016). As concerns with increasing travel time and decreasing reliability have increased, some District residents have also become more actively opposed to development, density, tourism, and other activities. These activities bring other benefits to the District, including affordable and diverse housing options, job creation, and economic vibrancy.
Travel by walking, cycling, and transit seems unsafe, undesirable, and / or out of reach to many District residents.	<ul style="list-style-type: none"> Stakeholders consulted during the Targeted OCP Review reported that not feeling safe as a deterrent for walking and cycling for members of their community. Between 37% and 60% of people are interested in cycling more, but are concerned about the safety of cycling. (British Columbia Ministry of Transportation and Infrastructure, 2019).

Key Issue

Why is it Critical to Address this Issue?

Lack of funding and land required to build the transportation infrastructure required to enable big shifts.

- Transportation infrastructure can be expensive and often requires additional right-of-way – either through land acquisition or the reallocation of road space (i.e. taking an existing travel lane and restricting it to transit only, or repurposing a travel or parking lane to build a protected bicycle lane). Since 2011, more than 4 km of sidewalk have been delivered inside the Town and Village Centres, which was largely made possible through development.
- Reallocating road space to transit and active transportation can result in a more efficient use of space. For example, in 2018 the City of Vancouver compared the people-moving capacity of various transportation modes on a 3-metre wide arterial travel lane, measured in persons per hour per direction. Private motor vehicles have a capacity of 700-1,100, whereas bus capacity is 1,000-2,000 for a regular bus and 2,000-4,000 for B-Line. A two-way protected bicycle lane has a capacity of 2,000-4,000 and a sidewalk can move up to 5,000-6,500 people per hour per direction (assuming a walkable surround land use).
- Land acquisition and road space reallocation is complicated by the fact that not all of the land or roads near the bridgeheads are under the District's jurisdiction, including Highway 1 and the Capilano Indian Reserve and Seymour Creek lands.
- Addressing funding and land requirements is foundational to making progress on the issues identified above.

7. KEY TRENDS AND EMERGING ISSUES

Key Trend/ Emerging Issue	Why is This Trend/Emerging Issue Important?
<p>Regional and provincial partners are dedicated to helping address transportation issues on the North Shore, including accelerating funding and studies of regional infrastructure.</p>	<ul style="list-style-type: none"> • There is currently strong interest in – and support for – sustainable transportation planning and infrastructure at the regional and provincial levels, making this an opportune time to partner with regional and provincial agencies to deliver meaningful improvements to the transportation network. • The District should continue to actively collaborate to achieve its priorities. • In the past five years, collaboration with regional and provincial partners has resulted in improvements to access to the Ironworkers Memorial Bridge and to the Lower Lynn Interchanges, among other projects. The North Shore’s first RapidBus and an Express Bus over the Ironworks Memorial Bridge will be delivered in 2020. Other initiatives through INSTPP and other plans and priorities have the potential to maximize the District’s ability to leverage funding and political will to meet transportation goals and objectives. • To maximize leverage, the District must continue to deliver on recommendations that are within its jurisdiction. This means following through with development in the District’s Town Centres and reconfiguring the District’s roadways to prioritize transit along key corridors. Currently, the District is collaborating with TransLink on transit priority improvements, which are key to delivering RapidBus on Marine / Main.
<p>Emerging technologies and new mobility options offer an opportunity to allow residents to travel smarter, more efficiently, with more choice, and lower footprints – if governments can accelerate positive impacts and manage the potential for negative impacts.</p>	<ul style="list-style-type: none"> • Technology is changing the way people and goods travel, and in ways that are not yet fully understood. • Micro-mobility options, including e-scooters and e-bikes will enable people to choose active modes for trips across longer distances and / or more challenging terrain. This has the potential to increase mode share. • Ride hailing and shared mobility present new opportunities and challenges to use infrastructure more efficiently, while limiting potential negative effects (e.g.,

Key Trend/ Emerging Issue

Why is This Trend/Emerging Issue Important?

including double-parking, increasing congestion and emissions, etc.).

- Travel is likely to become more fluid in the future – which means some old assumptions around choices and travel patterns may no longer apply.
 - This means transportation planning and policy delivery must be more nimble to fully monopolize on the potential for positive outcomes and mitigate the potential for negative impacts.
-

8. RELEVANT BEST PRACTICES

Best Practice	Why is This a Best Practice?
Leverage land use as the most important tool to solve transportation issues.	<ul style="list-style-type: none"> Complete communities are the most effective tool to lower trip distances, which in turn makes walking and cycling more attractive choices. Complete, higher density communities also make it easier to provide frequent, reliable transit to more people, jobs, services, and destinations.
Prioritize health and human life when making transportation decisions.	<ul style="list-style-type: none"> Vision 0 is emerging as a best practice internationally, including in Metro Vancouver.⁵ Safe transportation can be considered a fundamental human right.
Manage the road network to prioritize safety and reliability, including signal timing coordination, managing turning movements, and giving transit priority on the road network.	<ul style="list-style-type: none"> Roadways are a substantial public asset. Arterial and collector roadways should be managed to prioritize safety and reliability to reduce the need for expansion and reduce variability in travel times. Buses can effectively, efficiently, and reliably move more people per hour than private cars, provided they are not subject to the same congestion and delays. Prioritizing bus services is prioritizing equity – transit is accessible to people across all ages, abilities, and incomes. Prioritizing transit can reduce overall people-hours of delay. Effective and reliable transit serves the economy by allowing employees to reliably get to work on-time.
Identify high priority active transportation areas and corridors and deliver continuous, AAA active transportation infrastructure in those locations.	<ul style="list-style-type: none"> AAA infrastructure supports equity by allowing more people to safely and comfortably travel. AAA infrastructure is more attractive and comfortable – and therefore more likely to attract ‘choice’ walkers and riders. AAA infrastructure is aligned with other best practices, including prioritizing safety.

⁵ “Vision 0 is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all” Source: Vision 0 Network <https://visionzeronetwork.org/about/what-is-vision-zero/>

Best Practice

Why is This a Best Practice?

Match funding to meet the values / objectives of the community.

- Historically, transportation funding has focused on delivering a network that is focused on highly efficient driving trips. From what was required of developers, to investments made by governments, cities have invested heavily in driving and – as a result – people are driving over other transportation modes.
- Matching funding to mode share goals is a best practice to achieve the desired changes in travel patterns.

Consider the curbside as valuable, dynamic, public property and allocate it accordingly, including pricing where appropriate.

- The curbside makes up a substantial component of publicly owned land (almost ¼ of a 20 m right-of-way) and is often underutilized.
- There are a number of competing demands for curb space, such as free or paid parking (including accessible parking), passenger pick-up and drop-off, goods and services loading zones, transit stops, bicycle facilities, micro-mobility parking, pedestrian facilities (i.e. wider sidewalks), and public space (e.g. parklets).
- It is important to consider the best use of this curb space depending on the type of street and the adjacent land uses. The curbside can be permanently or dynamically reallocated to different modes or uses at certain times of day and days of the week.

Act as a leader by minimizing the personal and community impacts of transportation by District corporate activities and District staff.

- Municipal governments are often major employers in their communities and can lead by showing that policies and programs have a positive impact on both corporate and employee well-being while reducing the organizations' footprint in the community and globally

Consider multi-modal needs and transportation improvements as part of all District infrastructure improvements, including utility projects that are in the road right-of-way.

- All transportation projects should consider the needs of all modes during early concept development – this includes walking, wheeling, cycling, transit, shared mobility, goods movement, driving, and emerging technologies. Not all modes need to be accommodated on all infrastructure, but consideration early in the planning and design processes allow for opportunities identification and all projects to reflect overarching District goals and objectives.
- When capital improvements are done without considering the potential for multi-modal transportation improvements, there is a lost opportunity in making the

Best Practice

Why is This a Best Practice?

	best use of public funding and to deliver multiple public benefits while minimizing construction impacts.
Work closely with partners and stakeholders to identify possible collaborations, funding opportunities, and leverage points.	<ul style="list-style-type: none"> • Like risk, opportunities should be leveraged from those best able to provide them. • Local governments that best leverage partner funding are often those with well defined, 'shovel-ready' projects that are aligned with local, regional, and broader goals. Local governments who are willing to 'come to the table' with funding, land, population & jobs density, and / or other components in place are often more successful in securing more funding and infrastructure from partners. • Working with the development community as projects are conceptualized, designed, and delivered creates an opportunity to deliver high quality infrastructure that supports larger transportation goals.
Design road capacity improvements to focus on improving connectivity and prioritizing the movement of people and goods, while understanding that additional capacity without travel restrictions or mobility pricing is known to induce demand.	<ul style="list-style-type: none"> • Prioritizing the movement of people and goods (instead of cars) makes the most efficient use of limited public resources – both land and capital. • Drastically improving travel times for driving alone is difficult and expensive – additional lanes require property and are expensive and disruptive to construct, especially over difficult terrain or water crossings. Further, history shows that additional capacity is quickly 'used up' in the absence of travel restrictions (like transit, HOV and / or truck lanes) or mobility pricing, as people adjust their travel patterns until demand meets supply. The Port Mann Bridge and Highway 1 capacity improvements are a local example of this pattern.

9. KEY INDICATORS

Indicator	Why is This Important to Measure?
Rate of people killed and seriously injured in collisions each year (casualty collisions per person, casualty collisions per (VKT)).	<ul style="list-style-type: none"> • Safe transportation is fundamental and aligned with the OCP goal of a safe transportation network. • Relatively easy to measure – statistics about casualty collisions (the total number of collisions resulting in injuries and / or fatalities) are available annually from ICBC. • Including this as a rate recognizes that the number of collisions is tied to exposure – i.e. more travel is likely to result in more collisions.
Mode share for walking, cycling, transit, and driving.	<ul style="list-style-type: none"> • This is a best practice and is a commonly understood metric. • At a regional and municipal scale, this metric is facilitated by TransLink's Regional Trip Diary (all trips) and the Census (for trips to work only). • Although it can be expensive to collect, mode share data can be determined for specific neighborhoods or even developments. The District is currently undertaking a travel survey that will provide this information at a more local scale. • It is included in the 2011 OCP as an indicator. • Measuring the share of trips by walking, cycling, and transit is a good indicator of how appealing those modes are – which is aligned with the larger goal of creating viable alternatives to driving.
Average trip distance.	<ul style="list-style-type: none"> • Shorter trip distances are a sign of complete communities. • Shorter trips are more likely to be made by walking and cycling. • Shorter trips by transit and driving have lower emissions and cause less congestion than longer trips by those same modes.

Indicator

Why is This Important to Measure?

	<ul style="list-style-type: none"> • At a regional and municipal scale, this metric is facilitated by TransLink's Regional Trip Diary (all trips) and the Census (for trips to work only). • Although it can be a challenge to collect, average trip distance can be determined for specific neighborhoods or even developments. The District is currently undertaking a travel survey (in partnership with the City of North Vancouver and District of West Vancouver) that will provide this information at a more local scale. • Trip length by trip purpose and trip length at the neighbourhood level can indicate where and how to prioritize improvements to walking and cycling to maximize return on investment.
Delay / Lost Time due to Congestion	<ul style="list-style-type: none"> • Lost time due to congestion is a real measure of the impact of transportation issues on people's lives, well-being, and the economy. • If the District decides to quantify lost time due to congestion at a network level, suggest that this be applied to people movement (i.e., aggregate over transit and driving trips) and goods movement (delay to truck trips, especially off-peak) instead of as solely a measure of vehicle delay.

The table above focus on outcomes – indicators that show that the District's efforts are improving travel conditions and shifting travel behaviour. There are also many output indicators, a number of which were identified in the **Transportation Progress To-Date Implementing the 2011 OCP Memo**. These indicators are important and show that the District is building a network that aligns with the goals of the OCP; however, the number of indicators could overwhelm a document at the level of an OCP. These output indicators speak to the comfort, safety, and accessibility of the walking, cycling, and transit networks. Output indicators could be further divided into two types – one concerned with the basic provision of infrastructure and / or service (i.e. all transit coverage, sidewalk coverage, etc.) and the other concerned with the quality and accessibility of service (i.e. FTN and RapidBus coverage, accessibility of pedestrian crossings, etc.)

In the long-term, the District should consider creating specific standards for 'high quality' infrastructure that meets set standards for lighting, accessibility, and amenities. This would create the opportunity to determine both the existence of infrastructure (e.g. does the road have a sidewalk?) and the quality of that infrastructure (e.g. lighting, benches, surface material, maintenance, accessibility of crossings, etc.). This can be applied to transit, cycling, walking, and 'new' modes. These types of indicators should be considered for future, more detailed studies.

10. ACTIONS TO-DATE

The District has already taken meaningful action on Transportation. The list below is not comprehensive, but does highlight the key actions the District has taken more recently.

Infrastructure & Transit Service

- Implemented portions of Spirit Trail.
- East 29th Street safety and mobility improvements.
- Lynn Valley Road bicycle lanes.
- Keith Road and Bridge replacement projects
- Montroyal Bridge replacement project.
- Delivered southbound bike lane on Lynn Valley Road under Highway 1.
- Upgraded signal infrastructure and improved signal coordination and operation.
- Expanded the sidewalk network by almost 16 km, built almost 4 km of trails, and made 136 crosswalks more accessible.
- Improved transit priority at bridgeheads of the Ironworkers Memorial Bridge and Lions Gate Bridge.
- Have worked with developers to plan, design, and build AAA cycling and walking facilities and end of trip facilities to be opened in 2020 and beyond.
- Lower Lynn Interchange and Connectivity Improvements (in progress).
- Express Bus Route 222 connecting Phibbs Exchange and Metrotown to be launched in 2020 (in progress).
- R2 – Main Street / Marine Drive RapidBus to be launched in 2020 (in progress).

Land Use

- Permitted delivery of mixed-use, higher density development in the Town Centres.

Education

- School travel planning.

Policy & Funding

- Secured reliable, annual source of active transportation infrastructure funding.
- Adopted policy on bike parking and end of trip facilities.
- Developed policy for parking reduction in Town Centres.

Studies & Plans

- Developed transportation plans and functional designs to guide the delivery of transportation infrastructure – including AAA cycling and walking infrastructure – in Town and Village Centres.
- Burrard Inlet Rapid Transit Study (ongoing).
- Upper Levels Corridor Study (ongoing).

Other

- Ironworkers Memorial Bridge Incident response initiatives have been implemented.
- Continued collaboration with road and transit authorities to identify priority actions for implementation.

11. POTENTIAL ACTIONS

The following list includes potential actions that Council could choose to advance in the short-term. Appendix A includes a more complete list of action items.

Potential Action	Description
Advocacy & Convening	<ul style="list-style-type: none"> Continue to advocate for the District's priorities within the recommendations of INSTPP, including: <ul style="list-style-type: none"> Fixed Link Rapid Transit Connection to the North Shore New inter-regional bus service between the Squamish-Lillooet Regional District and Metro Vancouver. Improved transit service to the north shore, including increasing the amount of FTN service. Continue to participate in and support the initiatives of NXSTPP (the INSTPP Steering Committee).
Transit priority	<ul style="list-style-type: none"> Work with TransLink, MoTI, and the City of North Vancouver to continue to enhance the speed and reliability of service along RapidBus route R2 Marine Drive. Work with TransLink, MoTI, the City of Burnaby, and City of Vancouver to continue to enhance the speed and reliability of Route 222 connecting Phibbs Exchange to Metrotown and to expand that service to a future RapidBus to Capilano University. Work with TransLink and the City of North Vancouver to accelerate development and delivery of the proposed RapidBus route connecting Lynn Valley to Downtown Vancouver, including implementing a bus on shoulder express bus southbound on Highway 1 to Phibbs Exchange. Work with TransLink and MoTI to improve bus access to the Lions Gate and Ironworkers Memorial Bridges. Prioritize adding a transit priority lane along Ironworkers Memorial Bridges northbound and on the Main Street westbound off-ramp to Phibbs Exchange, as part of Phase 3 of the Lower Lynn Interchange improvements.

Potential Action	Description
	<ul style="list-style-type: none"> • Deliver transit priority measures within District jurisdiction along future RapidBus corridors. • Deliver transit priority measures within District jurisdiction at locations that negatively impact the speed and reliability of the FTN. • Deliver shelters and transit amenities at all bus stops on the FTN and confirm bus stop locations serve major employers and make best use of available infrastructure, including rail crossings. • Deliver enhanced shelters and transit amenities along RapidBus routes. • Develop a bus shelter and transit amenity improvement program for all bus routes.
Local Sustainable Transportation Infrastructure	<ul style="list-style-type: none"> • Commit additional resources to ensure that sidewalks clear, accessible, and maintained year-round. Maintenance should include removal of landscaping that has intruded on the right-of-way. • Consider alternate delivery and funding mechanisms to prioritize delivery of active transportation infrastructure. • Complete the sidewalk network to a AAA standard on both sides of Arterial and Collector roadways in the Town and Village Centres by partnering with developers and using District funding where appropriate. (Convening / Capital) • Complete the sidewalk network to a AAA standard on both sides of Arterial and Collector roadways – as well as local roads in commercial and multi-family areas – within 400 m of the FTN or of an elementary school. • Deliver priority 1 bike routes: <ul style="list-style-type: none"> ○ Lynn Valley Town Centre to Lynn Creek Town Centre, ○ Lynn Creek Town Centre to Maplewood Village, and ○ Lions Gate Village to Lynn Creek Town Centre. • Deliver priority 2 bike routes: <ul style="list-style-type: none"> ○ Lynn Valley Town Centre to Edgemont,

Potential Action	Description
	<ul style="list-style-type: none"> ○ Edgemont to Lions Gate Village, and ○ Maplewood Village to Deep Cove. ● Deliver the complete Spirit Trail.
Education, training & transportation demand management	<ul style="list-style-type: none"> ● Support expansion of bike skills training at schools. Provide cost share funding to ensure Learn to Ride bike skills training is provided to all DNV students in grades 4 & 5 during the course of this pilot and potentially beyond. ● Encourage walking & cycling for students. Work with schools to promote ongoing walking/cycling encouragement programming. ● Provide real-time transit information at key locations throughout the District, including at the busiest bus stops and in municipal buildings. ● Develop a local travel education program. Develop a local travel education program as a resource for residents and employees who want to learn about non-auto transportation options.
New mobility, shared mobility, and mobility hubs	<ul style="list-style-type: none"> ● Explore first / last mile transportation service opportunities. Partner with TransLink to explore opportunities for Transit On-Demand service to improve last mile service in parts of the District. Explore other last-mile partnership opportunities. ● Apply to participate in the Province's micro-mobility pilot program to explore the potential of new and emerging transportation modes (i.e., zero-emission motorized personal mobility devices). ● Develop micro-mobility licensing framework. Introduce a micro-mobility licensing framework to allow micro-mobility service providers to establish operations in the District. ● Introduce mobility hubs. Establish mobility hubs which could include last mile goods movement (e.g., transloading from large trucks to smaller vehicles), bike / bus transfers, facilitate shared and micro-mobility, etc.

Potential Action	Description
	<ul style="list-style-type: none">• Study & implement improved curb-side management. Conduct a study to understand the highest and best use of the space between the travel lanes and the sidewalk and create a curbside management strategy that leverages the road right-of-way as a valuable public asset. (e.g., parking pricing, loading zones, replace parking with dedicated bus lanes, bike lanes, or wider sidewalks, etc.)
Land use	<ul style="list-style-type: none">• Land use: Approve developments in the Town Centres and leverage to provide sustainable transportation infrastructure and transportation demand management.

DISTRICT RESIDENTS CAN HELP ADDRESS TRANSPORTATION ISSUES BY...

Choosing to work from home one day per week.

Congested roadways are very sensitive to small changes in traffic volumes. If one third of drivers crossing the Ironworkers Memorial Bridge worked from home just one day per week, the small reduction in traffic volumes could have a more substantial impact on travel times.

Depending on the length of trip to work and other typical travel patterns, reducing just one commute day per week can result in a meaningful reduction in personal emissions.

Choosing walking or cycling for some local trips, especially school trips.

Residents should understand that it is not necessary to commit to walking or cycling EVERY day. Walking or cycling SOME days is very valuable.

Residents should target trips less than 2 km for walking – these trips can typically be completed in less than half an hour and can eliminate local traffic congestion, contribute to meeting daily physical activity recommendations, and facilitate community-building.

Trips to school can be especially meaningful – school traffic is very ‘peaky’ and high volumes of vehicles around schools during drop-off and pick-up contribute to safety challenges, localized congestion, and overall emissions.

Exploring the District by bus and educating others on the bus system.

Getting comfortable with transit is the first step to using it more regularly. Residents should consider bus adventures on weekends and holidays as a way to understand how the system works, the nearest bus stops and routes from their house, and where they can easily get to by bus.

Many children enjoy the bus and – as they get older – comfort and understanding of the transit network can provide early, safe independence that is important for mental health and development.



12. REFERENCES

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APPENDIX A

Potential Actions – Additional Items

A.1 POTENTIAL ACTIONS – ADDITIONAL ITEMS

Category	Action
Regulations, funding, and policies	<ul style="list-style-type: none"> • Continue to pilot the recently developed parking and bicycle parking policies to align parking and loading requirements, bicycle parking and end-of-trip facilities, and transportation demand management approaches in new developments with current policies and overarching goals. • Commit additional resources to ensure that sidewalks clear, accessible, and maintained year-round. Maintenance should include removal of landscaping that has intruded on the right-of-way. • Update the District’s maintenance standards and commit additional resources to ensure that the AAA bicycle network is fully accessible year-round. Maintenance should consider the removal of snow and other debris, in addition to any specialized facilities such as pavers on shared streets. • Consider alternate delivery and funding mechanisms to prioritize delivery of active transportation infrastructure.
Advocacy	<ul style="list-style-type: none"> • Continue to advocate for the District’s priorities within the recommendations of INSTPP, including: <ul style="list-style-type: none"> ○ Fixed Link Rapid Transit Connection to the North Shore ○ New inter-regional bus service between the Squamish-Lillooet Regional District and Metro Vancouver. ○ Improved transit service to the north shore, including increasing the amount of FTN service. • Support regional implementation of mobility pricing as a way to manage transportation demand, improve network reliability, and provide stable, long-term funding for transportation infrastructure improvements.
Convening (partnerships)	<ul style="list-style-type: none"> • Continue to participate in and support the initiatives of NXSTPP (the INSTPP Steering Committee). • Continue to participate in the study of a Fixed Link Rapid Transit Connection to the North Shore and implement the

District's components of any forthcoming recommendations.

- Complete the sidewalk network to a AAA standard on both sides of Arterial and Collector roadways in the Town and Village Centres by partnering with developers and using District funding where appropriate. (Convening / Capital)
- Work with TransLink, MoTI, and the City of North Vancouver to continue to enhance the speed and reliability of service along RapidBus route R2 Marine Drive.
- Work with MoTI and TransLink to add a transit priority lane westbound on Dollarton Highway and extend RapidBus to Maplewood / Innovation District (pending development of the Innovation District).
- Work with TransLink, MoTI, the City of Burnaby, and City of Vancouver to continue to enhance the speed and reliability of Route 222 connecting Phibbs Exchange to Metrotown and to expand that service to a future RapidBus to Capilano University.
- Work with TransLink and the City of North Vancouver to accelerate development and delivery of the proposed RapidBus route connecting Lynn Valley to Downtown Vancouver, including implementing a bus on shoulder express bus southbound on Highway 1 to Phibbs Exchange.
- Work with TransLink and MoTI to improve bus access to the Lions Gate and Ironworkers Memorial Bridges. Prioritize adding a transit priority lane along Ironworkers Memorial Bridges northbound and on the Main Street westbound off-ramp to Phibbs Exchange, as part of Phase 3 of the Lower Lynn Interchange improvements.
- Work with TransLink and MoTI to improve cycling access to the Ironworkers Memorial Bridge.
- Partner with TransLink to deliver dynamic transit information at key stops and at District facilities (such as libraries, community centres, etc.)
- Support MoTI in delivering the Upper Levels Corridor Study and address any forthcoming recommendations that are within District jurisdiction. Advocate for improved active transportation crossings over Highway 1.
- Work with MoTI and north shore municipalities to deliver a permanent incident notification system for incidents on Highway 1.

- Work with partners to improve options to expedite incident clearing on the Lions Gate and Ironworkers Memorial Bridges.
- Facilitate a Walking School bus program for all elementary and middle schools within District.
- Work with School District 44 to provide local services, activities, and community-building centered around school sites.
- Work with School District 44 to deliver:
 - Bike education programs at every school in District at least once a year.
 - Safe routes to school program at every school in District once per year.
- Continue to partner with TransLink and municipalities across the region to deliver an e-bike share program.
- Work with large employers on TDM programs through community based social marketing and workforce attraction.

Capital (building things)

- Complete the sidewalk network to a AAA standard on both sides of Arterial and Collector roadways – as well as local roads in commercial and multi-family areas – within 400 m of the FTN or of an elementary school.
- Deliver the MBN within District Boundaries, in addition to the District's priority 1 and 2 bike routes (noted below). Road space reallocation will be required in order to build out the cycling network.
- Deliver priority 1 bike routes:
 - Lynn Valley Town Centre to Lynn Creek Town Centre,
 - Lynn Creek Town Centre to Maplewood Village, and
 - Lions Gate Village to Lynn Creek Town Centre.
- Deliver priority 2 bike routes:
 - Lynn Valley Town Centre to Edgemont,
 - Edgemont to Lions Gate Village, and
 - Maplewood Village to Deep Cove.
- Deliver the complete Spirit Trail.

- Deliver transit priority measures within District jurisdiction along future RapidBus corridors.
- Deliver transit priority measures within District jurisdiction at locations that negatively impact the speed and reliability of the FTN.
- Deliver shelters and transit amenities at all bus stops on the FTN.
- Deliver enhanced shelters and transit amenities along RapidBus routes.
- Develop a bus shelter and transit amenity improvement program for all bus routes.
- Continue to deliver traffic signal infrastructure improvements (fire pre-emption, coordination capability, transit priority) along with timing and coordination optimization on key corridors.
- Continue to deliver safety improvements at high priority intersections across the District.
- Locate municipal buildings in Town Centres and along transit and active transportation corridors.
- Require developers to create transit and active transportation friendly buildings, including standard TDM measures as well as creating accessible, street-oriented, and pedestrian-scale building frontages.
- Implement advance traveller information about lack of parking availability at key tourism destinations (Deep Cove, Lynn Canyon, Capilano Suspension Bridge) and alternative travel modes to those sites.

Programs

- Develop a local travel education program at the business and residential level to assist residents and employees that wish to learn about non-auto transportation options.
- Identify and implement an access to transit strategy for east of Seymour through park and ride, kiss and ride, or ride-hailing.

Leadership

- Implement a TDM program internally to show leadership as one of the largest employers in the District. This should include free and / or subsidized transit passes for all staff, a guaranteed ride home program and / or employee car share, priority parking for carshare, rideshare matching service, enhancements to cycling end-of-trip facilities,

employee bike-share memberships, flexible and / or compressed work schedules, and telecommuting options.

- Deliver pilot projects such as temporary street closures, pop-up bike lanes, educational events, and other tactical urbanism initiatives to expose residents and visitors to new street designs and transportation modes. Utilize District facilities such as libraries and community centres to host events and attract residents.

Studies / Policies

- Continue to expand and modernize transportation data collection and performance monitoring for all modes of transportation (big data, smart data, video detection).
 - Update the Transportation Master Plan and Active Transportation Plan to identify other high-priority walk, cycling, transit priority, road, and new mobility improvements required to meet transportation goals.
 - Create a curbside management strategy that leverages the road right-of-way as a valuable public asset.
 - Assess the feasibility of the Barrow St. – Spicer Road connector over the Seymour River south of the Main Street – Dollarton Highway corridor.
 - Assess the feasibility an expanded passenger ferry network across the Burrard Inlet.
 - Develop a strategy for management of tourism traffic, which should include consideration of expansion of the park pricing pilot and facilitation of tour bus travel and parking.
 - Require all District capital projects to consider multimodal transportation needs and opportunities.
 - Choose, plan, and design capital projects that align with partner funding opportunities.
 - Continue to consider safety in the identification of transportation projects and prioritize safety and accessibility in evaluation and design.
 - Further increase funding for transit priority, walking, and cycling and explore alternative funding and delivery mechanisms.
 - Consider 30 km/h speed limit on local roads to prioritize safety for vulnerable road users.
-