



SQUAMISH

MOVING BEYOND THE CAR

Image Credit: Luke Anthony, Pexels

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PREPARED FOR



DISTRICT OF SQUAMISH

PREPARED BY



ANGELA CHAU

*BA Urban Studies & Planning
MCRP (2022)*



FIONA KO

*BSc Ecology & Business
MPH Health Policy
MCRP (2022)*



JASMIN SENGHERA

*BSc Environmental Sciences
MCRP (2022)*



CELINA RUHLAND

*BA Geography
MCRP (2022)*

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Ian Picketts

Manager of Sustainability and Climate Change, District of Squamish

Gary Buxton

General Manager of Community Planning and Infrastructure, District of Squamish

Laura Princic

Manager of Municipal Engineering, District of Squamish

Dora Gunn

Transportation Planner, District of Squamish

Maged Senbel

Associate Professor and PhD Program Chair, SCARP

James Connolly

Assistant Professor, SCARP

Clare Mochrie

Adjunct Professor, SCARP

Erick Villagomez

Adjunct Professor, SCARP

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This report was prepared by:

Angela Chau
Fiona Ko
Jasmin Senghera
Celina Ruhland

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GLOSSARY OF ACRONYMS

AB: Alberta

AMPS: Access Management and Parking Strategy

ASMP: Austin Strategic Mobility Plan

AT: Auckland Transport

AT: Active Transportation

ATP: Austin Transit Partnership

ATP: Active Transportation Plan

AU: Australia

AUD: Australian Dollar

BART: Bay Area Rapid Transit

BC: British Columbia

BCATDG: British Columbia Active Transportation Design Guide

BE: Belgium

BIAs: Business Improvement Associations

BID: Business Improvement District

BJAD: Boulder Junction Access District

BMCC: Blue Mountains City Council

CA: California

CAAP: Climate Action and Adaptation Plan

CAGID: Central Area General Improvement District

CAP: Climate Action Plan

CBD: Central Business District

CCAP: Community Climate Action Plan

CCTV: Closed-circuit Television

CSP: Community Strategic Plan

CH: Switzerland

CO: Colorado

DCC: Development Cost Charges

DoS: District of Squamish

DOT: Department of Transportation

EU: Europe

EV: Electric Vehicle

FBC: Fraser Basin Council

GHG: Greenhouse Gas

IPCC: Intergovernmental Panel on Climate Change

ITDP: Institute for Transportation and Development Policy

ITE: Institute of Transportation Engineers

LPP: Local Planning Priorities

LPR: License Plate Recognition

LRT: Light Rail Transit

LU: Land Use

MB: Manitoba

MCRP: Master of Community and Regional Planning

MIT: Massachusetts Institute of Technology

MPT: Motorized Public Transport

NB: New Brunswick

NL: Newfoundland

NLZ: Neighbourhood Loading Zone

GLOSSARY OF ACRONYMS (CONT.)

NS: Nova Scotia

NSW: New South Wales

NT: Northwest Territories

NY: New York

NYC: New York City

NZ: New Zealand

OCP: Official Community Plan

ON: Ontario

PT: Public Transport

PTMD: Parking and Transportation Management District

QC: Québec

RMOW: Resort Municipality of Whistler

ROW: Right-of-Way

RPP: Resident Parking Permits

SBS: Select Bus Service

SCARP: School of Community and Regional Planning

SFMTA: San Francisco Municipal Transportation Agency

SK: Saskatchewan

SMART: Specific, Measurable, Assignable, Realistic, Timely

SMARTE: Sustainable, Measurable, Actionable, Relevant, Time-bound, Equitable

SPARC BC: Social Planning and Research Council of BC

SOV: Single-occupancy Vehicle

SUMP: Shared, Unbundled, Managed, and Paid

SWOT: Strengths, Weaknesses, Opportunities and Threats

TDM: Transportation Demand Management

TMP: Transportation Master Plan

TNC: Transportation Network Company

ToD: Transit ON Demand

TOD: Transit-Oriented Development

TX: Texas

UCLA: University of California, Los Angeles

UHGD: University Hill General Improvement District

UPP: User Pay Parking

USA: United States of America

USD: United States Dollar

VKT: Vehicle Kilometers Travelled

VPPP: Value Pricing Pilot Program

VRTC: Victoria Regional Transit Commission

VTPI: Victoria Transport Policy Institute

EXECUTIVE SUMMARY

mov-ing be-yond the car

verb

mu-vIng bih-yand the kar

1. reducing private vehicle trips
2. prioritizing environmentally-friendly modes of transportation



Image 1. Downtown Squamish (Source: BC Buy Local, 2021)

As the world confronts the realities of climate change, local governments have an essential role to play in the mitigation of carbon emissions. In August of 2021, the Intergovernmental Panel on Climate Change (the “IPCC”) published the Sixth Assessment Report, informed by thousands of international scientists, advising that communities must take urgent action to keep global temperature increases to a maximum of 1.5 degrees Celsius in order to avoid significant negative impacts (IPCC, 2021).

In July 2019, the District of Squamish (“DoS”) declared a climate emergency and resolved to create a *Community Climate Action Plan* (the “CCAP”) to guide Squamish toward a low carbon future. In alignment with the IPCC recommendations, the CCAP aims to reduce community greenhouse gas (“GHG”) emissions by 45% by 2030 and to achieve net-zero emissions by 2050. The Plan outlines six “Big Moves”, each with their own strategies and corresponding actions. Big Move 2, to “shift beyond the car”, envisions active transportation and transit as the preferred modes of travel to and within Squamish. This report is the result of a collaboration between the DoS and the SCARP Planning Studio to examine and envision recommendations for creating a “car last” community that encourages active, accessible and environmentally-conscious modes of transportation.

Using a three-phased approach, this project has led the project team through: a site analysis of Downtown Squamish; a comprehensive analysis of existing DoS regulations, policies and strategies concerning parking and integrative transportation; an examination of prevalent literature on transportation demand management (“TDM”) strategies, with a focus on parking regulation; a national and international case study analysis, condensed into a set of best practice models; and, a feasibility assessment using criteria developed from policy and literature reviews, and in consultation with DoS staff.

This final report culminates the findings of this work into a set of recommendations that include a curation of incremental tactics that seek to balance parking strategies with active and accessible travel alternatives, giving residents and visitors more flexible and equitable options in how they move around Squamish. To support DoS in visualizing *Moving Beyond the Car*, this report also supplements these recommendations with a set of applied design examples.

1. CONTEXT

1.1 SQUAMISH CONTEXT

Squamish is a small community of approximately 23,819 residents (Statistics Canada, 2022) located on the traditional and unceded territory of Sk̓wx̓wú7mesh Úxwumixw (Squamish Nation), midway between what is now known as Vancouver and Whistler, British Columbia. Its unique location along the Howe Sound and the Sea-to-Sky Highway makes it ideal for recreational enthusiasts and commuters moving in and out of Vancouver. As a result, driving is the dominant mode of transportation for locals and visitors. With the anticipation of its population doubling by 2036, combined with high vehicular GHG emissions, emerging parking issues, a need for a more refined transit network, and a historic lack of active transportation infrastructure, there is a need to develop innovative solutions to adapt to these changes and to create a resilient future for Squamish (DoS, 2019; DoS, 2020a; ISL Engineering and Land Services, 2017; DoS, 2021).

While Squamish is home to a young and active population, it has a very low rental vacancy rate, and housing affordability has increasingly become a problem (Canada Mortgage and Housing Corporation, 2018). Roughly 46% of the population live in single-detached houses, as compared to 15% in Vancouver (Statistics Canada, 2017a and 2017b). Historically, residents have shown resistance to efforts to increase density, and there is a local sentiment that Squamish is distinct from Vancouver as a more rural town. Over the last decade, however, Downtown Squamish has seen an influx of new development, leading to an increase in residential and commercial density. In the 2021 census count, it was revealed that Squamish is one of the fastest growing municipalities in Canada with a growth rate of 22.2% between

2016 and 2021 (The Canadian Press, 2022; Statistics Canada, 2022).

Development activity, coupled with increased tourist visitation and population growth, bring new opportunities for Squamish's downtown core. However, with new opportunities come new or exacerbated challenges for housing, transportation and infrastructure. Given its compact nature and increasing density, Downtown Squamish has the potential to enhance its active transportation infrastructure and transition towards becoming a "car last", and eventually "car free", neighbourhood. However, the disparity in connectivity between downtown and the remainder of Squamish and the region, reflects one of the many challenges the District faces in disincentivizing private vehicle use.

Another major challenge resulting from growth in the downtown core is the effects on parking supply and usage. According to the *DoS Parking Strategy 2016-2020*, shifts in parking patterns over the last 5 to 10 years have created a perception among those who live and work in Downtown Squamish that parking is becoming a neighbourhood concern. While many factors contribute to the issue of parking, a significant site-specific limitation is the Downtown's location on a floodplain, exposing it to flood and debris flow hazards (DoS, 2017a) and creating geotechnical challenges for constructing below-grade parking. The financial costs associated with drainage infrastructure, makes above-grade parking a more viable option for developers. A trade-off of this approach, however, is that above-grade parking must be provided either within the building envelope (loss of density) or as surface level parking (loss of buildable area). Further details on site-specific challenges can be referenced in the Section 2.1: Site Analysis.

1.2 PROJECT CONTEXT

In July 2019, Squamish declared a climate emergency, and in April 2020 the Community Climate Action Plan (the “CCAP”) was approved by Council. In 2017, transportation accounted for 53% of the community’s GHG emissions (excluding visitors), thus, the CCAP aims to reduce community emissions by 45% by 2030 and to move toward being net carbon neutral by 2050 (DoS, 2020a). The urgency of addressing the climate crisis has been especially evident in recent climate events affecting the province. During the latter half of 2021, the province was in and out of climate-related states of emergency, the first declared on July 20, 2021, in response to raging wildfires following a record-setting heatwave (Public Safety and Solicitor General, 2021a), and again on November 17, 2021, in response to widespread damage caused by severe flooding and landslides (Public Safety and Solicitor General, 2021b).

1.2.1 OBJECTIVES

In supporting DoS in its strategic goal of *Moving Beyond the Car*, the project team identified five overarching objectives (listed below) to guide its work. To accomplish these project objectives, the team organized the research process into three distinct phases (Figure 1), with each phase building upon the other to conclude with the set of recommendations and applied design examples presented in this report.

PHASE 1: INFORMATION GATHERING

(1) Comprehensively review the DoS’ existing policy framework, inclusive of all plans, strategies, and regulatory tools relevant to *Moving Beyond the Car*

(2) Identify and assess examples of car dependency mitigation strategies from similar local governments and develop a directory of case studies for Squamish

PHASE 2: SYNTHESIS & ANALYSIS

(3) Synthesize research into a set of best practices and analyze the feasibility of applying these practices in Downtown Squamish

PHASE 3: RECOMMENDATIONS & VISUALIZATIONS

(4) Recommend additional strategies, actions, and regulatory tools for reducing automobile use in Downtown Squamish

(5) Develop concrete design examples for Downtown Squamish to support recommendations for *Moving Beyond the Car*

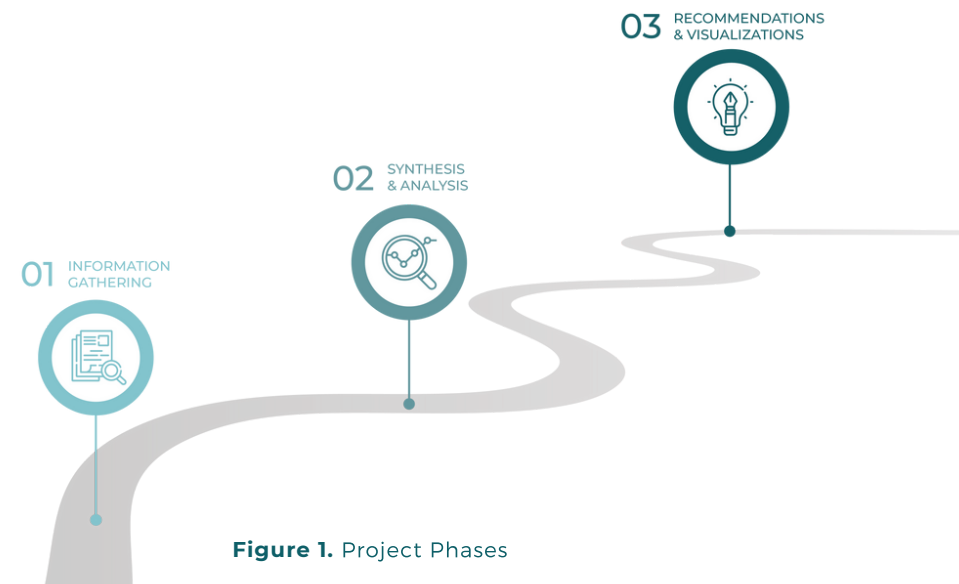


Figure 1. Project Phases

1.2.2 RESEARCH METHODOLOGY

In consideration of the objectives of this project, the team took a mixed-methods approach to their research. This approach began with Phase 1: Information Gathering, with the team conducting a site visit and rigorous analysis of DoS policies to document and understand the existing conditions of Squamish. This was followed by a focus on secondary data analysis of strategies, plans and regulatory tools as well as general literature for reducing automobile dependence and managing parking sustainably at the local scale.

This secondary data analysis allowed the team to establish 20 national and international case studies of jurisdictions of varying contexts similar to DoS, i.e., comparable demographics, geography, and/or economy (Appendix C). In the *Synthesis* stage of Phase 2, a thematic analysis of these case studies drew the team to several transportation and parking demand management best practices (Appendix D). The criteria used to qualify these cases as best practices, was adapted from George T. Doran's (1981) S.M.A.R.T. goals framework, commonly used in project and performance management to refer to goals that are Specific, Measurable, Assignable, Realistic and Timely (p. 36). To conform to the context of this project, the team adapted these criteria into a "SMARTE" framework, to ultimately ask the question: are the strategies used in these cases specific, measurable, actionable, relevant, time-bound, and equitable? The result of this assessment was a series of 10 synthesized leading best practices for the DoS to consider (Appendix E).

To determine the applicability of these best practices for the DoS, the team developed a list of seven preliminary feasibility criteria and corresponding guiding questions adapted from Cristina Puentes-Markides's (2007) presentation on "Policy Analysis and Decision-Making". In consideration of feedback received from DoS

staff, the team condensed this list into five themes of feasibility: regulatory, socio-political, sustainability, technical/administrative, and equity. Additionally, meetings with DoS staff allowed for further context-specific considerations of the implementation of these various best practices.

In the *Analysis* stage of Phase 2, the best practices were then analyzed against the five final feasibility criteria to inform the team's work in Phase 3: Recommendations and Visualizations. The team then transformed the analyzed best practices into a series of recommendations and applied designs to support the vision of Squamish *Moving Beyond the Car*. To support the DoS in approaching these recommendations, informal inquiries were conducted to gain further insight into the application of TDM best practices in communities with the most similar contexts and challenges as Squamish: Whistler, BC; Penticton, BC; Canmore, AB and Blue Mountains, NSW (Appendix G).

1.2.3 THEORETICAL LENS

The team adopted a mixed-scanning planning approach with an equity planning framework interlay. Mixed-scanning involves "pragmatic (like incrementalism), visionary (planning for the future) and strategic (with long-term or overall aims)" modes of thinking (Ravindra, 2019), which are compatible with the contentious and complicated nature of parking. The project team employed a combination of detailed and rationalistic approach for parking strategies research and a simplistic and schematic approach for active transportation plans to formulate a holistic response to car-dependency. This breakdown allowed the team to apply their professional experience and expertise to develop recommendations that are incremental and palpable in nature, building towards a fundamental paradigm shift in Squamish *Moving Beyond the Car*.

Acknowledging this project will impact not only individuals with vehicles but many other stakeholders such as local business owners, residents and even visitors to Squamish, it is imperative to apply an equity planning framework such that the strategies and recommendations that this project purports are inclusive and considerate of the needs of all ages, abilities, backgrounds and identities (Metzger, 1996). Equity planning cannot be completed by a single project, and is therefore a key complement to the mixed-scanning approach in order to build a commitment to addressing social and health equity issues (Zapata & Bates, 2015). An equity planning approach is vital to the current project as the social costs of private vehicle ownership and dependency are indirectly paid by the remaining residents, particularly by low-income individuals who rely solely on public transportation (Shoup & American Planning Association, 2005; Litman, 2021a).

1.2.4 RESEARCH LIMITATIONS

As in most research projects, it is inevitable to have limiting factors due to the nature of scoping and timelines. The team acknowledges that the following research limitations have impacted some, or all, phases of this project:

COVID-19 Impacts on Travel - The team recognizes that the COVID-19 pandemic has likely influenced individual travel patterns and as such, existing data regarding transportation in Squamish is not reflective of this “new normal.” In order to account for this disparity, the team has worked to address these patterns and examined datasets both prior to and during this pandemic.

Public Engagement - Due to concerns around COVID-19, the team’s lack of expertise pertaining to public engagement, and restrictions on timelines, this project did not undertake any public engagement. This was a limitation particularly during the

feasibility assessment, however, the team worked to address this through meetings with DoS staff and review of online communication channels.

Team Bias - Given that the project team consists of four planning students who solely use and promote the use of active transportation, do not reside in Squamish, and do not necessarily understand the day-to-day complexities that a diversity of residents may experience through their transportation journeys, the team is aware of its own biases as researchers. In order to eliminate the influence of these biases, the team worked to balance the concerns of residents and business owners (i.e. through meetings with DoS staff, review of online communication channels, review of past engagement events, and case studies of other similar jurisdictions) with the need for climate action.



Image 2. Project Team Site Visit, Squamish, BC
(Source: Fiona Ko, 2021a)

2. ANALYSIS

2.1 SITE ANALYSIS

As a relatively compact community, Squamish connects seven key destinations within the region (Downtown Squamish, Garibaldi Village, Chieftain Centre, Vancouver, Garibaldi Island, and Brenan Park), identified by residents (DoS, 2021). The team, based in Vancouver, conducted a site visit of Downtown Squamish on October 15, 2021, travelling via the Squamish Connector. Combining preliminary research on DoS' existing regulatory framework with field observations of existing conditions and meetings with DoS managers, the team identified the following themes:

Connectivity

- Sea-to-Sky Highway 99 is the main route for many commuters who live in Squamish and work in Vancouver and the Lower Mainland area.
- There is a desire to add another road entrance to offload traffic from the intersection of Bailey Street and Cleveland Avenue.
- A pedestrian bridge is proposed to be the important active transportation link across Mamquam Blind Channel for residents of Waterfront Landing, Downtown Squamish, Valleycliffe, and Hospital Hill. The goal is to create more opportunities to walk and cycle to Downtown Squamish and further reduce the reliance on private vehicle use.
- Driving is the most desirable and convenient mode for residents and tourists to travel to recreational destinations in Squamish. This contributes to the car-dependent nature of the community.

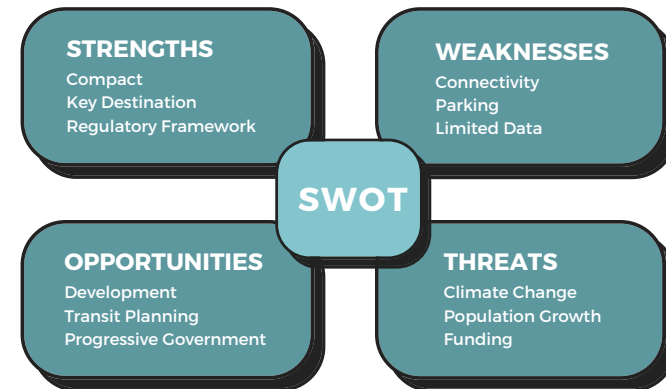


Figure 2. SWOT Analysis of Downtown Squamish

(For detailed analysis see Appendix A: Downtown Squamish SWOT Analysis)

- A newly-installed bike lane located at the intersection of Pemberton Avenue and Cleveland Avenue contributes to the existing bike network.
- There is a desire to explore micro-mobility solutions for intra-community travel, such as e-bikes.

Parking Demand and Management

- Mixed-use zoning with additional parking spaces on the upper level atop with view-preserved office spaces is encouraged to increase parking supply.
- "Skinny parking" (narrow garage) of townhouses at Eaglewind and the lack of restricting signage for on-street parking lead to inefficient access to parking spaces community-wide.
- There is a need for time-restricted parking spaces provided by new developers.

- It is anticipated that the demand for private parking will increase with growing residential and commercial densities.
- There was an expressed appreciation for turning existing on-street parking stalls into freight unloading zones in front of residential buildings, similar to Artisan (a recently built residential building), given the growing trend of e-commerce deliveries.

Location and Acquisition

- New developments require comprehensive parking studies to avoid spillover effects of on-street parking.
- Potential sites of interest for redevelopment or acquisition include a 2-hour free parking lot (next to Corsa Cycles) and BC Rail land along Loggers Lane for better parking management (i.e. designated peripheral parking for downtown employees).
- An ongoing rezoning application (RZ000004) proposes to rezone an existing site located adjacent to active Canadian National Railway lines, which is currently zoned as I-6 (Rail Transportation) and C-4 (Downtown Commercial) into a Comprehensive Development Zone. The application proposes a total of 483 parking stalls, meeting the current zoning bylaw requirements.
- Some local businesses expressed their interests in peripheral parking along Loggers Lane for businesses and employees who work in Downtown Squamish (Ghuman, 2020).

Considerations and Constraints

- The foundation of the land in Squamish is unstable and soft with debris flowing from the mountain and five streams underneath, making below-grade parking geotechnically constrained and financially unfeasible.
- Lenient enforcement of parking non-compliances such as unauthorized parking.

- There is a lack of available data on out-of-town commuting patterns and projection of commuting trends that considers the shifted patterns since COVID-19.
- There is a desire to explore micro-mobility solutions for intra-community travel, such as e-bikes.



Image 3. Overflow Parking on Bailey Street, Squamish, BC
(Source: Fiona Ko, 2021b)



Image 4. Existing Bike Lane, Pemberton and Cleveland Avenue, Squamish, BC
(Source: Fiona Ko, 2021c)



Figure 3: Downtown Squamish

2.2 CASE STUDY ANALYSIS

During Phase 1 of this project (Information Gathering), case studies were selected with consideration for comparable contexts, such as population size, economy, and/or geographic features. In addition, case studies from larger metropolitan regions were also referenced for their potential as best practice models. The project team reviewed and analyzed 20 national and international case studies of TDM initiatives and strategies (Table 2) for reducing car-dependency, with a focus on parking management. A case study directory was developed and presented to the DoS in December 2021, and can be reviewed in Appendix C.

Table 1. 20 National and International Case Studies

NATIONAL		INTERNATIONAL	
Banff, AB	Fredericton, NB	Auckland, NZ	New York City, USA
Barrie, ON	Halifax, NS	Austin, USA	Sacramento, USA
Canmore, AB	Jasper, AB	Blue Mountains, AU	San Francisco, USA
Edmonton, AB	Nelson, BC	Boulder, USA	South Lake Tahoe, USA
Esquimalt, BC	Pendicton, BC	Ghent, BE	Zurich, CH

2.3 BEST PRACTICE MODEL ANALYSIS

For the *Synthesis* stage of Phase 2 of the project, best practice models were selected from the case study directory generated in Phase 1 using the newly adapted “SMARTE” framework described in Section 1.2.2 of this report. The team modified the criteria to fit the project scope by altering: “Specific” to “Sustainable”, to consider the longevity and resiliency of the initiative; “Realistic” to “Relevant”, to ensure that the initiative relates to *Moving Beyond the Car*; and “Attainable” to “Actionable”, to ensure that the initiative can be implemented. “Equitable” was added to align with existing adaptations of the same framework to incorporate the principles of equity and inclusion (The Management Center, 2021).

The purpose of establishing this framework was to ensure that the selected case studies would be relevant and applicable to Squamish’s need for *Moving Beyond the Car* and to align with sustainable urban planning principles.

- **Sustainable** - Is the model sustainable (environmental, social, economic)?
- **Measurable** - Can this model be monitored/regulated?
- **Actionable** - Is this model feasible?
- **Relevant** - Does this model contribute to *Moving Beyond the Car*?
- **Time-bound** - Can this model be implemented over a short- (1-2 years), medium- (2-5 years) or long-term (5-10 years)?
- **Equitable** - Does this model address equity?

For the *Analysis* stage of Phase 2 of the project, the best practice models were evaluated using a set of feasibility criteria and guiding questions developed in consultation with the DoS.

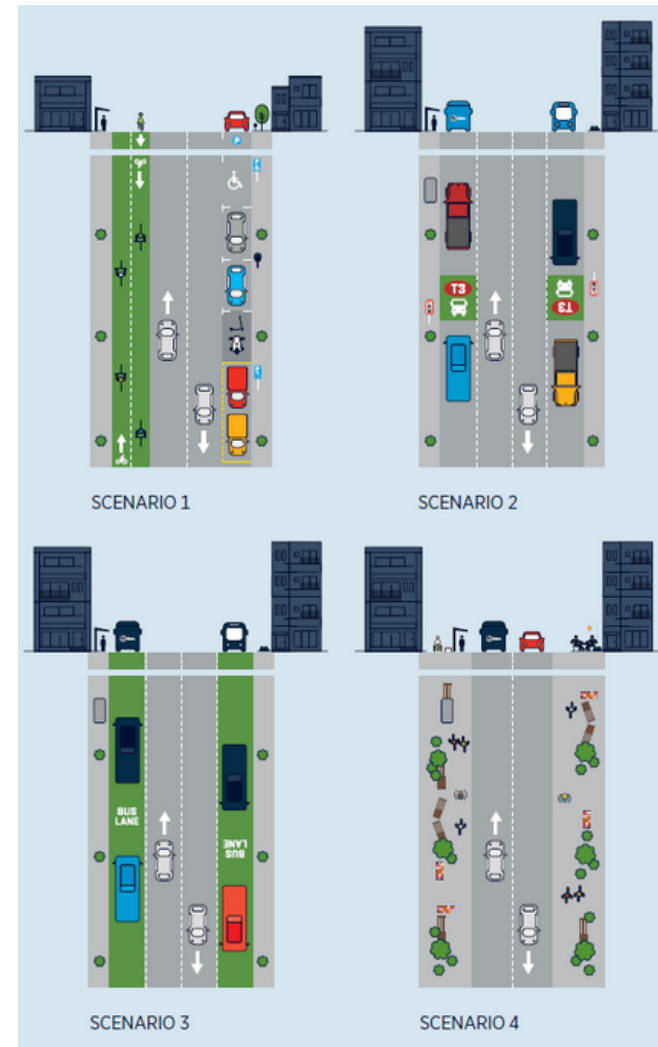


Image 5. Complete Street Options, Auckland, NZ
(Source: Auckland Transport, 2021)

2.4 FEASIBILITY ANALYSIS

During the first and second weeks of February, the team led three separate meetings with senior management, engineering staff and planning staff, respectively, to receive input on the preliminary feasibility criteria that would be used to evaluate the finalized set of best practice models. Table 2 represents the finalized feasibility criteria.

Table 2. Feasibility Criteria Used to Evaluate Best Practises

TYPE	DESCRIPTION	GUIDING QUESTIONS
Regulatory	Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.	- Does DoS have the existing regulatory tools to implement this model? - Does the model align with DoS policy objectives?
Socio-political	Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).	- How likely will this model be accepted by Squamish residents and stakeholders (e.g. business owners)? - Does this model align with the social/cultural context of Squamish?
Sustainability	Ability of the model to maintain its beneficial effects in the longer term.	Will this model be possible to maintain over the long-term?
Technical/ Administrative	Availability of necessary resources and competencies. Degree of ease of implementation, financial/ managerial factors.	- Does DoS have enough staff with the technical expertise and/or capacity to implement this model? - Does DoS have the budget, resources, and administrative policies to implement this model?
Equity	Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g. lower income, women, children, the disabled, aged, etc.	- Does this model benefit some groups and disadvantage others? - Are those disadvantaged by this model already historically disadvantaged/ marginalized?

**The above feasibility criteria have been adapted from Cristina Puentes-Markides's (2007) presentation on "Policy Analysis and Decision-Making" to the Pan American Health Organization/World Health Organization.*

Upon establishment of the feasibility criteria, the team was able to assess each best practice accordingly. The full assessment can be found in Appendix E. During the feasibility assessment, the team also took into account several considerations for optimizing the feasibility of each practice in the Squamish context by answering a series of questions as highlighted in Table 3. These details are also included in the feasibility assessment in Appendix E for each best practice.



Image 6. Tier-Based Parking Pricing Structure, Sacramento, USA
(Source: City of Sacramento, n.d.)

Table 3. Considerations for Optimizing Feasibility of Best Practice Models

FEASIBILITY TYPE	CONSIDERATIONS
Regulatory	- What regulatory tools would need to be introduced? - What amendments would be required?
Social-political	- How can this model be made more appealing to the public, stakeholders, etc. - How could this model be made to adapt to the Squamish context?
Sustainability	What features are missing to ensure this model is sustainable for Squamish
Technical/Administrative	- When to leverage existing DoS resources/ capacity vs. when to sub-contract work? - What additional resources would be required?
Equity	How can the model be adjusted to be more equitable?

3. RECOMMENDATIONS FOR MOVING BEYOND THE CAR

The following recommendations have been developed in consideration of previous recommendations provided by ISL Engineering in its *2017 Downtown Parking Study*, as well as the strategies and actions set out in the CCAP adopted in 2020. The project team has made efforts to avoid repetition of recommendations, however, overlap may occur where DoS policy is outdated (e.g. *DoS Parking Strategy 2016-2020*) or where strategic commitments have not yet been implemented. Each recommendation has an associated timeline that aligns with the timeframes set out in the CCAP:

- **Short:** 0-2 years to implement
- **Medium:** 2-7 years to implement
- **Long:** 7-10 years to implement

Timelines were assigned based on existing conditions, such as socio-political and technical/administrative factors. However, the assigned timelines do not align with the urgency of climate action, nor the team's conclusion. The team concludes that immediate parking reform, in concurrence with other TDM strategies, is required in order to efficiently reduce transportation-related carbon emissions.

A. Develop and implement a phased parking strategy

In recent decades, a paradigm shift in parking management in North America has changed the way parking problems are defined and solutions are evaluated (Litman, 2021b). In the former paradigm, parking issues were defined by motorists' inability to

find ample and convenient free parking. As a result, parking minimums (i.e. the minimum amount of parking stalls a local government requires for new builds) emerged as a common solution (ibid). In contrast, a new paradigm has emerged where parking issues are attributed to *oversupply* and a car-centric culture that has resulted in increased traffic congestion, energy consumption, degraded design, urban sprawl and high opportunity cost for land that could have been used for something other than parking space (Shoup, 2018).

Despite this oversupply, the cultural and psychological perception is typically the contrary – that there is not enough parking.

“ *There is no demand for parking per se, there is demand for access to destinations.* ”

Weinberger (2020)
in *Transportation, Land Use, and Planning*

In 2016, the DoS approved the *2016-2020 Parking Strategy* in response to redevelopment and increased tourist visitation, which placed heavier demand on parking in Squamish, particularly downtown and surrounding trailheads. The strategy recognized the need to balance demand and local business needs with Squamish's sustainable transportation priorities, and to ensure that demand does not lead to an oversupply of parking. The strategy consisted of a series of objectives, targets, and actions to address parking in Squamish, with designated timelines that have since lapsed.



Figure 4. 2020 Downtown Street Parking Counts (Source: DoS, 2020b)

In early 2020, before the COVID-19 pandemic, a parking count was conducted by the DoS on 10 high-traffic streets downtown. The first parking count, which took place on February 25th, showed 38% of street parking stalls were in use between 10:00pm and 10:30pm. The second parking count on March 5th, showed 42% occupied parking stalls between 11:30pm and 12:00am. While the percentage of parking stalls in use outside of peak business hours downtown remains significant, Figure 4 visualizes the oversupply of street parking in Downtown Squamish.

Given this context, the project team recommends that an updated, more rigorous, parking strategy be implemented by the DoS, with the primary goal of leveraging mobility pricing tools as a strategy for disincentivizing automobile travel to, from, and within Squamish. This recommendation is provided with the understanding that Squamish remains a “car first” community (Figure 5), and that efforts to reduce car-dependency must take into account this reality so as to balance the social, environmental, and economic sustainability of the community. An incremental, or phased, approach is, therefore, recommended with strategies ranging from short-, medium- to long-term. For the purpose of this report, the following parking management recommendations have been organized into six sub-recommendations, or strategies, that in combination would contribute to a single, comprehensive parking strategy. The sub-recommendations have been listed in the order of implementation timing, from shortest to longest.

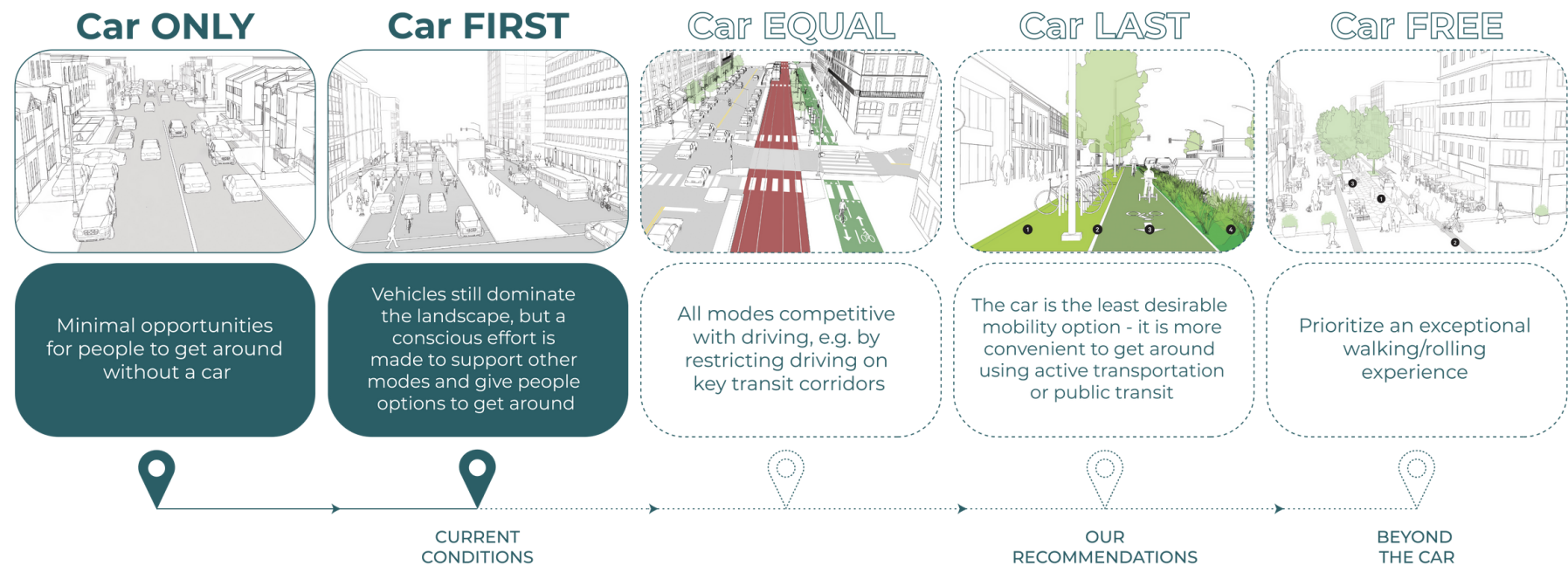


Figure 5. The Spectrum of Car Dependency (Adapted from Pinder (2021), “Car Dependency is a Spectrum”)

A1. Increase enforcement of existing parking regulations (Short)***Policy Follow-up: DoS Parking Strategy 2016-2020***

Action: Enforce current parking restrictions (education first, then ticketing)

Who: Bylaw Services

When: 2016

How: Current Mandate

Notes: Start with a public awareness campaign, moving to warning and finally to ticketing if necessary.

Parking in Squamish is currently enforced through the *Traffic Bylaw No. 2220, 2012*, with designated contraventions and penalties outlined in the *Municipal Ticket Information Bylaw No. 1832, 2004* and the *Bylaw Notice Enforcement Bylaw No. 2418, 2015*. One of the actions coming out of the *2016-2020 Parking Strategy* was to enforce current parking restrictions, starting by educating the public before moving on to warnings and ticketings (if necessary). Information on Bylaw enforcement is already accessible on the DoS website under *Our Services > Bylaw and Enforcement*, where the public can navigate to learn more about the types of regulations DoS Bylaw Officers enforce. Further navigation to *Parking Regulations* provides graphic representations of some examples of violations where vehicles may be issued a ticket and/or impounded, such as parking within or less than 6 metres from a crosswalk, or parking too close to a traffic control signal or intersection.

For a number of reasons, such as capacity of Bylaw enforcement, as well as parking challenges emerging from increased development downtown, parking enforcement in Squamish is considered relatively lenient compared to other jurisdictions. Building on the previous actions in the *2016-2020 Parking Strategy*, the team recommends that the DoS allocate resources to increase enforcement of existing parking regulations. Before the DoS can explore other recommendations, a culture of enforcement around parking must be developed. Expanding the capacity of the Bylaw Enforcement and Animal Control department will support the DoS in transitioning towards a new regulatory framework for pricing parking.

A2. Implement paid parking in Downtown Squamish (Medium)***Policy Follow-up: DoS Parking Strategy 2016-2020***

Action: Review options and opportunities for paid parking

Who: Engineering using consultants

When: 2018

How: Special Project funding required. Likely additional operational funding also.

Parking is a contentious issue in many communities, including Squamish, where historic car-enabling infrastructure has fed a cycle of automobile dependency (see Figure 6 next page). Many parking scholars have studied the positive correlation between the prosperity, safety, health, walkability, and pleasure of a

community and the performance of parking pricing that “clears the market” and prevents the “overuse of scarce infrastructure” (Shoup, 2018; Manville and Chatman, 2014). Although paid parking is not a new or innovative strategy, mid-sized communities like Squamish, with less resources than larger municipalities, face barriers to initiating regulatory changes that require extensive community engagement and financial capital to implement. Nonetheless, Squamish has been reviewing options and opportunities for paid parking for several years, as indicated in the *2016-2020 Parking Strategy*, the *DoS Official Community Plan* (Policy 20.12(c)), and the CCAP. Specifically, one action of the CCAP’s Big Move 2, to “shift beyond the car,” is to “develop and implement a strategy to price parking along parts of the core transit network and provide adequate enforcement in order to incent mode shift” (p. 35).

To support this action, the project team recommends that the DoS implement a paid parking program in Downtown Squamish, with the goal of eventually expanding into other high traffic commercial and recreation areas in Squamish, such as trailheads and Garibaldi Village Shopping Centre. For a number of reasons, such as capacity of Bylaw enforcement, as well as parking challenges emerging from increased development downtown, parking enforcement in Squamish is considered relatively lenient compared to other jurisdictions. Building on the previous actions in the *2016-2020 Parking Strategy*, the team recommends that the DoS allocate resources to increase enforcement of existing parking regulations. Before the DoS can explore other recommendations, a culture of enforcement around parking must be developed. Expanding the capacity of the Bylaw Enforcement and Animal Control department will support the DoS in transitioning towards a new regulatory framework for pricing parking.

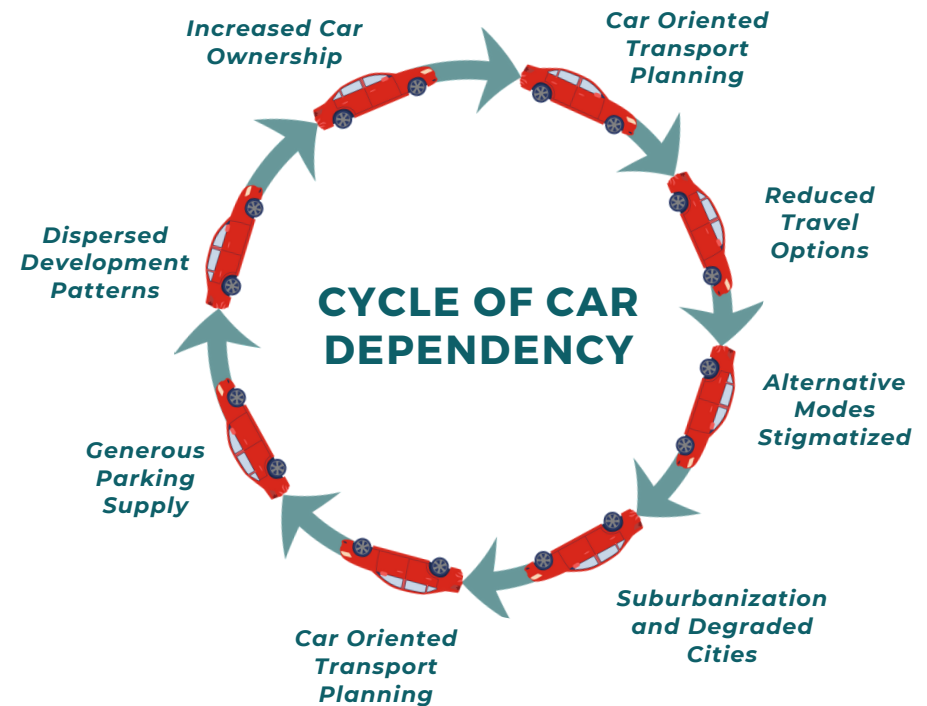


Figure 6. Cycle of Car Dependency
(Adapted from Litman, 2021a)

Table 4. Parking Pricing Methods*

PARKING PRICING METHODS						
Type	Description	Capital Cost	Operating Costs	User Convenience	Price Adjustability	Enforceability
Pass	Users purchase and display a pass	Low	Low	Medium	Poor to Medium	Good
Time-Coded Tickets	Parkers purchase a punch-card for a certain amount of time	Low	Medium	Medium	Medium	Good
Single-Space Meters	Parkers prepay a mechanical or electronic meter located at each space	High	High	Mechanical Meters: Low Electronic Meters: Medium	Mechanical Meters: Poor Electronic Meters: Good	Mechanical Meters: Poor Electronic Meters: Good
Smart Meters	Parkers prepay electronic meters which automatically reset when vehicles leave	High	High	Medium	Good	Good
Pay Box	Parkers prepay into a box with a slot for each space	Low	Medium	Low	Poor to Medium	Poor
Pay-And-Display Meters	Parkers prepay a meter, which prints a ticket that is displayed in their vehicle	Medium	Medium	Medium	Mechanical Meters: Poor Electronic Meters: Good	Good

*This table is directly sourced from Litman's (2021c) *Parking Pricing Implementation Guidelines*

PARKING PRICING METHODS (CONT'D)						
Type	Description	Capital Cost	Operating Costs	User Convenience	Price Adjustability	Enforceability
Per-Space Meters	<i>Parkers pay for a specific space using electronic meters</i>	Medium	Medium	Medium	Very good	Good
In-Vehicle Meter	<i>Parkers display an electronic meter inside their vehicle when parked</i>	Medium	Low	High	Moderate	Good
Attendant	<i>Parkers pay an attendant when entering or leaving parking lot</i>	High	High	High	Good	Good
Controlled Access	<i>Parkers pay a machine when entering or leaving parking lot</i>	High	Moderate	Medium	Good	Poor
Automatic Vehicle Identification	<i>System automatically records vehicles entering and leaving a parking area</i>	High	Medium	High	Good	Good
Global Location Technology	<i>Satellite-based systems automatically tracks parking use and calculates parking fees</i>	High but declining	High but declining	High	Very high	Good

**This table is directly sourced from Litman's (2021c) Parking Pricing Implementation Guidelines*

Parking pricing is just one type of mobility pricing - an umbrella term that refers to a number of fees that can be applied for the use of transportation services, such as congestion charges, car insurance, fuel taxes and transit fares (TransLink, 2018). Charging users for the designated parking space they consume follows what is referred to as the “Users Pay Principle,” whereby “users pay in proportion to how much they use the road network” (ibid). When users do not directly pay according to the proportion of their use, the costs associated with providing free parking are then absorbed by the local government and indirectly by its taxpayers, which includes cyclists, pedestrians and transit users who are not consuming the parking (Shoup, 2005; Ben-Joseph, 2015).

The project team recognizes that implementing paid parking will be a significant adjustment for the DoS, the community of Squamish and its visitors. Special Projects funding would be required to contract consultants for the initial development of a comprehensive parking strategy, as well as resources for communications and engagement with the public, the Chamber of Commerce, Business Improvement Associations (BIAs) and other stakeholders. Additional budget through the General Operating Fund will also be required to finance the operations of parking enforcement, such as hiring and training additional Bylaw Enforcement Officers and/or administrative staff, and purchasing, installing, and maintaining parking enforcement equipment and software (see Appendix H for resources). Although there are significant upfront costs associated with the introduction of a paid parking program, the revenue generated from pricing parking will allow for a more financially and socially sustainable model of parking. Consumers of parking are directly charged for their usage, and non-consumers are not burdened with the indirect costs associated with “free” parking.

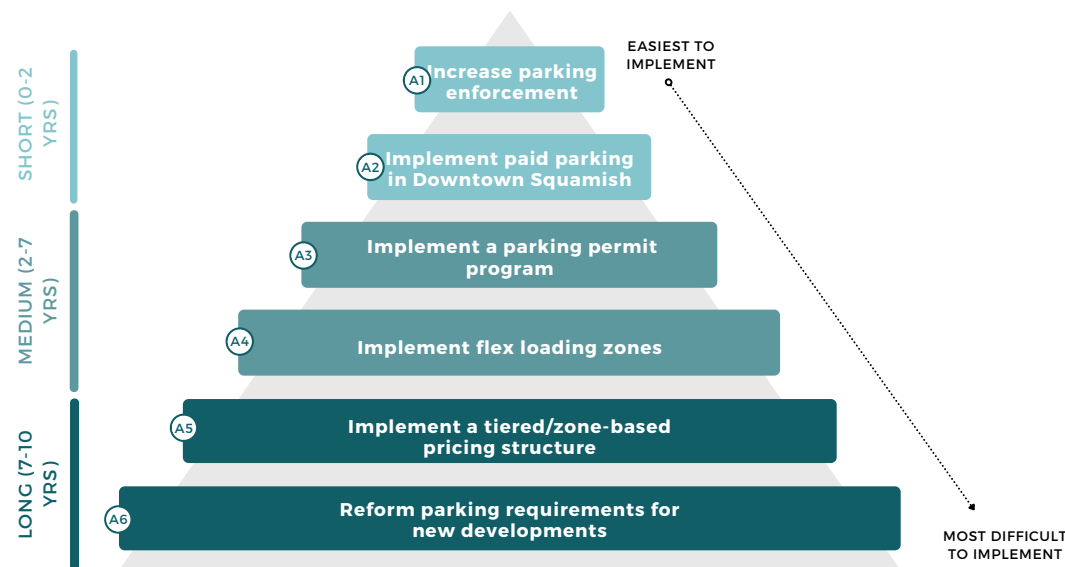


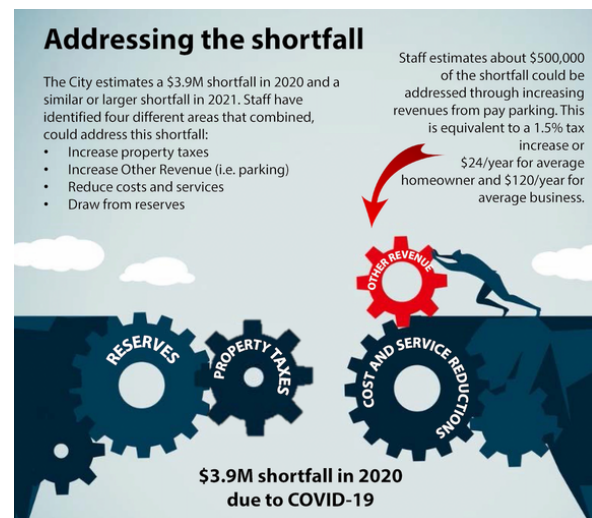
Figure 7. Phased Parking Strategy

Lessons Learned from the City of Penticton

What are some lessons learned from the process of introducing paid parking? E.g. public response, unanticipated costs

It's important to engage the public and show the true tradeoffs of not charging for parking (i.e. tax rates, turnover in commercial areas, supporting alternatives to single occupant vehicles etc.). For example, we estimate that paid parking when fully implemented just in the downtown is \$1 million dollar a year revenue source. That equates to a roughly 3% tax increase or \$1 million subsidy for downtown businesses. When general taxpayers look at it that way, they generally support paid parking.

Also, linking the revenue to specific items is useful. We linked the parking revenue to downtown safety (graffiti removal program / more bylaw officer presence / camera program / etc.) and downtown vibrancy (events / lightups / etc.). Finally, start with a larger area including all areas of public land where parking is in demand and scale back based on public feedback. For example we added all recreational areas, but pulled back to just downtown.



Revenue potential

What does pay parking cost the City and how much revenue do we think we can generate? The following table provides a high level estimate of forgone parking revenue and estimated capital set up costs. Expansion of the metered parking program would also necessitate additional staffing, including a parking supervisor and an additional traffic enforcement officer.

Area	Yearly Revenue potential	Capital
Downtown	\$300,000	34 machines = \$204,000 New signage = \$7,500
Okanagan Lakeshore	\$250,000	14 machines = \$84,000 New signage = \$5,000
Skaha Lake Park	\$125,000	4 machines = \$24,000 New signage = \$2,500
SOEC Campus	\$150,000	10 machines = \$60,000 New signage = \$3,500
Resident Only Parking	\$15,000	
	Total: \$840,000	Total: \$390,500

Figure 8. Penticton Downtown Parking Expansion Engagement 2020-2021 (Source: City of Penticton, 2020)

Lessons Learned from Blue Mountains City Council

Cost

At Echo Point, workers can park in the precinct, but that's always in the middle and in spots where people want to come. Employees take up substantial space, and are costing half a million (AUD) in revenue with employees taking up the space. So with the new plan (pending approval by Council), employees will have to park outside the precinct area, and there's well lit footpaths 5-6 minutes outside of the precinct for them to access the middle, or they can park in the middle but they need to pay.*

**Blue Mountains City Council has precincts which are defined neighbourhoods/areas around key destination areas. In the upcoming parking plan, each precinct will have its own catered parking plan.*

Parking Infrastructure

Collecting revenue is a priority because paid parking is demand management and it allows the investment back into active transport and the public transport network. Our parking meters went from coin to card only, and this saved us \$20K (AUD) a year in terms of maintenance cost. It's also easy to configure, everything is on a cloud. Our capacity right now at Echo Point is 30-33 metres, we are limited if there is a larger scale.



Image 7. Echo Point Parking Demand, Blue Mountains, AU
(Source: Sydney Expert, 2019)

Enforcement and Technology

We use sensed parking for enforcement, because we do not have a lot of rangers to actually do parking. Along Leura Mall, for example, people need to pay for 1 hour. They have a 15 minute grace period, but after that they are fined for overstay. Having these sensors provides us with a lot of data. They're embedded into the pavement and require a maintenance cost, we contract it out and they maintain it. It's important to research the technologies, and there's always a possibility to combine and hybrid options.

A3. Implement a parking permit program (Medium)

Accessible Parking Permits

In addition to the financial barriers of introducing a paid parking program, the project team has also considered the equity implications of this strategy. As well as, impacting low-income residents and visitors, paid parking can further disadvantage those whose reliance on their vehicle is more restricted than other users' (that is, where other modes are not safe, efficient, or practical), for example, caregivers and people with disabilities. With these considerations in mind, the project team recommends that alongside a paid parking program, an accessibility parking permit program should also be introduced. This program would enable holders of an existing accessible parking permit through the Social Planning and Research Council of BC (SPARC BC) to continue to access accessible downtown parking spaces for free (SPARC BC, n.d.).

With the vision that paid parking would eventually expand beyond the downtown core, permit options could then transition to subsidized rates for people with disabilities and low-income residents. Examples of similar models include the Accessible Parking Permits program in Victoria, BC and the Non-Market Exempt Permit in Vancouver, BC. The City of Victoria offers employees and students with disabilities (who regularly commute and park in the downtown core) a subsidized rate for monthly and periodic all-day parking permits (City of Victoria, n.d. -a). In Vancouver, as a response to affordability concerns, residents in low-income households living in the West End can apply for a permit at the non-market exempt rate (City of Vancouver, n.d.). Both of these models apply an equity lens to parking pricing by acknowledging that although reducing car dependency may be the ultimate goal of the new paradigm of parking management,

these changes do not occur overnight. Therefore, transitional programs are required to ensure that parking pricing does not further marginalize underrepresented groups.

Resident Only Parking Permits

As mentioned previously, introducing paid parking in Squamish will understandably be challenging and require adjustment for the DoS as residents who have been living in Squamish are used to "free" parking. To ameliorate this tension, and to further demonstrate that DoS has both considered and anticipated the needs of its residents, the project team recommends implementing a resident only parking permit. Doing so would prioritize and designate street space for Squamish residents, while instilling a culture where residents are expected to be conscious about their car-use. Implementing resident only parking permits would also recoup costs from car owners that can then be reinvested to augment Squamish public amenities. Following the likes of other tourism and adventure-based municipalities such as Banff and Blue Mountains (see Appendix G for more detail), there are various models to implement resident only parking permits.

The model based on Banff, AB would see that revenue collected from public paid parking be used to fund two resident parking permits for each household. With a high tourism economy, this would be a cost recovery method to recoup the costs of managing tourism and bring value back to fund resident parking so it may continue to be "free". Not only is this a beneficial step for allocating the cost to car-owners and leveling environmental inequities from the emissions that tourists and their vehicles bring into a municipality, but this is also a great rationale for ensuring resident buy-in.

The model based on Blue Mountains, NSW would see that each household is required to pay for two resident parking permits for street parking which would be in effect for two years. Alternatively, residents may choose not to purchase a permit, and park only on their property, such as in their garage and/or on their driveway. This is a way for the municipality to reclaim public street space for their own uses, or charge for residents to use public space. In Blue Mountains, this fee is an administrative fee to process the resident permit. Squamish could follow suit, and use the revenue to directly fund improvements to transit-related infrastructure or to the public realm.

The team's recommendation is to follow the Blue Mountains model as this would allow Squamish to reclaim the public realm, charge residents for using public space, and generate revenue to fund infrastructure for *Moving Beyond the Car* such as active travel or public transit infrastructure.

Lessons Learned from Blue Mountains City Council

Permits

Every resident has off-street parking, each household can have two permits for vehicles that they have to pay for. There is a fee, and it covers the administrative processing fee, and they have the permit for two years. If residents don't pay for the permit, then they have to park on their driveway. That's the option given to them because they don't own the roads, and ultimately, the

council has legislation. Of course, this will give us pushback, but our argument is that the revenue will be used to improve the infrastructure that is damaged or impacted by the visitors that come to this space. Also with this permit, residents are permitted to park in certain areas but [are] not allowed to, in higher priority areas, as the permit is intended only for places of residence. If you are outside of your resident area, then you are parking as a public member.

A4. Implement flex loading zones (Medium)

From conversations with DoS staff, it was explained that loading zones have been a recent addition to various developments in downtown and beyond to support e-commerce and digital shopping patterns. These loading zones are once on-street parking spots. To enable efficiency of parking usage, the team recommends that the loading zones be transitioned to "flex loading zones" with signage indicating that they could be used for on-street parking in the evenings and on weekends when delivery services are not in effect. In Fredericton, New Brunswick, the city implemented a successful "Flex and Loading Zone Pilot Project," along Queen Street in 2019 as a means to offer better access to products and merchandise through loading zones, while also providing more customer parking on evenings and weekends where these loading zones would otherwise be located (City of Fredericton, n.d.). This could be easily translated to the Squamish context through updated signage at these existing loading zones.

	MON-FRI	SAT-SUN
07:00-16:00	COMMERCIAL DELIVERY VEHICLES ONLY MAX 10 MIN	
16:00-24:00		

	MON-FRI	SAT-SUN
07:00-10:30	COMMERCIAL DELIVERY VEHICLES ONLY MAX 10 MIN	
10:30-17:00		
17:00-24:00		

	MON-FRI	SAT-SUN
07:00-17:00	COMMERCIAL DELIVERY VEHICLES ONLY MAX 10 MIN	
17:00-24:00		

Figure 9. Sample Flex Loading Zone Signage
(Adapted from City of Fredericton, n.d.)

A5. Implement a tiered/zone-based pricing structure (Long)

To support the longevity of the paid parking program in Downtown Squamish, the team recommends that in later iterations of such a program, a tiered/zone-based pricing structure be implemented. In Sacramento, CA, the variance of curb value throughout the city is recognized by the Public Works Department through an implementation of a tiered-based pricing structure for parking, piloted in late 2015. The variance in curb value throughout the city is acknowledged through levying adjusted pricing based on parking demand and geography (Nichols & Dorsett, 2021). The zonal-based pricing offers motorists the option to extend a parking session beyond the posted time limit (City of Sacramento, 2016). Prices for parking vary by area and hour with a total of four zones and rates ranging from \$1.75 to \$3.75 (USD) per hour, depending on the location and length of stay. A similar structure could be implemented in Squamish where zone divisions could vary based on demand and geography. Pricing schemes could be altered accordingly to deter automobile usage.

A6. Reform parking requirements for new developments (Long)

Parking experts have highlighted the inaccuracies of relying on the parking standards set out in the Institute of Transportation Engineers' (ITE) *Trip Generation* and *Parking Generation* manuals (Shoup, 2005). The overreliance on ITE's standards have created an excess of parking supply in both residential and commercial areas (Ben-Joseph, 2015). This oversupply is largely due to the demand rates from ITE's *Parking Generation* manual, which are derived from only surveying peak parking demand at sites with free parking and no transit service (Shoup, 2005). These rates are then institutionalized through parking minimums set and required by municipalities. These parking requirements inflate the demand for cars, and the use of cars then increases the parking requirements (Shoup, 2018). This cyclical demand has led to an exorbitant supply of parking, driving the price of parking down to "free". With the misconception that parking is free, required parking minimums have created a social standard where everyone prefers to drive because driving offers the best value. This value comes at a cost that does not fall only to vehicle owners, but is spread out over a system that includes private developers and the public.

Considering existing research findings on the role of parking requirements in feeding the cycle of automobile dependency, the team recommends that Squamish consider both removing parking minimums and establishing parking maximums, in alignment with policies from the CCAP and OCP. The removal of minimums would ensure greater land use efficiency and help reduce automobile dependency. Removal of parking minimums, specifically off-street parking, would involve amending the *DoS Zoning Bylaw No. 2200, 2011*. Development and building permit

applications would still be reviewed to ensure adequate parking for each use, and regular parking studies would be conducted to monitor trends. Parking maximums, while a milder strategy for Squamish, given the reduced parking supply in recent developments downtown, would directly restrict parking supply. This removal would need to be supported with the development of an OCP policy to establish an upper bound for the allowable number of parking spaces as well as an amendment to the *Zoning Bylaw*. The removal of minimums and instituting parking maximums alone will not suffice to remove automobile dependency; therefore, they must be supported with co-location of transit services and other sustainable transportation options.

B. Design a “Car Last” Downtown

Strategies for reducing car dependency can take on a number of forms. Parking management, for example, is just one TDM strategy that the DoS is pursuing to achieve their strategic commitment to “shift beyond the car” and to meet their community climate action targets. From the outset of this project, the team has sought to take a holistic approach to *Moving Beyond the Car*, by not only supporting the DoS in exploring options for parking management, but also encouraging other TDM strategies to achieve the same objective. As there is no universal reason why cars are a preferred mode of transportation, there is no “one-size-fits-all” approach to reducing car dependency. Therefore, the project team also explored design opportunities to assist in the visualization of a “car last” community (Figures 11-16) - a community in which the car is the least desirable mode, but that active transportation and public transit are convenient and efficient enough to replace the car (Pinder, 2021). The following section describes three interventions along Victoria Street and Loggers Lane in Downtown Squamish (Figure 10).



Figure 10. “Car Last” Downtown Map

B7. Close Victoria Street block to vehicle traffic (Medium)

Currently at Victoria Street between Cleveland Avenue and Loggers Lane, there is angle parking adjacent to a vacant lot north of Victoria, and a restaurant south of Victoria. The lot south of the restaurant hosts the Squamish Farmer’s Market every Saturday. This is an apt location to implement a car-free experience as a portion of the road is periodically closed for the farmer’s market. It is also complementary to the CCAP which suggests disincentivizing private vehicle use through hosting car-free days once a week during warmer seasons, and possibly combining these car-free days with the farmer’s market (DoS, 2020a). As a pilot project, temporary roadblocks can be placed at both Cleveland Avenue and Loggers Lane entry points to Victoria Street. Vehicle through traffic would be temporarily blocked, and drivers will have access to Loggers Lane via Main Street and Winnipeg

Street. Closing this section of Victoria Street will only result in the loss of six “free” car parking spots, but doing so will open up approximately 562 square metres to be reprioritized for pedestrian use and improving pedestrian experience. With this temporary car-free street, passive activities such as walks and free play are encouraged, and active placemaking activities such as mini concerts, food trucks, and other activities can also take place. If this initial pilot is successful, as measured by increased activity and pedestrian counts, it would warrant further exploration to make this strip a permanent pedestrian-only experience. To make changes permanent, the team recommends that the pedestrian right-of-way (“ROW”) be elevated and paved with the same brick pattern as the sidewalks adjacent to the restaurant. The space that was previously angle parking be made into flex/parklet space. Permanent street furnishings should be provided for free seating, and planters similar to Squamish’s corner parks can be placed as barriers to entry for private vehicles. Pending further assessment, it would be up to DoS staff on whether they prefer to space the planters wide enough for emergency vehicle access.

This design does not require street widening and aligns with the 20m (Figure 11) width requirement indicated in the *Subdivision and Development Control Bylaw No. 2649* (DoS, 2018) for a local street. In addition to fitting Squamish’s design guidelines and aesthetic, making this street permanent also complements the existing farmer’s market by providing additional space for market-goers to enjoy local goods. Similar to the purposes in the pilot, a permanent car-free street could be a destination for outdoor events, public art installations and performances, and a rest spot for pedestrians going to and from Downtown Squamish via the anticipated pedestrian bridge across Mamquam Blind Channel (Figure 12). Adding pedestrian scale lighting and wheelchair-considerate group seating that is sheltered from the elements will also greatly enhance the pedestrian experience and provide a space that is inclusive of all ages and abilities.

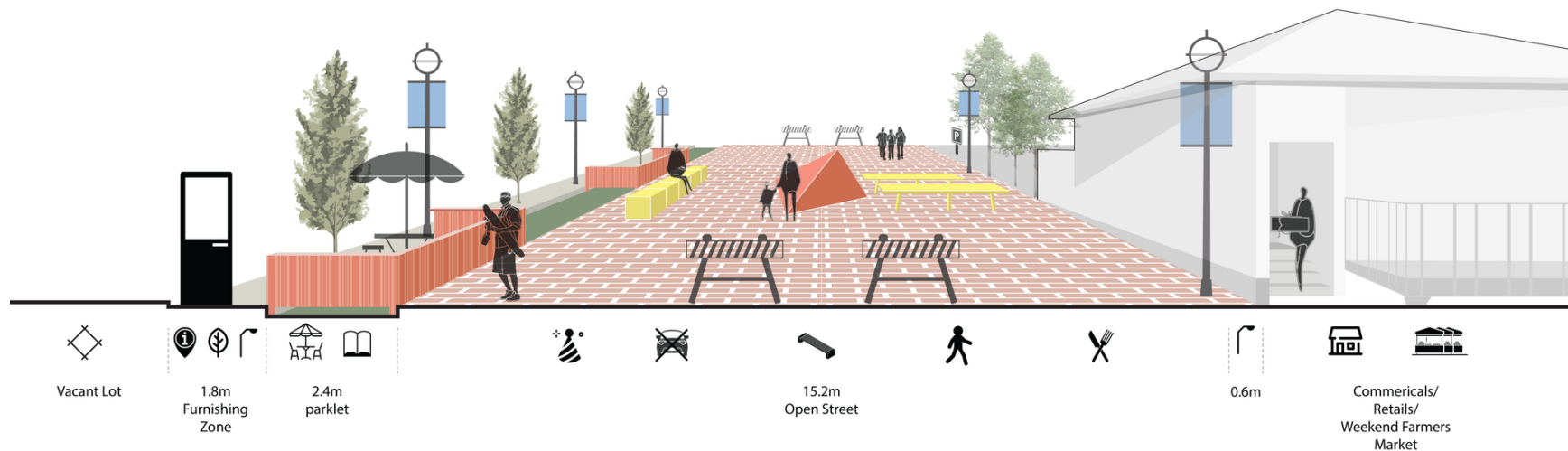


Figure 11. Technical specifications for a permanent car-free strip on Victoria Street between Cleveland Avenue and Loggers Lane fits with DoS’ 20m ROW (see Appendix I for design specifications and rationale)



Figure 12. Looking east on Victoria Street from Cleveland Avenue.

This street section could be activated with street furnishings and easily integrated with the existing farmer's market and anticipated pedestrian bridge.

B8. Construct a bike route along Victoria Street (Medium)

Policy Follow-up: DoS Parking Strategy 2016-2020

Action: Install more and improve bike lanes downtown

Who: Engineering

When: 2017 and beyond

How: Active Transportation Capital Budget

The transition from “car first” to “car last” would be remiss in not considering or implementing a comprehensive active travel network. Currently, there is on-street car parking on both sides of Victoria Street. Though interventions have been completed at Cleveland Avenue to include bulb-outs and corner parklets, there is ample opportunity to improve the stretch of Victoria Street west of Cleveland Avenue into a “car equal” experience (Figure 13) and promote active travel options. As indicated in Figure 38-1: Downtown Open Spaces Plan in the DoS OCP Development Permit Area 5 Guidelines, Victoria Street is planned to become a future Neighbourhood Way whereas 3rd Avenue is proposed to become a designated bike route and safe route to school. While details have not been provided as to the precise execution of the two active transportation infrastructures, there is great potential to remove on-street parking and put separated bike lanes along Victoria Street that would intersect with the DoS’ proposed bike route on 3rd Avenue. The change would also enable Squamish residents west of 3rd Avenue to have direct access to the proposed pedestrian-only stretch of Victoria Street, the farmer’s market, and the waterfront nodes on both sides of Mamquam

Blind Channel. Ultimately, allocating street space for protected bike lanes institutionalizes an active travel network for residents (Figure 14). Still adhering to the 20m ROW, removing on-street parking allows the repurposing of street space for pedestrian-scale lighting, street trees and a furnishing zone with seating north of Victoria street. The proposed 1.8m separated uni-directional bicycle lane on either side of Victoria Street is identified as best practice in the DoS *Active Transportation Plan* (DoS, 2016b, p.g.95). Though two uni-directional separated bicycle lanes are proposed, there is street space for the bi-directional vehicular lanes to remain with the caveat that they are narrowed to an acceptable 3m each to further traffic calm the vehicle throughway. South of Victoria Street, a bioswale is proposed adjacent to the bike lane to collect rainwater. In accordance with the CCAP's Big Move 2 strategy to improve active transportation and its associated action that suggests the enhancement of

streets to consider active transportation, environmental values, and stormwater management (DoS, 2019a). A furnishing zone can be added to improve the current low number of bike parking available along Victoria Street. Additionally, benches added in the frontage zones to encourage pedestrian lingering and to provide additional seating and places of rest for those walking to and from the pedestrian bridge.

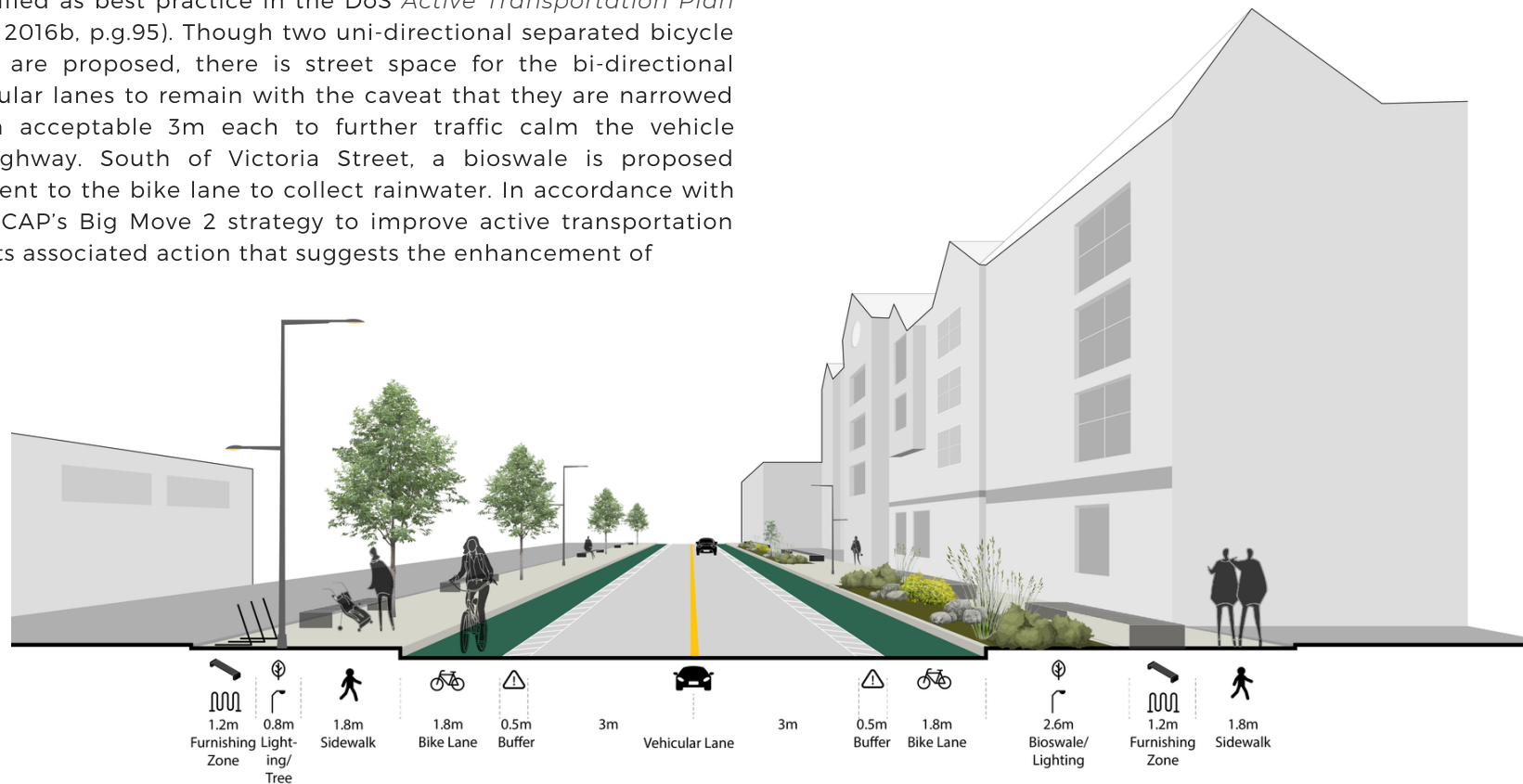


Figure 13. Technical specifications for uni-directional bike lanes and widened pedestrian thoroughways on both sides of Victoria Street are in accordance with DoS' 20m ROW (see Appendix I for design specifications and rationale)



Figure 14. Looking south on Victoria Street at 3rd Avenue. The added furnishing zones provide opportunities to increase bicycle parking facilities, seating for pedestrians, and a bioswale in advancing Victoria Street as a Future Neighbourhood Way as part of DoS' Downtown Open Spaces Plan (OCP Development Permit Area 5 Guidelines).

B9. Construct an Active Transportation Corridor along Loggers Lane (Long)

Loggers Lane is the major throughway for large vehicles and trucks in Squamish and is expected to remain the primary access to the Oceanfront peninsula. The continuous development of high-density residential buildings and the imminent completion of the pedestrian bridge means this throughway is expected to serve even higher traffic volumes in the near future. Changes need to be made to ensure Loggers Lane can keep up with the growth and continue to be welcoming to residents and pedestrians accessing the waterfront with or without a car. In addition to the width of the vehicle travel lanes, there is angle parking in excess on both east and west of Loggers Lane. This spread of pavement amplifies the run-off of rainwater and there is tremendous opportunity to transition to a more climate-friendly solution. This division in the form of parked cars further reduces the human-scale of the street and is a visual cue for motorists to drive at high speeds, next to the many residential properties along the corridor. There are currently no sidewalks on either side of Loggers Lane, creating an unpleasant and unsafe pedestrian environment for those accessing the waterfront node on Winnipeg Street behind the residential properties (OCP Development Permit Area 5 Guidelines).

There is a great opportunity to transition Loggers Lane from a "car only" to, at minimum, a "car equal" corridor. Space can be allocated to create a positive pedestrian experience. The team proposes removing the pavement for car parking on both sides of Loggers Lane to allow for the introduction of a sidewalk wide enough for pedestrians to enjoy side-by-side (Figure 15). This is also applicable to people who use wheelchairs, as the 2m wide sidewalk on each side of the road allows two wheelchairs to pass or roll side-by-side. Adjacent to the pedestrian throughway,

benches, and pedestrian scale lighting installed in the furnishing zone turns Loggers Lane into a place to linger. Removing the pavement for parking also makes way for a bioswale to absorb stormwater and reduce the urban heat island effect, which is in line with the overarching scope of climate change mitigation in the CCAP. Similar to the intervention proposed at Victoria Street and 3rd Avenue, the creation of a bioswale along Loggers Lane is in accordance with the action to enhance streets with ditches that considers active transportation, environmental values and stormwater management (DoS, 2020a). Though narrowed, the vehicle lanes still abide by the DoS *Subdivision and Development Control Bylaw No. 2649*, requiring a minimum 3m lane width for a local street (DoS, 2018). Cleveland Avenue currently has sharrows, which means bicycles share the same throughway as motor vehicles. Creating an above-standard protected bi-directional bike lane offers safer bike access in Downtown Squamish that is not on the high-traffic main throughway that is Cleveland Avenue, which currently has sharrows and bicycles have to share the same throughway as motor vehicles. The protected bike lane will be 4m wide with a 0.9m buffer from the vehicular lane as demarcated by a painted band supplemented with flexible bollards. Both the bike lane and buffer meet the design guidelines stated in the *BC Active Transportation Design Guide* (Ministry of Transportation and Infrastructure, 2019). The furnishing zone west of Loggers Lane can also host bicycle parking as well as parking and storage for alternative modes of micromobility that could be introduced to Squamish in the near future (Figure 16). Overall, the proposed active transportation corridor is in line with the CCAP Big Move 2 vision statement that envisions active transportation and transit as the preferred modes of travel to and within Squamish (DoS, 2020a).

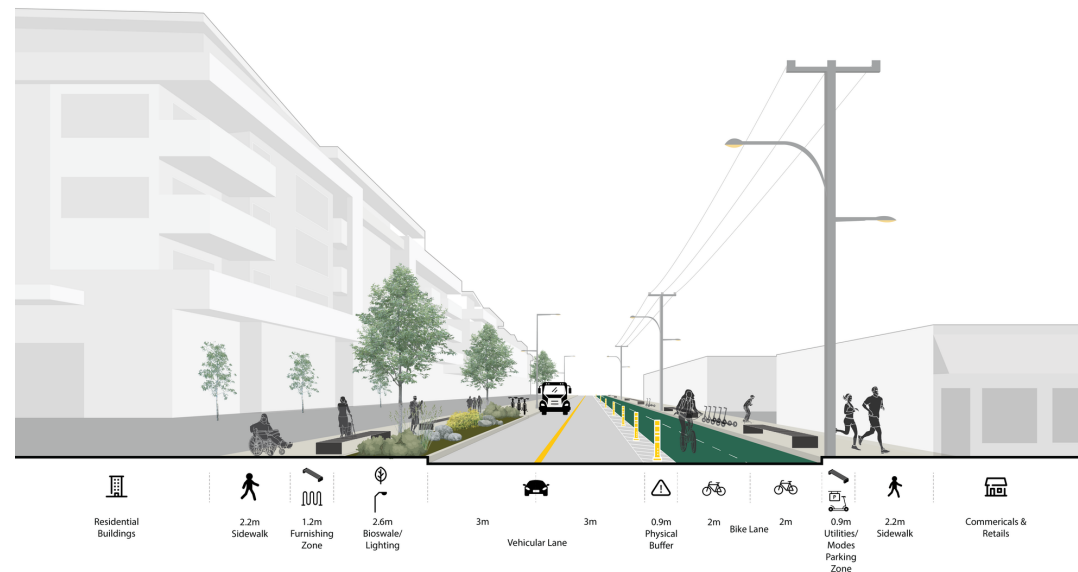


Figure 15. Technical specification for an active transportation corridor along Loggers Lane aligns with DoS' 20m ROW
(see Appendix I for design specifications and rationale)



Figure 16. Looking south on Loggers Lane at Winnipeg Street. A bioswale separates the residential properties from vehicular noise and traffic, and a bi-directional bike lane on the west provides access for residents along the corridor.

C. Implement additional TDM strategies in concurrence with parking reform

C10. Expand the existing carshare program as a transitional strategy (Short)

Policy Follow-up: DoS Parking Strategy 2016-2020

Action: Encourage car share programs

Who: District

When: 2016

How: Operational and Ongoing

Notes: Could be undertaken specifically or generally.

While carsharing as a best practice model does not itself promote *Moving Beyond the Car*, given its emphasis on vehicular reliance, it can be used as a transitional strategy to discourage car ownership and increase efficiency of parking structures in Downtown Squamish. Research has also found that carsharing can lead to reductions in GHG emissions and can encourage users to traverse with other sustainable options (transit, walking, cycling) in conjunction with carsharing (Martin & Shaheen, 2011). In alignment with DoS' CCAP and OCP policies that support carsharing, the team recommends Squamish expand their existing carshare program by partnering with other carsharing companies. Alternatively, DoS may include carsharing as a required community contribution from developers in replacement of parking requirements. These partnerships could also explore options such as adjustable pricing rates, additional

vehicle options, and a wider radius of availability beyond downtown to appeal to a greater diversity of users including residents and tourists.

C11. Provide transit free of charge for riders 18 and under (Short)

Existing transit services in Squamish for riders 12 and under are free of charge as well as summer weekends for all riders. The team recommends that this be expanded to allow riders under the age of 18 to use transit free of charge to create lifelong transit users. Research has found that exposure to transit during youth can lead to an “auto-light lifestyle” as well as more pronounced transit usage later in life (Smart & Klein, 2017). Cities such as Victoria, BC as well as Kingston, ON have implemented free transit for youth (18 and under in Victoria and 14 and under in Kingston) and have found great success (Bailey, 2019). The monthly youth bus pass (age 13-18) cost in Squamish is \$20 with a single cash boarding fare being \$2 (BC Transit, n.d.). As of 2016, there were 1,815 youth (ages 10-19 based on Census data) residing in Squamish (Statistics Canada, 2017a). Given that student ridership has been low in previous years (44.1% based on trends from 1991-2006) there is an opportunity for these youth bus passes to be subsidized (UMA Engineering, 2008).

City of Victoria Case Study

The City of Victoria implemented their Youth U-PASS pilot program in December of 2019 which allows youth between the ages of 13-18 to travel free of charge on the Victoria Regional Transit System which is operated by the Victoria Regional Transit Commission (VRTC) and BC Transit (note

that bus fares for youth 12 and under were lifted on BC Transit in 2021) (Bailey, 2019; Crescenzi, 2020). This program originated as a monthly pass pilot and has now evolved to be an annual pass system (City of Victoria, 2020). Youth between the ages of 13-18 can apply for this pass on the upass.victoria.ca website or at City Hall by providing government-issued identification. The pass is then sent in the mail after which youth can use it for the calendar year within the VRTC (including Handi-Dart services) (City of Victoria, n.d. -b).

Prior to implementation of the program, monthly youth passes were \$45/month (Egan-Elliott, 2019). To subsidize these passes, the City of Victoria has been using funds from Sunday street parking fees in downtown which were implemented in May of 2019. It was anticipated that the City would generate between \$600,000 to \$1 Million in fee revenue of which they would pay \$850,000 (\$11.25 per youth/month) to BC Transit for these passes (Bailey, 2019). Due to the pandemic however, these fees were much lower than anticipated and therefore funding from a contingency budget was also utilized (City of Victoria, 2020).

In terms of uptake, the City found between December to March of 2019, about 2,367 passes were collected per month. In the duration of the pilot from December 2019 to August 2020, the City was paying \$81,000 per month to BC Transit for all 7,200 youth in the city (despite the

fact that many passes were remaining unclaimed) (City of Victoria, 2020). However the City did not pay any fees between March to May of 2020 as BC Transit was offering free transit for all in the midst of the pandemic. The City has transitioned from paying a monthly \$81,000 to \$11.25/month per youth for a minimum of 4,000 youth for the calendar year (with this number to be updated every 4 months) (City of Victoria, 2020).

C12. Improve signage for private regional transit (Short)

The Squamish Connector as the private regional daily transit shuttle moving between Squamish and Vancouver, provides numerous pick-up and drop-off locations for riders to travel between jurisdictions. While these locations are detailed on their website, there is no existing wayfinding signage to signal this at either the Downtown Squamish or Vancouver pick-up and drop-off points. The team recommends that such signage be implemented. While the provision of this signage does not explicitly fall within the DoS' jurisdiction, it would assist in the CCAP's broader goals to "shift beyond the car" by encouraging high-occupancy travel options like the Squamish Connector, and making wayfinding much more visible and accessible for residents and visitors.

CONCLUSION

With the urgency of the climate crisis, compounded by significant development and population growth, the DoS is set to contend with a multitude of challenges and opportunities, one of which is to guide Squamish towards a low carbon future. As vehicular GHG emissions are cited as one of the highest sources of community emissions in Squamish, DoS' CCAP purports Big Move 2 "shift beyond the car" to address this challenge as well as to move the District beyond its current car-enabling urban form, and consider more alternative and sustainable modes of transportation. This report addresses Big Move 2 through a series of curated, comprehensive and incremental TDM strategies with a focus on parking management. Acknowledging *Moving Beyond the Car* is much more than parking management, this report also provides recommendations and visualizations that offer a glimpse of a "car last" or "car free" Squamish. These products build upon the existing action items as outlined in the CCAP, by considering a series of national and international case studies, best practices, and leading literature and to what extent they are feasible in the context of Squamish. Through this work it is exceedingly apparent that immediate action is required, as current land-use and transportation management will continue to promote urban sprawl, an oversupply of parking, and a lack of active transportation infrastructure. This curated response to the climate crisis is urgently needed to build a resilient future that directly prioritizes a sustainable, equitable and healthy Squamish for its community and visitors to live and move.

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APPENDIX A

DOWNTOWN SQUAMISH SWOT ANALYSIS

DOWNTOWN SQUAMISH SWOT ANALYSIS

Strengths

Compact

- Downtown Squamish is relatively compact, which not only reduces the walking distance for those unable to find parking immediately adjacent to their intended destination, but also provides an opportunity to enhance active transportation infrastructure.
- Downtown Walk Score®: [67/100](#)*, i.e., some errands can be accomplished on foot.
- Downtown Bike Score: [88/100](#)*, i.e., biking is convenient for most trips.

Key Destination

- Downtown Squamish is a key destination for both residents and visitors as a central hub for retail, food, hospitality, services, and amenities.

Regulatory Framework

- Strong commitments and strategies related to transportation have been established by the District of Squamish through the Community Climate Action Plan (CCAP).
- The majority of publicly available parking in Downtown Squamish is municipally managed, which eliminates potential hurdles for introducing new parking strategies.

Weaknesses

Connectivity

- There is a limited connection between Downtown and the remaining neighbourhoods in Squamish, with only one bridge connecting Downtown to the Sea-to-Sky Highway.
- Walk Score® for the entirety of Squamish is only [22/100](#)*, creating barriers to modal shift for non-Downtown residents and visitors.

Parking

- Lenient parking enforcement leading to a cycle of non-compliance, e.g., unauthorized parking along Cleveland Avenue at Main Street.
- Free parking for residents and visitors puts the cost of parking on the District and/or developers.
- There are limited opportunities to expand existing parking facilities due to floodplain construction levels and funding availability.

Limited Data

- Outdated and/or limited data for Downtown Squamish, including shifts in transportation patterns resulting from COVID-19.
- Downtown Squamish experiences seasonal parking demand fluctuations, which can construe the perception of parking issues.

Opportunities	Threats
Development • Growth and redevelopment in Downtown Squamish may present opportunities for the private sector to incorporate public paid parking within future development. • Future development can support the introduction of new transportation demand management (TDM) strategies such as paid parking, active transportation improvements and transit service expansion. Transit Planning • The District of Squamish, in partnership with BC Transit, is in the process of developing the Squamish Transit Future Action Plan (in progress). Progressive Government • The District of Squamish staff and Mayor and Council have a sustainable, future-focused vision for the community, which provides opportunity for new strategies and innovations to be implemented.	Climate Change • Location on a floodplain exposes Downtown to flood and debris flow hazards from nearby channels (e.g. Mamquam Blind Channel) and coastal waters (e.g. Howe Sound). • The effects of climate change increases the risk of infectious disease occurrence Population Growth • Population growth is projected in Squamish, which may exacerbate parking demand pressures. • Development in Waterfront Landing may result in increased parking demand, which once capacity is reached, may spill into the Downtown parking area and exacerbate demand pressures if modal shifts do not materialize. Funding • As a small, but growing community, the District of Squamish has limited financial resources, especially following the COVID-19 pandemic.

**Walk Score® methodology combines 3 elements: the shortest distance to a group of preselected destinations (such as commerce/services, e.g. public transport, restaurants, shopping, parks/green spaces, and schools), the block length, and the intersection density around the origin (Hall and Ram, 2018, p. 311). While Walk Score® is increasingly being used in studies of active transportation and walkability, it does not replace site-specific transportation analysis.*

APPENDIX B

POLICY AND LITERATURE REVIEW FINDINGS

POLICY REVIEW

EXISTING REGULATORY FRAMEWORK

The District of Squamish has an extensive existing inventory of regulations, policies, and strategies that promote *Moving Beyond the Car*. As such, Phase 1 of this project consisted of a comprehensive review of such documents in order to provide a framework for this research and to avoid repetition in future recommendations. These regulations, policies, and strategies are listed on the following page in reverse chronological order (newest to oldest).

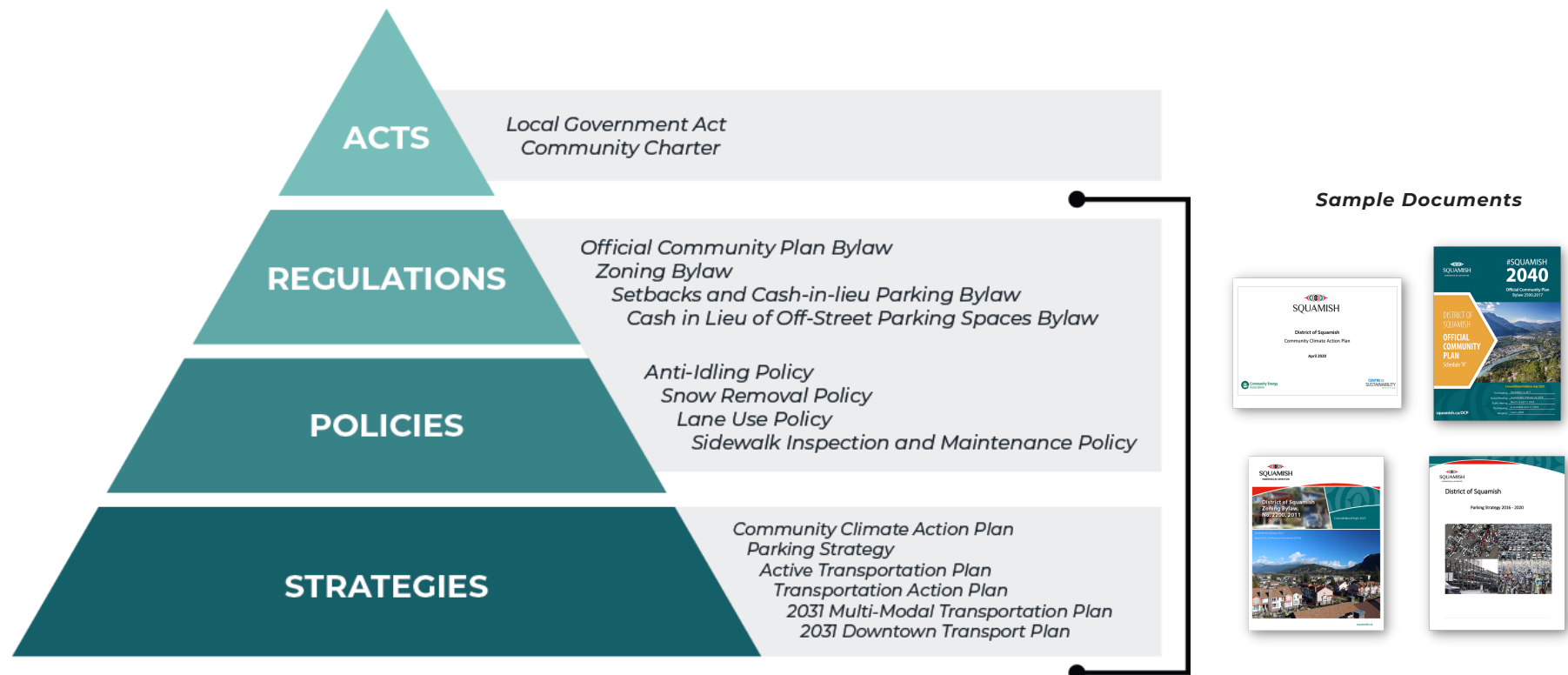


Figure: Squamish Regulatory Framework

REGULATIONS

Zoning Bylaw 2200 (2011 - Consolidated Oct 2021)

Squamish's Zoning Bylaw discusses parking and active transportation requirements in a series of different sections. Section 4, specifically requires "active transportation setbacks" on parcels with frontage along certain sections of Third and Pemberton Avenue in order to provide more space between buildings and streets for active transportation uses.

Section 41 then addresses requirements around off-street parking. 41.2 (c) highlights the Cash in Lieu of Parking Bylaw No. 2553, 2017 that allows land owners to pay \$15,000 (with the revenue going towards the District's Municipal Off-street Parking Facilities Reserve Fund) per off-street parking space in lieu of providing off-street parking for a maximum of four parking spaces, unless commercial off-street parking is provided on-site, then the amount of eligible cash-in -lieu spaces shall increase by one space for every one commercial space provided on site. Section 41 further details minimum off-street parking requirements and minimum and maximum off-street bicycling requirements based on specific buildings and uses.

Squamish 2040 - Official Community Plan Bylaw 2500 (2017)

Adopted in 2018, Squamish's OCP provides a vision for the future of Squamish for 2040 that is guided by five goals that aim for Squamish to be resilient, healthy, connected, liveable, and engaged. Through these goals, the OCP consists of several policies pertaining directly to parking and an integrative approach to transportation. These policies discuss parking demand in relation to increased visitation, parking infrastructure efficiency, mode shifts, reduced parking requirements in the Downtown, paid parking, hierarchical prioritization of active transportation modes, and more.

POLICIES

Through this research, several bylaw enforcement and administrative policies were also reviewed, including the District's Anti-Idling Policy, the Snow Removal Policy, the Lane Use Policy, and the Sidewalk Inspection and Maintenance Policy. These policies discuss specific guidelines related to reducing GHG emissions and ensuring that lanes as well as sidewalks are maintained for active transportation uses. Policies of this type provide a framework for Council and staff to consistently evaluate enforcement processes to ensure efficient use of municipal resources (Ombudsperson BC, 2016).

STRATEGIES

Public Engagement Summary Report - Squamish Transit Future Action Plan (2021)

BC Transit and the District of Squamish are in the process of developing a Transit Future Action Plan which has undergone engagement. The purpose of this plan is to identify a series of temporal service and infrastructure priorities for the future of the transit system while also identifying the influence of COVID-19 on the system as well as ridership. Key findings included the reduction in ridership as a result of COVID-19, a series of barriers faced by non-transit users in using transit, and some recommendations around prioritizing certain routes and/or neighbourhoods. When asked about the implementation of pay-parking on commercial streets to dis-incentivize private vehicle use, with the funds going to transit improvements, 33% of respondents indicated that they either agreed or strongly agreed, while 50% either disagreed or strongly disagreed.

District of Squamish Community Climate Action Plan (CCAP) (2020).

As highlighted above, in April 2020 the CCAP was approved by Council in 2020, following Squamish's climate emergency declaration in 2019. The CCAP strives to reduce community greenhouse gas emissions by 45% from 2010 levels by 2030, in order to achieve net carbon neutrality by 2050. The CCAP is organized into six "Big Moves", each with their own strategies and corresponding actions. Big Move 2 calls for a "Shift Beyond the Car" with specific strategies and subsequent action items related to improving active transportation and public transit and working to promote mode shifts through considerations around parking.

District of Squamish Downtown Parking Study (2017).

A 2017 parking study by ISL engineering in Squamish's downtown resulted in a parking inventory and utilization, duration, and turnover survey as well as a bike parking inventory survey in the downtown core. When it was released, the study concluded that there was not a parking problem in the district but provided a series of on-street and off-street improvement recommendations based on anticipated future demand. On-street recommendations included parking regulation changes (i.e. reduction of parking limits from 2 to 1 hours), parking configuration moderations (i.e. angle parking provision to maximize optimize space), and the introduction of pay parking. Off-street recommendations included: improved wayfinding information, the introduction of a development permit parking bylaw, and exploring the possibility of an off-street parking structure.

District of Squamish Parking Strategy 2016-2020 (2016).

The District's 2016-2020 parking strategy references redevelopment and increased tourist visitation as concerns around the demand for parking, particularly in the downtown area

as well as near trailheads. It recognizes the need to balance this demand and business concerns with Squamish's sustainable transportation priorities and to ensure that this demand does not lead to an oversupply of parking. The strategy consists of a series of objectives, targets, and actions addressing parking information, downtown parking, recreational parking, and commuter parking.

District of Squamish Active Transportation Plan (2016).

Adopted in 2016, the Active Transportation Plan (the "ATP") identified issues that prevent the prevalence of active travel options in Squamish. This includes the lack of sidewalks especially alongside Government Road and Loggers Lane, insufficient street/trail lighting, limited direct transit routes to destinations in Squamish, and traffic safety concerns with intersections along Cleveland Avenue. In response, the ATP developed five strategies - connectivity, safety and security, maintenance and accessibility, growth and amenities, education and awareness in the hope of increasing transportation choices within the community and to provide an accessible, sustainable, and efficient transportation system for all users.

Transportation Action Plan (2012).

The 2012 Transportation Action Plan emerged from a strategic planning retreat led by Council, which identified transportation as a priority issue. This plan included a series of goals in providing alternative transportation options through 1) implementing transit improvements; 2) local transportation enhancements; and 3) developing a regional transportation study. In order to implement the deliverables associated with these goals, the plan identified the need to develop a Transportation Working Group, hire a Transportation Planner, and regular engagement with Council.

2031 District Wide Multi-Modal Transportation Study (2011)

Commissioned in 2010, Opus International Consultants, prepared this multi-modal study to support the then 2009 OCP Community Vision. This study addressed the highway interface and regional transportation, local networks, and commercial transport in order to provide a framework for the future of transportation infrastructure over 20 years in Squamish. The study provided a series of recommendations relating to the aforementioned topics of which some pertain to park and ride sites, evaluation of bicycle and pedestrian routes, identifying and managing wildlife corridors in conjunction with resident travel patterns, the introduction of parking maximums and paid parking, and many more.

Transportation Options for Squamish-Metro Vancouver Corridor (2009)

This report conducted by AECOM, examines current commuting options as well as current and anticipatory demand for a commuter system between Squamish and Metro Vancouver. The report provided a series of recommendations on developing a commuter service and subsidy program to reduce fares as well as forming funding partnerships between the District, BC Transit, and TransLink.

Downtown Squamish 2031 Transport Plan (2009)

Developed by Creative Transportation Solutions Ltd., ISL Engineering & Land Services Ltd., and PTV America, this transport plan was intended to provide a framework for the future transportation network amidst redevelopment and prioritization of Smart Growth principles. The work for this plan entailed testing a baseline scenario, as well as a series of potential road network improvement scenarios in the downtown area. The plan also resulted in a series of network recommendations and targets

to reduce trips made by automobile, increase trips made by modes of active transportation, increase local jobs, and reduce number of residential units.

LITERATURE REVIEW

In transportation planning, the term Transportation Demand Management (TDM) is often used to describe “a broad range of policies, programs and services designed to reduce the demand for vehicle use by influencing individual travel behaviour and providing expanded options” (FBC, 2009). TDM encompasses a broad range of benefits, which will be further detailed later in this report. For the purpose of this project, the TDM strategies this report has focused on for preliminary findings are those aimed at disincentivizing private vehicle travel, such as parking management, and incentivizing alternate transportation modes, including but not limited to, improvements in active transportation infrastructure, public transit servicing, and ride-sharing.

As is clear in the District of Squamish’s CCAP, the goal of *Moving Beyond the Car* must encompass a broad range of strategies and actions. Disincentivizing strategies, such as parking management, must be implemented alongside incentivizing strategies that encourage residents to reduce private vehicle use as their primary mode of transportation. Some advocates of parking management believe that efficient and strategic parking management is the quickest, most cost-effective and politically-feasible way to achieve many social, economic, and environmental goals (Shoup, 2019). Weinberger (2020) argues that “there is no demand for parking per se, there is demand for access to destinations” (p. 201). When free and under-paid parking makes driving the only, or the best, option, the demand for access translates directly to demand for parking. Figure 6 illustrates this relationship through the cycle of automobile dependency. The following sections will provide an in-depth review of our literature findings as it relates to parking management and TDM more broadly.

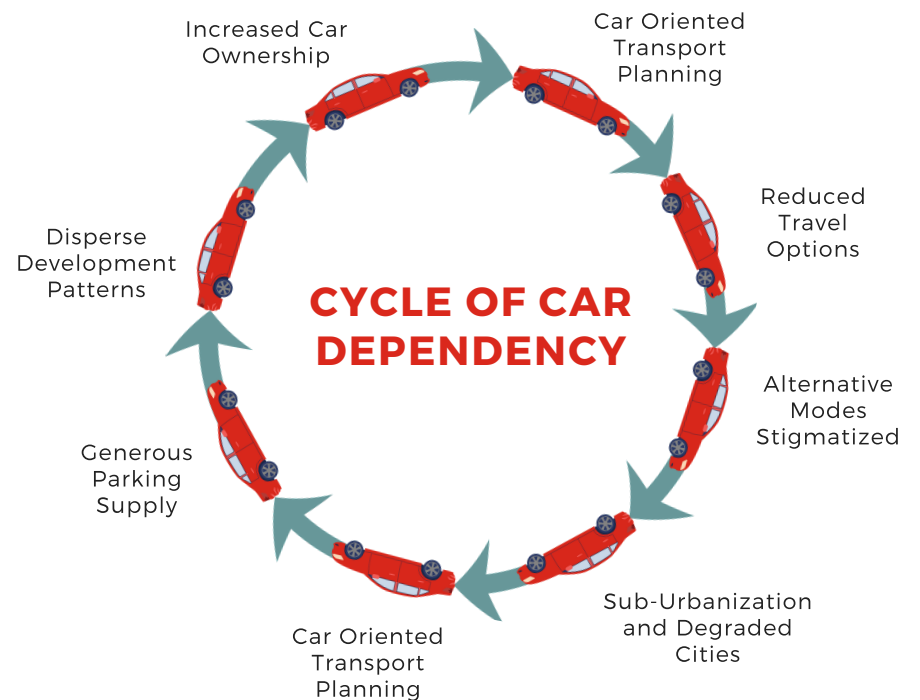


Figure: Cycle of Car Dependency
(Adapted from Litman, 2021a)

PARKING MANAGEMENT ADVOCATES & APPROACHES

In current literature, there are many advocates and approaches of parking management and reform. A name often heard is Donald Shoup, a Distinguished Professor of urban planning at UCLA, author of *High Cost of Free Parking*, *Parking and the City* and countless articles. He laments the number of space municipalities and urban planners has invested into providing free parking, and highlights the inaccuracies of relying on the Institute of Transportation Engineers' (ITE) *Trip Generation* and *Parking Generation* for parking standards. Eran Ben-Joseph, professor of landscape architecture and planning at MIT, echoes Shoup's stance on the overreliance on ITE's standards that have created an excess of parking supply in both residential and commercial areas (Ben-Joseph, 2012). This oversupply is largely due to the demand rates from *Parking Generation* which are derived from only surveying peak parking demand at sites with free parking and no transit service (Shoup, 2005, p. 60). These rates are then institutionalized by parking minimums set and required by municipalities. These parking requirements inflate the demand for cars, and the use of cars then increases the parking requirements (Shoup, 2018, Ch. 2). This cyclical demand has led to an exorbitant supply of parking, driving the price of parking down to 'free'. With this misconception that parking is free, these required parking minimums have created a social standard where everyone prefers to drive because driving offers the best value. This value comes at a cost that does not fall to vehicle owners, but is spread out over a system that includes private developers and the public.

Additional problems of this ample supply of parking and car-centric culture include increased traffic congestion, energy consumption, degraded design, urban sprawl and high

opportunity cost for land that could have been used for something other than parking space (Shoup, 2018, Ch. 2). The costs of these problems are then absorbed by the municipality and its ratepayers, and by cyclists and pedestrians even though they are not the ones consuming the parking (Shoup, 2005; Ben-Joseph, 2015). The provision of such parking spaces is also quite expensive with a study in the US predicting a range between \$24,000 per spot for aboveground parking and \$34,000 per spot for underground parking (Shoup, 2020). Oftentimes, this financial cost is then reflected in higher residential units costs which are subsumed by the consumer (Weinburger, 2020). Despite this oversupply, the cultural and psychological perception is typically the contrary – that there is not enough parking.

Based on these issues and the ubiquitous culture of free parking in North America, Shoup's ideologies boil down to three recommendations:

1. Remove off-street parking requirements
2. Charge the right prices for on-street parking
3. Spend parking revenue to improve public services on metered streets

Rather than reactively and incorrectly supplying parking as automobile-enabling infrastructure, which transportation engineers and planners have historically done, it has been evidently proved that the prosperity, safety, health, walkability, and pleasure of a community are often positively correlated with performance pricing of parking that "clear the market" and prevent the "overuse of scarce infrastructure" (Shoup, 2018; Manville and Chatman, 2014). Shoup suggests implementing "parking benefit

districts” where some or all of the parking revenue would return directly to the community where the parking meter is located. This creates a way for locals to charge outsiders and collect benefits from on-street parking. It is fairer to directly charge drivers for parking than forcing everyone to indirectly pay for it downstream. Doing so is a more equitable approach, as low-income residents are less likely to own cars and should not have to pay for residents who do. Shoup also suggests that subsidies can be used for low-income residents using on-street parking but such a subsidy should be matched for low-income residents who use active transportation - “the subsidy should be for people, not parking” (Shoup, 2021).

Environmental costs must also be considered; a one-acre parking lot produces almost 16 times the volume of runoff as that of a similar-sized meadow (Ben-Joseph, 2015, p. 32). This increased volume of surface water from runoff impacts the shape of stream channels by increasing the erosion of naturally vegetated edges, created collection of debris and increasing pollutants by oils, metals and other elements that may also impact the supply of potable water (Ben-Joseph, 2015, p. 32; Puget Sound Regional Council, 2014). Another detriment is that a paved lot also prevents recharge of the underlying aquifer (Ben-Joseph, 2015, p. 32). The construction of parking lots requires water removal infrastructure to the nearest stream via an engineered piping system, but it must be noted that the intake of this water to the stream accelerates flooding and erosion. (Ben-Joseph, 2015, p. 33). Aside from effects on the water supply, the pavement from parking accumulates heat and this network of paved areas creates a network of urban heat islands that are significantly hotter than vegetated areas (Ben-Joseph, 2015, p. 33).

Energy costs must be considered, as parking lots raise the amount

of carbon dioxide emitted per mile and increase the concentration of gases such as sulfur by 25% and soot as much as 90% (Ben-Joseph, 2015, p. 32). It is evident that providing parking space is not only financially costly, but comes with tremendous social costs as well. Ben-Joseph (2015, p. 136) states it is time to consider parking lots as more than “just repositories for stationary vehicles”.

Paul Barter, an Adjunct Associate Professor of infrastructure and transport policy at National University of Singapore provides broader international additions to Shoup’s proposals. Barter’s package of parking reform agenda is collectively called Adaptive Parking and uses the acronym RESPOn(D):

- *R*: Relax about parking supply and stop boasting it
- *E*: Engage with key stakeholders to ease their fears and offer value
- *S*: Share parking more, aim to make most of it open to the public
- *P*: Price parking in the right ways and with the right rates for each place and time
- *On*: On-street control of parking needs strong design and enforcement
- *D*: Discourage (or Demand management) by limiting parking supply in certain contexts

To add to Shoup’s requirement for priced parking, Barter proposes Adaptive Parking to make parking supply, prices and demand more responsive to each other (Barter, 2019a). However, this is not just the price of the parking itself, but could also apply to adjusting prices of residential parking permits so there is no waitlist. Adaptive Parking also supports Shoup’s third goal, that value should be created from parking space for the benefit of local residents, business owners and society in general (Barter, 2019a).

Paul Barter has also completed extensive research on parking policy in Asian cities that are characterized by rapid urbanization, rapid motorization, and extremely high densities. Despite these differences with North American cities characterized by high car ownership, Barter Asians cities utilize strategies of three categories: conventional parking policies such as parking minimums, parking management such as constraint of parking supply, and market-based approaches that balance supply and demand based on market prices. Barter notes, similarly with North American cities, conventional strategies have led to traffic and congestion problems, and parking management and market-based approaches that create the walkable neighbourhoods in Japan, for example, should be emulated (Barter, 2019b).

A study into parking policy in Europe by Kodransky & Hermann (2011) investigated the successful turnaround of high parking demand sparked by climbing post-war car ownership into the return of road and street space to pedestrians and users of active transportation. Similar to North America, on-street parking in Europe is governed by municipal or district policy, and off-street parking is generally controlled through zoning and building regulations.

In the 1960's and 1970's, after many attempts to fulfill constant demand for car parking, European cities began to realize "parking supply was part of a system-wide policy mismatch that contributed to traffic congestion" and realized, when put to use, parking management can be a tool to achieve social goals that are economical and equitable (Kodransky & Hermann, 2011, p. 11). The four categories of parking management used in Europe were: economic mechanisms, regulatory mechanisms, physical design, and quality of service contracting and technologies. All ten cities studied implemented economic mechanisms such as curbside

charges, regulatory mechanisms such as regulated parking minimums, and implemented pay-by-phone technologies (Kodransky & Hermann, 2011).

TYPES OF PARKING MANAGEMENT

The listed established advocates and scholars have developed a compilation of parking management strategies. The numerous strategies are listed below and are a combined adaptation from the strategies from Victoria Transport Policy Institute (VTPI) (Litman, 2021a) and the Institute for Transportation and Development Policy (ITDP) (Kodransky & Hermann, 2011).

Table 1. Parking management strategies and their descriptions *(Adapted from VTPI and ITDP)*

Parking Management Strategy	Details
Economic Mechanisms	
Parking pricing	Charge motorists directly and efficiently for using parking facilities
Improving pricing methods	Use better charging techniques to make pricing more convenience and cost effective
Emissions-based parking charges	Varying parking charges based on the CO2 emission levels of vehicles at time of registration
Workplace levy	Impose an annual tax on companies for each parking space they provide for employees
Earmarking/Ring fencing	Revenue generated from parking fees goes to support sustainable transport goals
Parking tax reform	Change tax policies to support parking management objectives
Unbundle parking	Rent or sell parking facilities separate from building space
Financial incentives	Provide financial incentives to shift mode such as parking cash out.
Regulatory Mechanisms	
Shared parking	Parking spaces service multiple users and destinations
Parking regulations	Regulations favour higher-value uses such as service vehicles, deliveries, customers, quick errands, and people with special needs
Reduced and more accurate and flexible minimums	Adjust parking standards to more accurate reflect demand in a particular situation
Reduce residential street width requirements	Adjust parking requirements to limit amount of “free” on-street parking
Parking maximums	Establish maximum parking standards
Parking supply caps	Freeze existing parking supply, and use cap-and-trade such that when a new space is built off-street, an on-street space has to be removed
Improve enforcement and control	Improve control of parking enforcement to increase turnover and ensure long-term users do not occupy short-term spaces

Table 1 cont'd. Parking management strategies and their descriptions *(Adapted from VTPI and ITDP)*

Parking Management Strategy	Details
Modal Mechanisms	
Walking and bicycling improvements	Improve walking and cycling conditions to expand the range of destinations serviced by a parking facility
Mobility management	Encourage more efficient travel patterns, including changes in mode, timing, destination and vehicle trip frequency
Smart growth	Encourage more compact, mixed, multi-modal development to allow more parking sharing and use of alternative modes
Ridesharing, ride-hailing implications	Improve the availability and integration of ridesharing services to reduce demand for vehicle storage,
Public transit improvements	Improve public transit to reduce reliance on private vehicle usage
Bicycle parking and changing facilities	Short-term and long-term bike parking and facilities to encourage use of bicycles for mode of transportation
Design Mechanisms	
Bollards/Barriers	Barriers to prevent cars from parking in pedestrian paths and public plazas/space
Striped Lines	Use to mark reserved spaces for vehicles with disability privileges. Not advised to delineate on-street parking, to encourage smaller vehicles to squeeze into street space
Street geometry	Strategically arranging existing parking spaces to make other street users more comfortable
Improving user information and marketing	Wayfinding and signage to guide visitors to additional parking options
Improve parking facility design and operation	Improving physical layout and day-to-day management to address various problems such as accessibility and circulation
Service and Technology Mechanisms	
Transportation management associations and parking brokerage	Private, non-profit, member-controlled organizations that provide transportation and parking management services in a particular area to local businesses and residents
Electronic parking guidance systems	Real-time message boards to direct drivers into nearby parking facilities to decrease search time
Pay-by-phone	Implement electronic mobile payments so patrons do not have to pay at a physical meter, and can be outsourced to a third-party vendor, allowing for competition
Smart meters	Use of magnetic induction to recognize metal mass of vehicles, enforcement and drivers receive an alert on mobile phones when meter expires
Scan cars	Digitizing license plate registrations and using a scan car to monitor parking compliance

PARKING MANAGEMENT BENEFITS

The following section has been adapted from the Online Transportation Demand Management (TDM) Encyclopedia compiled by the Victoria Transport Policy Institute (VTPI, 2018b).

Efficiency and savings - As parking is one of the largest transportation costs, reducing parking requirements can increase cost savings and improve consumer affordability. Combining several strategies (Table 1) can have synergistic effects on the magnitude of costs and efficiency. Effective parking strategies ensure there is an adequate supply with existing parking, and payment is made directly by the users of the parking space (VTPI, 2018b).

Reduced automobile use - Managing parking is a promising way to reduce vehicular traffic by reducing total automobile trips up to 30% (VTPI, 2018b). This reduction may be increased if combined with other strategies. Less automobile trips means decreased congestions, road maintenance costs, risk of accidents, emissions and increase in multimodality.

Improved design - Strict parking requirements such as high minimums reduce development and design flexibility. Appropriate parking management therefore grants developers and designers increased control over land use in order to create higher density and attractive urban areas. This is particularly true for infill development in areas with high land costs (VTPI, 2018b).

Business impacts - Challengers of parking restrictions argue it will reduce business activity in the area, but if parking revenues are invested back in the municipality, such as in improving street or transportation infrastructure, it will directly benefit and increase business activity in that area (VTPI, 2018b).

Reduced environmental impacts - As discussed previously, pavement and the takeover of land for parking space can result in tremendous environmental costs. Controlling this takeover means reducing urban sprawl and mitigating these environmental impacts (Wilson, 2015).

EQUITY IN TDM

The effects of transportation planning and management on equity are numerous. As mentioned by the advocates of parking management, the social and environmental costs of car-ownership and dependency are not paid by the owners and drivers, but by the municipality and ratepayers. Not everyone drives, but everyone has to pay the price for those that do. Some individuals cannot drive, including those without a driver's license, those unable to drive due to a disability, low-income households burdened by vehicle costs, and some seniors (Litman, 2021b). Yet, car-centric neighbourhoods continue to disadvantage these groups, and promote car-centric infrastructure. As demonstrated by the cycle of automobile dependency, this leads to a further reduction in travel options and stigmatization of other modes of transit (Figure 6). It is therefore more equitable to implement TDM coupled with the bolstering of active transportation to help create multi-modal communities that can increase economic opportunity and economic mobility for disadvantaged populations (Litman, 2021b). These compact and connected communities can then reduce transportation costs for those who need it most, and reduce greenhouse gas emissions (BC Healthy Communities Society, 2020). Deprioritizing the car by reevaluating parking spaces can redistribute street space to alleviate social, health and environmental inequities.

APPENDIX C

CASE STUDY DIRECTORY

City	Population*	Characteristics**	Climate Action	Transportation Strategies	Parking Strategies
Squamish, BC	23,819	Average Age: 37.5 / Median Age: 37.8 Population Growth (2016-2021): 22.2% Average Household Size: 2.6 Climate: High precipitation; Moderate Economy: Recreation/Tourism; Education (Capilano University, Qwest University) Travel Behaviour: Car Dominant. Mode-split commute to work (2016) = 76% vehicle (driver); 9% vehicle (passenger); 3% transit; 7% walk; 4% bike; 2% other	Community Climate Action Plan (Apr 2020) - Big Move 1 Close the Loop on Waste: Divert organics, Capture landfill gas, reduce waste - Big Move 2: Shift Beyond the Car: Active Transportation and Transit - Big Move 3: Decarbonize Transportation: Zero or low carbon passenger, Medium- and heavy-duty vehicles - Big Move 4: Decarbonize Existing Buildings: Retrofits & Upgrades - Big Move 5: Construct Better Buildings: Zero and near zero-emission structures - Big Move 6: Organizational Actions: Laying the foundation	Squamish 2040 - Official Community Plan (Jun 2018) - Employ a hierarchy of transportation modes as a general approach to guide transportation decisions. Priority (in order): walking; cycling; transit; commercial vehicles; high-occupancy vehicles/taxi; then private automobile. Modes at the top of the hierarchy will not necessarily receive priority on every street; in some cases, users may be accommodated on a parallel or nearby route. - Establish alternative transportation funding sources to support walking, cycling, public transit, and other alternative transportation Squamish Transit Future Action Plan (In Progress) - Goals: Identification of short-term (0-5 years) service and infrastructure priorities for the system; Identification of medium- and long-term service and infrastructure priorities, including recommendations for phasing; Examination of the impact of COVID-19 on the Squamish Transit System and a discussion of strategies to address the pandemic's toll on ridership.)	Parking Strategy 2016-2020 (2016) - 4 component strategy (Parking Information; Downtown Parking; Recreational Parking; Commuter Parking) Squamish 2040 - Official Community Plan (Jun 2018) - Monitor Downtown parking inventory and utilization and secure a location for a shared parking facility as part of, or in close proximity to a multi-modal hub, rather than a proliferation of accessory lots. - Maintain reduced parking standards in the Downtown and continue to encourage shared parking facilities where feasible and appropriate, and where parking demand varies over the course of the day for different activities. - Explore options for paid parking and actively manage on-street parking through parking enforcement and education programs.
National Case Studies					
1 Canmore, AB	15,990	Average Age: 40.9 / Median Age: 41.4 Population Growth (2016-2021): 14.3% Average Household Size: 2.4 Climate: Variable Economy: Tourism and recreation Travel Behaviour: 58.41% of commutes with personal vehicle	Town of Canmore Climate Action Plan (Dec 2018) - 30% reduction of VKT from 2015 levels - 40% of trips within community through sustainable modes - 20% vehicles electric, all neighbourhoods capable of supporting EV charging - Significant number of fleet vehicles electric or hybrid - Developing complete neighbourhoods - Reviewing parking policy to align with climate goals	Town of Canmore Integrated Transportation Plan (Jun 2018) - Modal integration and accommodates road use by locals and tourists - Complete streets approach, with a target of 40% of trips taken by foot, bicycle, or bus on a summer day in 2030 - Goal of moving traffic and goods around Town Centre and people into Town Centre, including greater activation of Main Street - Emphasizes sustainable fare-free transit, improving bus stops, adding shelters and lighting, and improving pedestrian connectivity and accessibility	Town of Canmore Integrated Parking Management Plan (Jun 2018) - Found 85% of Town Centre open space dedicated to roads and parking facilities - Parking strategies have synergistic effects - Recommended: local transit implementation and doubled frequency of regional transit, bicycle parking stalls for events, on-street patios, paid parking, fare-free transit - In progress: Paid parking with revenue that will fund fare-free transit has been approved for implementation on Oct 5, 2021 for initiation in 2022 (delayed due to COVID-19)
2 Banff, AB	8,305	Average Age: 37.5 / Median Age: 35.2 Population Growth (2016-2021): 5.8% Average Household Size: 2.5 Climate: Variable Economy: Tourism and recreation Travel Behaviour: Summer - 45% walk, 30% private vehicle, 17% bicycle / Winter - 46% walk, 41% private vehicle, 2 % bicycle	Banff Environmental Master Plan (Jan 2019) - Balances tourism with environmental stewardship - Improve air quality through mode shift to active transportation and mass transit - Encourage investin in RQAM public transit and residents and visitor to use sustainable transportation year round - Development of new intercept parking lots to encourage visitors to leave cars at townsit e entrances - References Transportation plan for parking demand reduction - Continue to track vehicles-per-day at townsit e entrances, and pedestrian counting in downtown Banff using infrared trail counters	Town of Banff 2012 Transportation Master Plan Update (Aug 2013) - Heavy focus on parking capacity - Suggests use of intercept lots and paid parking to reduce demand in core	Comprehensive Parking Management Plan (Jun 2019) - Peak daytime occupancy exceeding 85% in downtown core and adjacent resident areas - Reduce parking pressures in residential neighbourhoods; priority to residential parking for residents; encourage off-street private stalls for residents; free up short term downtown parking stalls and displace commuter and long term parkers - Conducted enagement in 2020, initiation in Jul 2021 - Resident parking permit system (RPP) and downtown user pay parking (UPP) - Intercept parking at 3 locations on periphery of downtown - Revenue used to cover costs of RPP and UPP and enhance transportation-related services; payment using Blinkyay app
3 Jasper, AB	4,738	Average Age: 38.8 / Median Age: 37.1 Population Growth (2016-2021): 3.2% Average Household Size: 2.2 Climate: Variable Economy: Tourism and recreation Travel Behaviour: 57% of residents walk or cycle to work; no public transit network	Community Sustainability Plan (Sept 2011) - Guiding principle: Environment with goals to promote walking and cycling in Jasper; manage vehicle traffic and parking efficiently; support and promote affordable and accessible alternatives to private automobile for local travel in Jasper	Community Sustainability Plan (Sep 2011) - Examine feasibility of developing sustainable transportation options, such as public car/bike-share	Community Sustainability Plan (Sep 2011) - Examine potential for paid parking, both on- and off-street to influence parking behaviour and obtain parking revenue - Consider intercept lot Paid Parking Pilot - Jul 21, 2021 - Oct 11, 2021 - Paid parking from 9am-5pm daily for all 2-hour on-street parking downtown at \$2/hour - Free off-street parking at municipal lots - Payment on mobile device with HotSpot - Town shuttle service operated by Sundog Transportation & Tours Ltd

City	Population*	Characteristics**	Climate Action	Transportation Strategies	Parking Strategies
4 Edmonton, AB	1,010,899	Average Age: 37.7 / Median Age: 35.7 Population Growth (2016-2021): 8.3% Average Household Size: 2.5 Climate: Variable Economy: Industry, infrastructure, institutions Travel Behaviour: 77.6% of daily trips as car driver or passenger in a car	Edmonton's Community Energy Transition Strategy & Action Plan (Apr 2021) - Completed roll out of electric vehicle charging facilities, development of downtown protected bike lanes, extension of Edmonton's LRT network and single largest purchase of electric buses in Canadian history, and ongoing development of carbon-neutral community for 30,000 residents - One of four pathways being a low carbon city and transportation by being carbon neutral by 2050, 50% growth by infill development and completed active transportation network by 2030	Edmonton City Plan (Dec 2020) - Goal: A Community of Communities, with targets of 50% of trips made by transit and active transportation, and 15-minute districts using strategic measures such as population within 0.5km of public transit running at least 15 min during peak period and population within reasonable distance to Basic Services - Will be implemented via Active Transportation Network which will create connections that for walking, rolling or biking, and via Transit Network which will provide city-wide connectivity with mass and local transit, prioritizing accessible, reliable and safe services to enable energy efficient mobility	Rules for Parking for New Homes and Businesses: Recommendation Report (Feb 2019) - Compares minimum parking requirements, open option parking, and maximum parking requirements with the last providing the least parking but being the most walkable - Existing surplus of parking spaces in Edmonton, some parking lots 90%+ capacity, but only on portions of the day or week - No consistent trends in parking minimums between different land uses or locations - Recommends parking maximum restrictions for residential development in transit oriented and main street areas, as well as both residential and non-residential uses in the Downtown area - Recommends requirement of TDM for any Direct Control zone and development permit applications on properties over 1 hectare in size - Recommends opportunities for shared parking, bicycle and barrier-free parking spaces, and using greenery and other design regulations for parking areas
5 Nelson, BC	11,106	Average Age: 42.5 / Median Age: 42.3 Population Growth (2016-2021): 5.1% Average Household Size: 2.1 Climate: Variable Economy: Resource-based (forestry and mining) Travel Behaviour: Mode-split commute to work (2016) = 60% vehicle (driver); 6% vehicle (passenger); 2% transit; 26% walk; 5% bike; 2% other	Nelson Next: A New Community Vision for Climate Action (2020) - A draft version of Nelson Next was passed unanimously by City Council in December 2020. It is guided by the following targets (a) to ensure resilience by addressing climate risks, protecting vulnerable groups from climate impacts, and integrating climate data and risk assessments into City planning and operations and (b) to accelerate emissions reduction and limit global warming to 1.5 degrees celsius by a 75% reduction in community-wide GHG's by 2030 and net zero GHG's by 2040 and net zero municipal operations by 2030 - The plan consists of a series of 7 roadmaps of which one is to aspire for Nelson's residents and tourists conveniently navigate the city and region using the highest per capita rates of public, active, or electric transportation in the country	City of Nelson Active Transportation Plan (2010) - Nelson's ATP identifies multi-use trails, pedestrian and cycling amenities, and public transit improvements to increase options for human-powered forms of transportation. It then proposes a series of active transportation routes which consider network connectivity, compatible between sustainable transportation networks, existing infrastructure, connection of neighbourhoods to the downtown core, accessibility to recreational trails, route steepness, and all season conditions City of Nelson Active Transportation Plan Review Implementation Plan - 2020 to 2025 (2019) - Council adopted this implementation plan in 2019 - It is a review of the original ATP with a series of actions categorized along a timeframe, funding opportunities, responsibility, and status	City of Nelson Downtown Parking Strategy (2021) - Formally approved by Council on March 9, 2021. Established a clear, goal-driven framework for the community to help the city achieve its sustainability goals, including economic, social, and environmental goals - Recognizes parking actions taken so far 2017-2020 (i.e. signage changes, reductions for certain uses, new parking meter rate for commuters, parking amnesty program) - Provides 61 recommended actions under 13 headers - maximize current parking assets, financial sustainability, park-and-ride, city parkade, downtown residential streets, residential guest permits, making parking easier through tradesperson service, parking requirements, veterans and seniors parking, carsharing, tradesperson and commercial delivery, and effective enforcement and increased compliance Off-Street Parking and Landscape Bylaw 3276 (2020) - For mixed-use buildings containing multi-unit residential dwellings, the required number of vehicle parking can be reduced where carshare stalls are provided, where peak use of off-street vehicle parking spaces of two or more uses occurs at different periods of time, for low density residential zones, and for laneway homes or secondary suites Traffic Bylaw 3156 (2010) - Residential parking permits free of charge shared between up to two vehicles
6 Esquimalt, BC	17,533	Average Age: 43.2 / Median Age: 43.4 Population Growth (2016-2021): -0.7% Average Household Size: 2.0 Climate: Moderate Economy: Tourism; Military Travel Behaviour: Mode-split commute to work (2016) = 56% vehicle (driver); 5% vehicle (passenger); 16% transit; 11% walk; 9% bike; 3% other	Community Climate Mitigation Plan (In Progress) - Council unanimously endorsed the proposed target to reduce corporate emissions by 45% and committed Esquimalt to becoming a 100% renewable energy community by 2050 (Nov 2019)	Active Transportation Network Plan (In Progress) - Identify deficiencies in the pedestrian and cycling network; identify gaps in the pedestrian and cycling network; and develop the vision and goals for the network to address the deficiencies and gaps - Create an implementation plan to identify the critical projects needed in the short-term (1-5 years), medium term (5-10 years), and long-term (10-20 years) to increase the share of trips completed by an active mode and more broadly reach the greenhouse gas (GHG) targets set out in the Official Community Plan.	Streets and Traffic Regulation Bylaw, 2017, No. 2898 (Feb 2021) - 14 types of parking and stopping restrictions, with only 6 enacted on a regular basis - No parking pricing

City	Population*	Characteristics**	Climate Action	Transportation Strategies	Parking Strategies
7 Barrie, ON	147,829	Average Age: 38.9 / Median Age: 38.5 Population Growth (2016-2021): 4.5% Average Household Size: 2.7 Climate: Variable Economy: Tourism, Professional, scientific, and technical services Travel Behaviour: Mode Share of All Trips to or from Barrie (2016) = 82% automobile (driver and passenger); 9% active transportation; 2% transit; 7% other (motorcycle, school bus, taxi passenger, paid rideshare, and others)	<u>Climate Change Adaptation Strategy (2017)</u> Goals: - Maintain public health and safety - Minimize risks to buildings and properties - Strengthen infrastructure resilience - Help local businesses and tourism industry adapt to changing conditions - Protect biodiversity and enhance ecosystem functions - Minimize disruption to community services - Build community resilience <u>Implementation Plan - Climate Change Adaptation Strategy (2018)</u> - Identifies tasks, timelines, estimated initial costs, estimated ongoing costs and responsible department for each action from the Climate Change Adaptation Strategy	<u>Transportation Master Plan (Jun 2019)</u>: To increase active transportation and transit use, improve options to keep Barrie moving during planned growth, and developing comprehensive, environmentally sound solutions. <u>Appendix B: Active Transportation (AT) Strategy (Jun 2019)</u> - Design a continuous and connected AT network that includes facilities to accommodate a range of users and abilities - Provide a well-connected AT network that connects to existing and future transit routes and stations to encourage multi-modal transportation and to support increased transit use <u>Barrie Official Plan (Jan 2018)</u> - Multiple transportation goals, e.g. To promote healthy communities, active living and energy efficiency; public transit, car pooling, all forms of active transportation, safe integration and connectivity between these various modes of transportation will be encouraged; To develop the Intensification Areas identified on Schedule I –Intensification Areas of this Plan at densities that are transit supportive and provide linkages to major transportation hubs and routes such as the major transit stations. <u>Transit ON Demand (ToD) (Aug 2020)</u> - Transit service without a fixed schedule or route - Users can book their trip through an application and then the bus travel is optimized through a computer-based system - Operates within a specific zone allowing riders to travel from bus stop to bus stop within the zone on demand - Pilot was a success with riders receiving faster trips, shorter wait times and reporting high satisfaction - Cost of providing ToD is equal to the cost of conventional service, but can cover more area, resulting in a more efficient service for the city	<u>City of Barrie Parking Strategy Update (Mar 2020)</u> - Provide more options to pay, including Smart Meters with credit card payment options, a parking app, and licence plate recognition technology (to allow for digital parking passes). - Alter parking pricing structure to better meet supply and demand by prioritizing on-street parking options for customers, adjusting parking lot pass options to help distribute parking demand, and lowering rates at underused facilities to encourage use. - Simplify parking by aligning how the downtown Library and City Hall lots can be used, standardizing spillover parking controls in residential areas, and improving and standardizing parking signs across Barrie. - Improve waterfront parking by considering a pilot shuttle service on summer weekends, implementing seasonal on-street parking to Resident Waterfront Parking Pass holders, and adjusting seasonal on-street parking restrictions in surrounding neighbourhoods. - Ensure parking rates remain financially sustainable by adjusting some rates downtown (increase of 25 cents per hour, \$1.50 a day and 10% for monthly and annual passes), adjusting rates and extending paid parking on Gallie Court and Quarry Ridge Road, and investigating the implementation of paid evening parking in the downtown.
8 Penticton, BC	36,885	Average Age: 48.7 / Median Age: 52.4 Population Growth (2016-2021): 9.3% Average Household Size: 2.1 Climate: Dry; Variable Economy: Tourism (Agrotourism); Agriculture; Casino Travel Behaviour: Mode-split commute to work (2016) = 83% vehicle; 10% walking; 3% bicycle; 1% motorcycle/scooter; 1% transit; 2% other	<u>Community Climate Action Plan (Nov 2021)</u> - 6 pillars of actions that have the biggest impact on reducing emissions in the community; 3 related to transportation: - Shift Beyond the Car: Encourage active & accessible transportation and transit - Electrify Passenger Transportation: Accelerate the adoption of zero-emissions vehicles - Decarbonize Commercial Transportation: Support low-carbon options for medium & heavy-duty vehicles	<u>Transportation Master Plan 2020-2045 (Jun 2021)</u> - 2 Pedestrian Principles developed to guide recommendations: (1) Walking is a safe, convenient and comfortable mode of travel for all people and all destinations; walking is the preferred mode of transportation for Penticton residents and visitors; pedestrians are the top priority in the hierarchy of transportation modes. (2) Penticton's sidewalk network is complete and connected; opportunities to build missing sidewalks are leveraged, where possible, through any adjacent infrastructure projects. <u>OCP 2045 - Penticton Official Community Plan (Aug 2019)</u> - Policies pertaining to active transportation, transit, goods movement and driving - E.g. Policy 4.2.3 Cycling: Develop a connected network of safe and convenient cycling infrastructure that meets the needs of recreational riders, casual riders and commuters. From 2019-2021, City rolled out the Lake-to-Lake bike route, a two-way track protected bike lane; Where possible, the City has worked with commercial property owners to reduce the number of entrance points to improve safety for the cyclists, resulting in fewer entrances and exits to parking lots.	<u>Metered Parking Program (Mar 2021)</u> - Expansion of the metered parking program throughout commercial areas of downtown, increasing rates to \$2.00/hour - In response to COVID-19 pandemic revenue shortfalls, <u>Resident Parking Program (2014)</u> - Some areas of our City see a lot of out-of-town traffic during peak tourist times, and not all visitors have respected residents' needs to access their driveways and lanes. Other residents in the vicinity of large employers also struggle with congested streets, as employees park their vehicles for the day in residential areas and walk to work. Shifting to a "Resident Parking" program in specific areas is designed to alleviate these problems by encouraging visitor and commuter traffic to choose more appropriate places to leave their vehicle, such as parking lots.
9 Fredericton, NB	63,116	Average Age: 41.1 / Median Age: 39.9 Population Growth (2016-2021): 7.5% Average Household Size: 2.2 Climate: Variable Economy: Natural resources and biotechnology, ICT, oil and gas, engineering Travel Behaviour: Mode-split commute to work (2016) = 75% vehicle (driver); 8% vehicle (passenger); 4% transit; 9% walk; 1% bike; 1% other	<u>Community Energy and Emissions Plan Citizens Synopsis (2021)</u> - This plan envisions a future where Fredericton is a community leading in the transition towards an energy efficient and low carbon future. The city has established a per capita GHG emissions reduction target of 80% per capita by 2050. - It consists of a series of targets relating to transportation - namely prioritizing pedestrians and cyclists in community plans, reducing the number of single occupancy vehicles, and reducing vehicular travel and associated GHG emissions <u>Climate Change Adaptation Plan 2020-2025 (2020)</u> - This plan aids in addressing this threat of climate change by identifying impacts and potential actions to minimize risk and build resilience. The goals within it include: maintaining health and safety, minimizing risk to building and properties, strengthening resilient of core built municipal infrastructure, strengthening resilience of natural infrastructure and assets, minimizing disruption to municipal services and programs offered, and creating partnerships and empowering the community - In relation to transportation, the plans calls for an expansion of the active transportation network to mitigate climate change related transportation disruptions	<u>Fredericton on the Move - Fredericton Transit Strategic Plan (2018)</u> - This plan is a guide aimed at ultimately improving service quality and growing transit ridership while identifying new and innovative ways to provide transit more efficiently and effectively in the future - Recommendations are summarized under: service planning and operations, technology, fares, partnerships, marketing, and fleet <u>City of Fredericton Active Transportation Connection Plan (2017)</u> - This plan helps guide the growth of cycling and pedestrian infrastructure over the next 10+ years by identifying trail gaps, determining connection points for bike lanes and trails, identifying priority intersections for bike lane marking improvements, considering the limits of trail paving, prioritizing the location of trail crossings, identifying future trail neighbourhood connections, and identifying cycling and pedestrian issues in need of future considerations <u>Imagine Fredericton: The Municipal Plan (2020)</u> - This plan establishes a broad planning policy framework to manage future growth. It consists of several policies pertaining to complete streets, active transportation, and parking - Themes of such policies include prioritizing a "pedestrian first" principle, enhancing connectivity, reducing parking requirements etc. <u>Garrison District Master Plan (2015)</u> - Recommendation for a woonerf along Carleton Street with integrated parking	<u>City of Fredericton Parking Master Plan (2019)</u> - Endorsed by Council, this plan provides a strategic direction with respect to downtown parking and keeps pace with the city's growing and vibrant downtown core - The actions its recommends fall under equipment modernization, parking rate strategy, commuter parking zones, and parking inventory solutions). Some of these actions include: pricing strategies, parking zones, increasing cash-in-lieu rates etc. <u>Off-Street Parking and Landscape Bylaw 3274 (2020)</u> - Parking reductions outside CBD for residential use OR residential use located near a transit stop OR for building containing affordable housing <u>City of Fredericton Website</u> - Virtual parking permits through HotSpot - Queen Street flex and loading zone pilot project - Low-cost annual resident parking permits

City	Population*	Characteristics**	Climate Action	Transportation Strategies	Parking Strategies
10 Halifax, NS	439,819	Average Age: 40.8 / Median Age: 41.0 Population Growth (2016-2021): 9.1% Average Household Size: 2.3 Climate: Temperate Economy: IT, financial services, ocean technology, transportation and logistics, health and life sciences Travel Behaviour: Mode-split commute to work (2016) = 71% vehicle (driver); 7% vehicle (passenger); 12% transit; 8% walk; 1% bike; 1% other	<u>Halifax: Acting on Climate Together 2050 (2020)</u> - This plan is Halifax's response to its 2019 climate emergency declaration. It consists of a series of actions pertaining to decarbonized and resilient infrastructure, prepared and connected communities, and governance and leadership. - In relation to decarbonizing transportation it sets the following actions: (a) expanding transit and active transportation infrastructure; b) collaborating with local organizations and businesses to develop a community-wide EV strategy; and c) preparing for and catalyze electric vehicle uptake through planning and policy	<u>Integrated Mobility Plan (2017)</u> - This plan will inform municipal mobility and land-use planning and decision making until 2031. Its target is that by 2031, at least 30% of trips should be made by transit and active transportation - It consists of a series of policies for integrated planning, land use and transportation, complete streets, and TDM - Examples include: (a) encourage all future development to take the form of Complete Communities with opportunities to work, study, shop, play and obtain personal services with an attractive walking distance of where people live; (b) set downtown parking rates high enough to influence mode choice and ensure a sufficient number of vacant short-term parking spaces, while not unfairly penalizing downtown businesses and insitutions over similar uses in suburban areas, where parking is abundant and free <u>Municipal Planning Strategy Halifax (2016)</u> - This strategy sets forth policy statements regarding present and future land use, transportation facilities, service facilities, budgeting and citizen participation - With regards to transportation, there are a series of policies pertaining to design standards or pedestrian routes, discouraging vehicular traffic in new and existing neighbourhoods, encouragement of alternative modes of transportation	<u>Regional Parking Strategy Functional Plan (2008)</u> - This is a 25-year plan ensuring that parking will (a) support a choice of integrated travel modes; (b) encourage alternatives to the single occupant vehicle trip; (c) help mitigate traffic congestion; (d) promote efficient land use; (e) operate efficiently and equitably; (f) support local business, tourism, and service sectors - Some of the recommended strategies include: revising parking zoning standards, improving user information, optimizing on-street park management, and reducing commuter parking demand <u>Halifax Regional Municipality By-Law Number P-1200</u> - Bylaw creates permits for residents, temporary residents, commuters, students, carshare users, and daily contractors <u>Parking Program Changes: Amending By-Laws P-500, P-1200 and A015</u> - Staff report approved on introducing parking program changes by allowing for parking increases (dynamic pricing) <u>Parking Bylawmap Implementation Study</u> - Halifax Regional Council moved motion to direct staff in Planning and Infrastructure to review the 2008 Regional Parking Strategy - Work to be done regarding parking enforcement - Parking governance recommendations in effect (Parking Program Office, advisory committee etc.), wayfinding being improved, mobile app and payment options - Moving forward -> parking technology implementation, monitoring of parking demand and utilization to help inform decision making, collaboration with private industry and BID's, further improvements to bylaw P1200
International Case Studies					
11 Zurich, CH	415,367 (2020)	Median Age: 38.4 Population Growth: 10.9% Climate: Variable Economy: Finance; Creative Economy Travel Behaviour: Commuters (2020) = 67% public transport; 24% individualized motor transport; 9% soft mobility	<u>Climate Targets (2019)</u> - Greenhouse gas emissions in the urban area of Zurich will reduce direct greenhouse gas emissions in the urban area to net zero by 2040: A reduction of at least 50 percent compared to 1990 is to be achieved by 2030. - Greenhouse gas emissions outside the city (indirect emissions): For the first time, the city council has also decided on a reduction target for indirect greenhouse gas emissions: 30 percent compared to 1990 per person per year by 2040 is the target. - Net zero in 2035 for city administration: The city administration has a role model to play on the way to net zero. It should achieve the targets for direct and indirect greenhouse gas emissions as early as 2035. <u>Climate Alliance (1993)</u> - World's largest network of cities dedicated to climate protection and the only one that sets specific goals - Committed to reducing its greenhouse gas emissions by ten percent every five years - The network promotes cooperation with indigenous peoples, carries out campaigns to raise awareness and develops tools for climate protection planning	<u>Bike Strategy 2030 (Mar 2021)</u> - 3 strategic directions contribute to the achievement of the three goals of cycling promotion (1) the bike shapes all traffic (2) cycling is safe and (3) cycling is a matter of course for everyone. <u>Urban Traffic Programme 2025 (Jul 2013)</u> - Increase the modal split of public transport (PT), pedestrian and bicycle traffic - Improve the availability and attractiveness of public transport, pedestrian and bicycle traffic - No increase in the capacity of motorized public transport (MPT) - Implement a 2000 Watt Society in the area of mobility - Protected residents from the negative impacts of traffic - Increase the quality of public spaces	<u>The Ordinance on Private Car Parking (2015)</u> - Regulates the number of minimum required and maximum permitted private parking spaces for private cars - Parking maximums introduced as early as 1989 to protect the city from having too much parking that could degrade the urban character of the city <u>Colour Coded System</u> - Blue Zones: Parking from Monday till Saturday from 8 am until 6 pm is free of charge for an hour with the blue parking disc (including EU parking disc). On Sundays and public holidays parking is free between the hours 7 pm in the evening and 7 am in the morning. - Day Permits in Blue Zones: The permit entitles you to park the vehicle for an unlimited period of time on the specified day in all blue zones of the city of Zurich. - Day Permits for Trades: The permit entitles you to park the vehicle on the specified day without restriction in all blue zones and in parking spaces with parking time restrictions (60 minutes and more). - Residential Permits: Residential and domiciled tradespeople can apply for a parking permit for the blue zone of their postcode area for every light motor vehicle registered in their name and address. - Yellow Zones: These are private or reserved for companies and may only be used by them or their clients and guests. - White Zones: These are chargeable, often numbered and located near a parking meter. - Yellow markings with crosses mean no parking and yellow lines by the side of the road mean no waiting at the roadside. Parking on main roads outside of towns is prohibited. <u>Parking Guide (2014)</u> - allocates specialist departments of the City of Zurich directly involved in parking issues is to present the responsibilities, processes and procedures associated with the topic of parking - intended as an internal administrative aid to sharpen the understanding of the roles of the departments involved and to promote cooperation

City	Population*	Characteristics**	Climate Action	Transportation Strategies	Parking Strategies
12 New York City, NY	8,804,190 (2020 census)	Average / Median Age: 36.7 Population Growth (2020-2030): 4.9% Average Household Size: 2.6 Climate: summers are warm, humid, and wet; the winters are very cold, snowy, and windy Economy: financial services, healthcare, professional and business services, retail trade, manufacturing, and education Travel Behaviour: complexed multi-modal and transit-oriented share: 2017 Citywide Mobility Survey by NYC DOT: Sustainable Mode Share: 62%; 32% car, 28% walk, 23% subway, 8% bus, 3% bike, 3% for-hire vehicles.	OneNYC 2050 (2019) - continues building on the 80x50 goal set in 2015 (reducing GHG emissions 80% from 2005 levels by 2050. - OneNYC 2050 is a renewed strategic plan that commits the city to carbon neutrality, among other climate action goals (Volume 7 of 9) - Indicators: 100% eliminated, reduced, or offset GHG emissions by 2050, 100% share of electricity mix from clean sources by 2040, increase flood insurance enrollments, and increase to \$4 billion city pension fund investments in climate change solutions by 2021. Progress: - As of 2019, 81.5% of New Yorkers living within walking distance to a park; - As of 2019, the city had more than 1,200 miles of bike lanes; - There is a long way to meet Zero Waste goal. Only a 9.8% reduction in waste colled between 2005-2019	New York City Department of Transportation (NYC DOT) Strategic Plan (2016) - In response to challenges that NYC is facing: overcrowding sidewalks and subway trains, and limited mode share capacity with the current street design. - Six initiative highlights: (1) Improving street safety through targets such as reducing left turn conflicts; (2) Seeking to doubling the number of active cyclists through aiming for creating at least 10 miles of new protected bike lanes per year; (3) Enhancing transit with creating at least 20 Select Bus Service (SBS) routes and improving transit access to neighborhoods underserved by the subway system. (4) Better managing freight by completing a comprehensive five-borough plan, and expending its freight mobility team. (5) developing an updated parking policy with introducing the launching of mobile parking payment platment, comprehensive analysis on how metered parking is used, better manage and price curb space to increase parking availability, and tesing new technologies to better enforce parking rules. (6) caring for DOT assets.	Background of NYC Parking History. - NYC is an early adopter of parking maximums within its CBD (Manhattan Core), beginning in 1982. - Bike parking: As of 2009, new multi-family residential, community facility, and commercial developments citywide are required to provide secure and enclosed bicycle parking. - In 2016, the city's Zoning for Quality and Affordability plan eliminated parking minimums for fully affordable housing developments in transit-rich areas Neighborhood Loading Zones - NLZ program aims to reduce double parking on narrow residential streets by providing space at the curb for deliveries, passenger pick-up/drop-off and loading Car Share Program - Provided up to 300 on-street parking spaces in 14 pilot zones and up to 300 parking spaces in municipal parking facilities for use by participating carshare companies - Pilot program launched in June 2018. Currently in transition to become permanent program 2013 Manhattan Core Parking Regulations Revision (text amendments) - Removing language that could be read as requiring parking for [developing] affordable housing units (13-42); - Allowing building built before 1982, which had been required to build parking, to reduce or eliminate parking, permission of City Planning Commission is required; (13-07 (a) (1)) - Expanding the amount of spaces allowed in commercial districts for car rental and car-sharing vehicles (13-16).
13 South Lake Tahoe, CA	21,330 (2020 census)	Median Age: 37.1 Population Growth: -0.34% (from 2010) Average Household Size: 2.42 Climate: Variable Economy: Accommodation and food services; arts, entertainment, and recreation; and retail trade Travel Behaviour: Means of transportation to work: 69% drove alone; 10% carpooled; 4% used public transit; 4% cycles; 8% walked; 5% worked from home; and 1% used other modes	City of South Lake Tahoe Climate Action Plan (2020) - This CAP focusses on reducing emissions by 2030 and 2040, the city's targets are 50% below 2015 levels by 2030 and 80% below 2015 levels by 2040 - Transportation related strategies in this plan, include: (1) collaborate with regional transportation agencies to reduce transportation-related GHG emissions; (2) increase education and outreach to promote awareness of public transit and EVs; (3) increase the use of EVs to reduce emissions from passenger and transit vehicles; (4) reduce or redistribute travel demand by working with local business; (5) improve transit holistically to reduce passenger vehicle emissions; and (6) increase walking and biking to reduce emissions from passenger vehicles;	Linking Tahoe Regional Transportation Plan (2017) - This plan provides a vision for a first-class transportation system that prioritizes bicycling, walking, and transit, and serves residents and visitors while contributing to the environmental and socioeconomic health of the region - Priorities are transit, trails, and technology upgrades (as a way to improve parking management, particularly in and around recreational areas)	Park Tahoe - State Route 28 Parking Management Program Pilot Monitoring Report (2020) - Analysis + preliminary findings of the State Route Corridor which was developed under the Value Pricing Pilot Program (VPPP). This project is a rural, resort-destination market-pricing parking project - Features of this pilot included: "come early, come late, pay a lower rate," a demand-based pricing strategy, an ambassador program, and more City of South Lake Tahoe Parking Program - Residential parking permits (free) Commute Tahoe Program Guide - Program for workplaces to better manage traffic congestion at Lake Tahoe by encouraging employees to walk, bike, use transit, carpool, vanpool or drive at non-peak times South Lake Tahoe Ordinance 6.10.400 Maximum Limit (1997) - The city has minimums as well as maximums in place
14 Austin, TX	961,855 (2020 census)	Average / Median Age: 33.3 Population Growth: 21% Average Household Size: 2.44 Climate: Humid Subtropical Climate (long, hot summers and short, mild winters, with warm spring and fall transitional periods) Economy: Computer technology, Entertainment Travel Behaviour: 74% drive alone, 11% carpool/taxicab/ other, 8% telework, 4% transit, 2% walk, 1% bicycle	Austin Climate Equity Plan (Sept 2021) - Net-zero by 2040, equitably - Goals across five focus areas: Sustainable Buildings, Transportation and Land Use, Transportation Electrification, Food and Product Consumption, and Natural Systems.	Austin Strategic Mobility Plan (April 2019) - adopted April 2019 - 50/50 (50% drive alone by 2039) mode share goal to help the community manage congest as it grows - components: 127 policies, 155 indicators+targets, 279 actions, 1street network table+map, 11 transportation network maps, 3 priority network maps - 10 top priorities to reach 50/50 mode share by 2039 - Project Connect (link) - in line with ASMP - two new light rail lines, a downtown tunnel, new Metro Rapid service, new neighborhood circulators, park and rides, and more - Austin Transit Partnership (ATP), an independent organization collaboratively formed by Capital Metro and the City of Austin to guide the Project Connect investment with transparency and accountability throughout the program	Parking and Transportation Management District (PTMD) - A PTMD is a defined geographic area that may include a mix of retail, entertainment, commercial, medical, educational, civic, and residential uses in which City Council finds that traffic flow on public streets requires a higher level of management than commonly provided and determines that parking meters will facilitate traffic flow objectives. - Price to recoup costs and encourage modes other than driving (51% of the public paid parking revenue, less City expenses, from PTMD is dedicated to help with mobility improvements within the established district and can include park maintenance, signage, wayfinding and sidewalk improvements.) Priority #8 of ASMP: - right-size and manage parking supply to manage demand (a) pay-by-plate system (b) temporary curbside customer pick-up zones (c) affordable parking program (d) tiered parking fee structure (e) Park ATX mobile payment app with promo codes for free 15-minute parking sessions.

City	Population*	Characteristics**	Climate Action	Transportation Strategies	Parking Strategies
15 Sacramento, CA	524,943 (2020 census)	Average / Median Age: 34.5 Population Growth: 113% Average Household Size: 2.66 Climate: typical: summers are hot, arid, and mostly clear and the winters are short, cold, wet, and partly cloudy Economy: manufacturing, tourism Travel Behaviour: car-dominated	<u>Climate Action and Adaptation Plan (2015)</u> - The Sacramento Climate Action Plan was incorporated into the 2035 General Plan and adopted on March 3, 2015. - The City of Sacramento is updating its Climate Action and Adaptation Plan (CAAP) as a stand-alone document, which will meet the criteria for a "qualified GHG reduction plan" that provides substantial supporting evidence. - In total, the CAAP identifies measures to reduce GHG emissions by over 1.2 million MTCO₂e in 2030 and achieve a 59% reduction below 1990 emissions levels and a 57% reduction below 2016 levels. - Five sectors that are covered in the Plan: built environment, mobility, waste, carbon sequestration, and water and wastewater. <u>Highlighted General Plan Policies (in 2035 General Plan) that addresses Climate change:</u> GOAL LU10.1 Growth and Change - LU 10.1.3 Transportation systems, including transit and roadways that are substantially improved and expanded, in a manner that provides enhanced mobility for all sectors of the community and benefits regional air quality. GOAL M 1.4 Transportation Demand Management - M 1.4.1-1/4/3: increase vehicle occupancy; automobile commute trip reduction; transportation management associations	<u>"Grid 3.0" Plan</u> - The City's plan to integrate a number of planned transportation improvements and programs and to further enhance the downtown grid. - Goals: 1) Enhancing commercial corridors for safe cycling and walking, while accommodating both through and local traffic 2) Protect neighborhood streets as places where parents feel safe for their children to walk and bike 3) Improve connections between neighborhoods and the downtown core for biking, walking and transit - Highlight: Using an integrated "layered network" approach, which focuses on providing a variety of transportation options, allowing people to select from a host of mode choices, routes or environments. <u>Downtown Mobility Project</u> - As the next implementation phase of the transportation improvements identified in the Grid 3.0 Plan and Central City Specific Plan. - Despite rehabilitating pavement, the project will add 62 blocks of protected bikeways to the network, as well as convert key streets from one-way to two-way to improve circulation. - Two-way conversions Benefits of two-way streets: lower vehicular speeds, reduces confusion and eliminates potential for wrong-way travel.	<u>Parking Modernization (2012)</u> - Sacramento City Council adopted the term "parking modernization" to focus on the following areas of improvement to the City's parking system: technology & rate enhancements, system expansion, parking policy & legislative reform - SacPark meters as smart meters - interactive parking map showcases meter locations, residential permit parking zones and City-owned and managed parking garages and lots. - tech upgrades: online 24-hour Temporary Residential Parking Permit to allow guest vehicles to park at RPP zone for 24 hours. - <u>client services</u> (by parking professionals) for parking facility owner/ operator. - <u>SacPark (Tiered Based Pricing Program)</u> - Activation of each tier is determined by the zone type. - The hour designated on the sign reflects how many hours a motorist may park at the Tier 1 price before the Tier 2 rate is effective. - Extensions of parking time may be done at the meter or remotely using the Parkmobile app.
16 Boulder, CO	108,250 (2020 census)	Average / Median Age: 28.6 Population Growth: 2.9% Average Household Size: 2.36 Climate: mild climate with very little humidity in the summer and winter months Economy: outdoor activities, talented chefs, breweries, and vibrant downtown Travel Behaviour: in 2018, SOV and transit travel accounted for 37% and 5% of residents all trips. In 2017, SOV and transit travel accounted for 77% and 6% of non-residents commute trips.	<u>Climate Commitment 2017</u> - emissions and energy goals: community emissions reduction (80% by 2050), organization emissions reduction (+90% by 2050), percent of electricity supply that is renewable (100% by 2050) - parking management with financial incentives to encourage other travel options and reward commuters who don't require daytime parking - parking management systems that stimulate adoption of high efficiency mobility options. - parking lots and other non-building spaces have substantial additional solar energy generation capacity, according to assessment. - recommend prioritizing the review and revise of parking lot shading guidelines and enforcement of increased canopy cover.	<u>Transportation Master Plan (TMP)</u> - proposed 2030 mode share targets: RESIDENT TRIPS: 20% SOV (single-occupant vehicle) and 80% walk, bike, transit and carpool NON-RESIDENT TROUPS: 60% SOV and 40% walk, bike, transit and carpool - 10 TMP initiatives to achieve a safe, equitable, reliable provide travel choices, support clean air and climate commitment Boulder. - Initiative 8 of TMP "managing demand on our system together" proposes actions related to parking and curb management. <u>Curbside Management Program Launch</u> (latest project of AMPS) - Beginning late 2021 through early 2023 - a specific focus on curbside spaces in the city's three general improvement districts: Boulder Junction Access District (BJAD), Central Area General Improvement District (CAGID), and University Hill General Improvement District (UHGD) - to balance well-established curbside uses like on-street parking, deliveries, transit, and bicycling with new mobility technologies like Transportation Network Companies (TNCs), e-scooters, and dockless bikeshare, while also considering public space uses like parklets and food trucks.	<u>Access Management & Parking Strategy (AMPS)</u> - Guiding principles: provide for all transportation modes, customize tools by area, support a diversity of people, seek solutions with co-benefits plan for the present and future, cultivate partnerships - Focus area 1: district management ("edge" parking, shared parking options with public private partnership, etc) - Focus area 2: on- and off-street parking (reassess Boulder's "72-hour on-street parking limitations" that implies abandoned vehicle, curbside space management, etc) - Focus area 3: TDM (trip reduction toolkit, bundled first & final mile corporate memberships, Cash-out programs for employees, etc) - Focus area 4: tech and innovation (Prepare for autonomous vehicles via policies and infrastructure, parking garage access equipment, TNCs,etc) - Focus area 5: code requirements (remove parking minimums and explore maximums, "Shared Unbundled, Managed, and Paid" – "SUMP" parking principles in new districts, etc) - Focus area 6: Parking Pricing (pilot the Boulder Junction parking garage management structure, garage back loaded fees, graduated fines, etc)
17 San Francisco, CA	873,965 (2020 census)	Average / Median Age: 38.2 Population Growth: 1% Average Household Size: 2.36 Climate: Mediterranean climate: hot, dry summers and cool, rainy winters. Economy: manufacturing, tourism Travel Behaviour: private auto (48%) and non-private auto (52%) with walking and transit each accounting for about a quarter of trips (22%)	<u>San Francisco Climate Action Plan</u> - First launched in 2004, updated in 2014, 2021 CAP is launching in Dec 2021. - Vision: The 2021 San Francisco Climate Action Plan (the Plan) charts a pathway to achieve net-zero greenhouse gas (GHG) emissions and works toward addressing racial and social equity, public health, economic recovery, resilience, and providing safe and affordable housing to all.	<u>San Francisco General Plan</u> Transportation Elements listed below have policies that have direct implications on the Air Quality Element: - Congestion management - Transit First Policies - Transportation Demand Management - Transportation System Management - Parking Management and Citywide Parking - Mass Transit - Pedestrian - Bicycles	<u>"Transit First" policy</u> - eliminated parking minimum and imposed parking maximum <u>Residential Permit Parking</u> - Fee - private vehicles \$160 (annual) / \$79 (less than six months) - Limit Four (4) Permits Per Address - Driveway Parking - residents may block their own driveway by parking parallel to the curb or street, if the vehicle's license plate is registered to the building(2 or fewer units)'s address. - License Plate Recognition (LPR) Enforcement - enforcement vehicles read license plate numbers as they drive through neighborhoods, checking in real time if vehicles have a permit. - Privacy Protections - SFMTA policies regarding the use of LPR technology for parking enforcement is in full compliance with state and local laws on the use of surveillance technology - Shared Electric Mopeds - are exempt from RPP time limits <u>Parking Tax</u> - imposes 25% tax on total parking charges for all off-street parking <u>CarShare Program</u> - on average 19 different people each month used on-street shared vehicle in San Francisco <u>Color Curb Program</u> - provide access to the curb to help facilitate activities like the loading of people or goods. - fees associated with zone application may be waived for certain Government agencies and non-profits)

City	Population*	Characteristics**	Climate Action	Transportation Strategies	Parking Strategies
18 Auckland, NZ	1,571,718	Median Age: 34.7 Population Growth: 1.6% Average Household Size: 3.0 Climate: Temperate Economy: Professional, scientific and technical services Travel Behaviour: 59.5% drive a private vehicle to work, 38.5% drive a vehicle or are a passenger in private vehicle to education	Auckland Climate Plan (Jul 2020) - Road transport is Auckland's largest single source of GHG emissions, 80% of which are from private motor vehicles and light commercial vehicles - Priorities include changing travel options, improve public transport, bicycle and walking infrastructure, shift to zero emission vehicles	Auckland 2015 Parking Strategy - City Centre Parking Zone with goal of introducing demand responsive pricing, 10-minute grace period of no payment for short stops, reduction of hourly rates in car-park buildings - Draft Parking Strategy (Nov 2021) - Better utilisation of space: convert parking space to bus, traffic lanes, cycleways and footpaths, parking for other mobility uses - Increase parking turnover and reduce commuter parking - Decrease cost and construction time frames: removing parking quicker than widening road corridors - Prevent developers passing on costs of parking to rate payers Draft Strategy presented to Council and approved to consultation on November 4, 2021	Auckland Regional Land Transport Plan 2021-2031 DRAFT - Currently lack of competitive travel options other than private car - Auckland's public transport network not fast or dependable during peak periods to be a choice for many Aucklanders - This shortfall of transport does not provide equitable access to employment and social opportunities - Improvements must be made to current active transportation infrastructure and networks to increase comfort and safety of people on bikes across the wider transport system - Transport activities funded by a combination of Auckland Council, Central Government, and user pays service charges - Payment possible via the AT Park app, parking enforcement completed using CCTV and car mounted cameras
19 Blue Mountains, AU	78,705	Median Age: 44 Population Growth: 6.0% Average Household Size: 2.5 Climate: Temperate Economy: Tourism and recreation Travel Behaviour: Avg 1.8 motor vehicles per dwelling	Carbon Abatement Action Plan adopted in 2017 by the Blue Mountain City Council (BMCC), declared climate emergency in Feb 2019 BMCC Community Strategic Plan (CSP) 2035 (2017) - Increase in number of vehicles, and decrease in train trips - Lists 'environmentally friendly transport' as a value and aims to have available transport options to encourage more environmentally friendly travel patterns Blue Mountains 2040 Living Sustainable: Local Strategic Planning Statement (Mar 2020) - Responds to CSP 2035 with Local Planning Priorities (LPP) - LPP 2: Managing bushfire risk and responding to climate change in our unique environment - LPP 8: Leading destination management and sustainable tourism (recognizes disproportionate burden on local residents in subsidizing visitor infrastructure) - LPP 9: Improving local transport connections and accessibility, including walking and cycling (stipulates a reduction in parking supply can encourage shift to more sustainable modes of travel)	The BMCC Integrated Transport Strategic Plan (ITSP) 2035 (May 2018) Recognizes streets are more than movements but should be places for people - Considers bicycling and walking networks, public transport, roads and travel demand, technology and innovation - Bicycling: will implement Bike Plan and encourage sustainable transport at schools - Public transport: encourage visitors to use sustainable transport, improve bus services and commuter transport - Parking: introduce additional paid parking, review commuter parking facilities, review accessible parking - Visitor infrastructure: recommend visitor user-pay systems, increase vehicle turnover, improve equitable outcome for a variety of road users	The Citywide Parking Strategic Plan (Mar 2018) - Informed by draft Blue Mountains Integrated Transport Strategic Plan and draft Visitor Infrastructure Investment Strategic Plan - Blue Mountains see competing parking demand between commuters, employees, shoppers and visitors - Large parking areas are not consistent with distinctive character of towns in the Blue Mountains - Lack of infrastructure for coach parking, need for better management at tourist sites, and both timed and paid parking - Paradigm shift from convenient, free parking from generous parking minimums to efficient parking facilities with alternative options including shared parking, pricing and walkability improvements - Echo Point Parking Precinct Plan upgraded parking meters to Pay By Plate and contactless payment in Nov 2020, and parking permits for residents and businesses in March 2021.
20 Ghent, BE	262, 219 (2019)	Median Age: 41.9 (Belgium) Population Growth: 0.64% from 2020 Climate: Temperate Economy: food industry, pharmaceutical industry, chemical industry, manufacturing metals Travel Behaviour: Walkable, active transportation-oriented	Ghent Climate Plan 2014-2019 - The City of Ghent committed to a reduction in carbon dioxide emissions by over 20% by 2019; energy consumption in 2019 to be lowered by 20%; local renewable energy production in 2019 to cover 15% of domestic energy demand; and energy consumption in city buildings and public lighting to be reduced by 3% every year - In the long term, the city aims to be climate neutral (2050) - To achieve this Ghent focusses on 6 high priority areas: housing, their own exemplary role, enterprise, renewable energy, transport, and food - In line with their mobility-related strategies, Ghent aims to ensure proximity, lower the number of required km, enhance steps, stairs and public transportation, and green modes of transportation. In relation to parking specifically, Ghent highlights motivational parking policy and pricing	Mobility Plan Ghent 2030 - The mobility plan consists of a circulation and parking plan - The circulation plan prevents vehicular traffic from entering the city center allowing for more space for pedestrians, cyclists, buses, and trams - The plan also consists of a bicycle policy, priorities around public transport, and temporary uses of street spaces Ghent: Car-Sharing City - Details a 2-year campaign as part of Ghent's Car-Sharing Action Plan in 2017 for which Ghent eventually won the international car sharing award	Mobility Plan Ghent 2030 - The mobility plan consists of a circulation and parking plan - The parking plan takes the approach of "the further away from the center, the lower the tariffs." It allows for more areas reserved for resident parking, parking zones divided based on demand-based zones, underground parking spaces, residential permits, and parking maximums
*Population for all national case studies uses Statistics Canada, Census Profile 2021 Data.					
**With exception to population growth, demographic characteristics for all national case studies uses Statistics Canada, Census Profile 2016 Data.					

APPENDIX D

BEST PRACTICE MODEL ASSESSMENT

Best Practice Model: Carsharing

S	Sustainable	No - not sustainable in the long term as the model does not consider GHG emissions (lifecycle GHG emissions of EV's, parking required etc) and a future where we don't just rely on cars but this could be used as a transitional shift beyond the car.
M	Measurable	Yes - can be regulated with respect to its administered business license, but the ability of monitoring however depends on the source of data (private entity/ public sector).
A	Actionable	Yes. <i>Note: DoS does have Modo car share already but only has two cars downtown (https://modo.coop/); use details are unknown.</i>
R	Relevant	Yes and No - encourages carpooling, reduces car ownership, but still focuses on cars.
T	Time-bound	Short- and medium-term.
E	Equitable	This model does not consider people who may be unable to drive however it may provide a more safe travel option for vulnerable/racialized/marginalized populations. It may also present a potential cost barrier but could also be cost-effective for those who cannot afford a private vehicle.

Best Practice Model: Ride-Hailing

S	Sustainable	No - not in the long term, we need to think about GHG emissions and a future where we don't just rely on cars but this could be used as a transitional shift beyond the car.
M	Measurable	Yes - can be regulated with respect to its administered business license, but the ability of monitoring however depends on the source of data (private entity/public sector).
A	Actionable	Yes.
R	Relevant	Yes and No - encourages carpooling, reduces car ownership, but still focuses on cars.
T	Time-Bound	Short- and medium-term.

E	Equitable	There may be a potential cost barrier but this model may also be potentially effective for those who cannot afford a car. For the drivers, this model may be income-generating, but potentially exploitative.
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Best Practice Model: Complete Streets/Active Transportation Integration

S	Sustainable	Yes - more sustainable in the long-term too. It is cost-effective, sustainable, and have potential economic impacts (i.e. integrate with businesses).
M	Measurable	Yes - results can be monitored by level of foot traffic in an area, GHG emissions etc. Can be regulated through zoning bylaws.
A	Actionable	Yes.
R	Relevant	Yes - encourages moving beyond the car.
T	Time-Bound	Long-term or short-term if it is ad-hoc.
E	Equitable	There may be a potential barrier for those who are visually impaired, if there are no clear delineations between modes of travel and their infrastructure. However, this model may be effective for those who may be unable to afford a car.

Best Practice Model: Transit Improvements/Transit-Oriented Development

S	Sustainable	Yes - if transit is actually integrated with development (co-located) and there is availability of other sustainable modes.
M	Measurable	Yes - results can be monitored through usage and experience and regulated through zoning bylaws.
A	Actionable	Yes.
R	Relevant	Yes - encourages transit use in a way that may disincentivize car use.

T	Time-Bound	Long-term.
E	Equitable	Transit/TOD isn't necessarily an appealing option for everyone (i.e. people with autism, sensory overload etc.) and core transit users may eventually be priced out of these TOD areas.

Best Practice Model: Parking Pricing/Adaptable Parking Pricing

S	Sustainable	Yes - although it must be coupled with other parking management/sustainable mode promotion techniques.
M	Measurable	Yes - can be measured through parking usage (i.e. parking studies) and regulated via bylaws.
A	Actionable	Yes.
R	Relevant	Yes - directly disincentivizes car use through a cost mechanism.
T	Time-Bound	Medium to long-term.
E	Equitable	Potential cost barrier for those who cannot afford parking prices but have no choice but to drive and park in the core.

Best Practice Model: Parking Regulations

S	Sustainable	Yes - although it must be coupled with other parking management/sustainable mode promotion techniques.
M	Measurable	Yes - can be measured through parking usage (i.e. parking studies) and regulated via bylaws.
A	Actionable	Yes.
R	Relevant	Yes/No - as regulations act to disincentivize parking but in doing so may promote parking (i.e. for residents).
T	Time-Bound	Short to medium term.
E	Equitable	Resident permits for example may present a cost barrier for certain residents.

Best Practice Model: Implementing Parking Maximums

S	Sustainable	Yes - although it must be coupled with other parking management/sustainable mode promotion techniques to manage the need for parking.
M	Measurable	Yes - regulated through zoning bylaws and results can be monitored via parking demand, usage and streetscape foot traffic.
A	Actionable	Yes.
R	Relevant	Yes - directly reduces excessive parking supply.
T	Time-Bound	Medium to long-term.
E	Equitable	Implementation of parking maximums in an area may result in less of an incentive for developers to build as less parking may reduce property values - potentially taking much-needed housing spaces away. On the flip-side some may argue that reducing parking may be more cost-effective for people looking for housing, through the provision of more land and unbundling parking.

Best Practice Model: Remove Parking Minimums (Parking Allowances)

S	Sustainable	Yes - although it must be coupled with other parking management/sustainable mode promotion techniques.
M	Measurable	Yes - regulated through zoning bylaws and results can be monitored via parking demand, usage, and streetscape foot traffic.
A	Actionable	Yes.
R	Relevant	Yes - directly reduces excessive parking supply.
T	Time-Bound	Medium to long-term.
E	Equitable	Studies have shown parking minimums to be costly for Canadians and that removing them can be cost effective.

Best Practice Model: Mobile Paid Parking Technology

S	Sustainable	Yes - although it must be coupled with other parking management/sustainable mode promotion techniques.
M	Measurable	Yes - monitored through parking usage and regulated through bylaws.
A	Actionable	Yes.
R	Relevant	Indirectly yes - serves to make parking management easier.
T	Time-Bound	Likely long-term due to financial cost.
E	Equitable	People without smartphone access are at a disadvantage.

Best Practice Model: Remote Parking, Spillover and Shuttle Service

S	Sustainable	Yes - although it must be coupled with other parking management/sustainable mode promotion techniques.
M	Measurable	Yes - monitored through pilots and demand determination and regulated through bylaws.
A	Actionable	Yes.
R	Relevant	Yes - encourages shifting to other modes beyond the car.
T	Time-Bound	Medium to long-term.
E	Equitable	Provision of such services would increase accessibility if integrated with local transportation networks.

APPENDIX E

FEASIBILITY ASSESSMENT

Expanding Carsharing Options

Feasibility Type	Description	Notes
Regulatory	<i>Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.</i>	DoS currently has an agreement with the carsharing co-operative, Modo, with 2 cars available downtown. The funds to purchase the two DoS carshare vehicles located Downtown were received from a developer contribution for the Waterfront Landing project (Bosa Properties). Therefore, the ability to expand carsharing from a regulatory standpoint is feasible. To support expansion the DoS could partner with other carsharing companies and/or include carsharing as a required community contribution from developers in replacement of parking requirements. Carsharing aligns with CCAP Big Move #2 Shift Beyond the Car Strategy Action: <i>Continue to support the establishment of car-sharing in Squamish including provision of on-street carshare parking where appropriate, corporate use of carshare, and working with developers to provide car sharing vehicles/memberships when appropriate.</i> However, this practice still encourages the usage of vehicles. Carsharing also aligns with OCP Policy 20.13 (c) <i>Encourage and prioritize affordable and accessible transportation options and alternatives;</i> OCP Policy 20.14 (b) <i>Encourage shared auto use (such as car co-operatives) and efficient and/or alternate fuel vehicles by allocating preferred parking spaces and reducing parking requirements for new developments;</i> OCP Policy 20.14(c) <i>Amend municipal zoning to mandate that development accommodate car co-ops, car share vehicles and/or electric vehicles (EV);</i> and OCP Policy 36.6(g) <i>Carshare or bike share spaces should be visible and conveniently located.</i>
Socio-political	<i>Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).</i> <i>Consistency with national/local traditions, policies and institutions; acceptable for the local population.</i>	An agreement between DoS and carsharing co-operative, Modo, was <u>signed in June 2018</u>, however, the agreement sparked debate at a <u>November 2019 Council meeting</u>. Expansion of carsharing options may lead to similar debate from the community. Carsharing aligns with the social/cultural context of DoS given the branding of DoS as “hardwired for adventure” and the lifestyle of residents where the use of a car is required to participate in certain recreational activities. This model is also appealing for tourism purposes. Carsharing could be made more appealing to residents and stakeholders by providing more vehicle options (e.g. size, day rates, grouped hourly rates) and a wider radius of availability for local residents.
Sustainability	<i>Ability of the model to maintain its beneficial effects in the longer term.</i>	Given the climate emergency, models such as carsharing that still rely on vehicle use are not environmentally sustainable. However, this practice can be used as a transitional recommendation to ultimately reduce car ownership and increase efficiency of existing parking structures.

		To ensure this model can be more sustainable for DoS, more designated parking spots for carsharing vehicles and more vehicles in the fleet are required. Offering an option of one-way trips (different pickup/dropoff location) versus two-way trips (same pickup/dropoff location) to reduce distance of the trip, is another way to make this model more sustainable. DoS must renew and maintain agreements with carsharing companies and developer contributions to ensure financial sustainability for the District. Ultimately, expanding carsharing options must take place alongside other strategies that reduce automobile dependence altogether.
Technical/ Administrative	<i>Availability of necessary resources and competencies.</i> <i>Degree of ease of implementation, financial/ managerial factors.</i>	DoS staff have already worked with the carsharing co-operative Modo on this type of agreement and would have the resources and competencies to continue partnering with other carsharing companies in the future. Given that the current carsharing options in DoS were funded through developer contributions, it would be anticipated that future expansion of options would also be funded by developers rather than DoS.
Equity	<i>Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g. lower income, women, children, the disabled, aged, etc.</i>	Carsharing does not consider those that cannot drive, however, it can provide a safer option for vulnerable/racialized/marginalized populations who do not own a vehicle. A more equitable approach can be taken by providing adjustable rates, however, this would require an agreement with Modo and other future carsharing companies.

Ride Hailing		
Feasibility Type	Description	Notes
Regulatory	<i>Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.</i>	DoS' regulation of ride hailing currently falls under the business licensing department. Ride sharing exists (e.g. <u>Poparide</u>), but does not require a business license (i.e. not regulated by DoS), while ride <i>hailing</i> options (i.e. vehicle for hire) are limited. Additional regulatory tools such as a set of reviewing guidelines for granting business licenses to ride hailing companies could be introduced. Ride hailing aligns with OCP Policy 20.14 (a) <i>Employ a hierarchy of transportation modes as a general approach to guide transportation decisions. Priority (in order): walking; cycling; transit; commercial vehicles; high-occupancy vehicles/taxi; then private automobiles. Modes at the top of the hierarchy will not necessarily receive priority on every street; in some cases, users may be accommodated on a parallel or nearby route.</i>

		<i>This is particularly true for streets that serve a particular need such as the movement of goods.</i>
Socio-political	<i>Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).</i> <i>Consistency with national/local traditions, policies and institutions; acceptable for the local population.</i>	Despite DoS already having an option to purchase a business license for ride hailing operations, the availability of ride hailing services in DoS is dependent on driver availability. The app “Whistle” currently only operates between 2:00 and 7:00pm on weekdays, while larger companies such as Uber and Lyft do not yet operate in DoS. Two locally-owned taxi companies, Squamish Taxi and Howe Sound Taxi also operate as ride hailing options. Lack of ridership information from private companies makes it difficult to forecast demand. Ride hailing does align with the social context of DoS, as a useful tool for those residents and tourists that need transport to participate in recreational activities/access the downtown. It would also be a source of income for residents who own vehicles. Ride-hailing could be offered and marketed as an additional mode of travel to residents and tourists, specifically one-way travel that would be helpful for drop off at trailheads/errands downtown. Expanded operating times would also make these services more accessible.
Sustainability	<i>Ability of the model to maintain its beneficial effects in the longer term.</i>	Given the climate emergency, it is not environmentally sustainable to rely on high-occupancy travel such as ride hailing/taxis, as these strategies still involve GHG emissions. However, this practice could be used as a transitional recommendation to ultimately reduce private car ownership and increase efficiency of existing parking structures.
Technical/ Administrative	<i>Availability of necessary resources and competencies.</i> <i>Degree of ease of implementation, financial/ managerial factors.</i>	Ride hailing is feasible for DoS as there is minimal compliance and enforcement required from District staff (with exception to business licensing).
Equity	<i>Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g. lower income, women, children, the disabled, aged, etc.</i>	Ride hailing can create a potential cost barrier for some residents as rates and service quality are not regulated. Lack of regulatory power makes it difficult to ensure equitable outcomes of these services for residents (e.g. rates, service quality, etc.). Alternatively, ride hailing provides an option for people who cannot drive or cannot afford a private vehicle to access their destinations. However, ride hailing does not necessarily provide accessible options for residents/tourists who use mobility aids.

Complete Streets/Active Transportation Integration

Feasibility Type	Description	Notes
Regulatory	<i>Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.</i>	Complete streets and active transportation integration aligns with CCAP Big Move #2 Shift Beyond the Car Strategy Actions: “Develop a strategy to enhance streets with ditches that considers active transportation, environmental values and storm water management,” and “augment existing active transportation infrastructure budget to make biking and walking safer and more accessible.” This TDM strategy also aligns with OCP Policy 19.4 (c) <i>Emphasize active transportation and public transit as an essential part of the District transportation and land use network</i>, and OCP Policy 38.9 (a) <i>The Downtown Open Spaces Plan identifies key public parks, corner plazas, potential street end closures, approximate locations of mid-block connections, waterfront walkways, and separated bike lane corridors.</i> To support this model further in DoS, amendments to the <i>Development Cost Charges (DCC) Bylaw No. 2672</i> to increase contributions from developers to fund complete street/active transportation infrastructure could be considered.
Socio-political	<i>Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).</i> <i>Consistency with national/local traditions, policies and institutions; acceptable for the local population.</i>	Complete streets and active transportation integration aligns strongly with the active and adventure-focused demographic of DoS and its tourists. However, any limitations to private vehicular usage (e.g. closed streets, expanding bike lanes) is likely to lead to some pushback from the community, as automobiles are currently the dominant mode of transportation in these areas. Complete streets and active transportation integration could be made more appealing to the community through more integrated planning of various active transportation modes and complete street initiatives and by pairing various complete street initiatives and active transportation modes with recreational activities.
Sustainability	<i>Ability of the model to maintain its beneficial effects in the longer term.</i>	Complete streets and active transportation integration can be sustained over a long term if DoS has a financial sustainability plan and diverse revenue streams to maintain infrastructure upkeep and if this model is paired with other modal shift initiatives. This model encourages an overall move beyond car usage and vehicular greenhouse gas emissions.
Technical/ Administrative	<i>Availability of necessary resources and competencies.</i>	DoS has an existing Downtown Open Spaces Plan (within the OCP) and <u>future bike lane plan</u> , however, this model may require external consultants to conduct traffic volume assessment/transportation assessment to determine road closure locations and bike

	<i>Degree of ease of implementation, financial/ managerial factors.</i>	route expansion. It will also require additional budget (e.g. via grants) and resources for infrastructure improvements. DoS could sub-contract the transportation study to support the development of complete streets. By pricing parking and increasing developer contribution, DoS would have the revenue stream to pay for future infrastructure improvements.
Equity	<i>Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g. lower income, women, children, the disabled, aged, etc.</i>	This model provides benefits to those who cannot drive due to age or disability, or who have financial barriers to owning a vehicle. However, it should be noted that road closures/car-free streets could create barriers for loading/unloading near businesses and services downtown (i.e. lengthen travel time. To mitigate these challenges, DoS could work to ensure that all design and planning prioritizes accessibility and employs universal design techniques to limit barriers to access. Furthermore, they could work not only with the developer/ builder community, but also residents of DoS to better heed the concerns of residents and neighbourhoods.

Transit Improvements/Transit-Oriented Development (TOD)

Feasibility Type	Description	Notes
Regulatory	<i>Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.</i>	DoS has a strong existing partnership with BC Transit, which operates public transit within DoS. Improving transit and transit-oriented development (TOD) aligns with CCAP Big Move #2 Shift Beyond the Car Strategy Actions: “<i>Improve public transit within Squamish (Improve frequency, reliability, routing, infrastructure and communications),</i>” and “<i>Improve regional transportation (Develop affordable and reliable transit).</i>” Transit improvements also align with multiple OCP Policies, including but not limited to Policy 19.4 (c) <i>Emphasize active transportation and public transit as an essential part of the District transportation and land use network.</i> Regarding Regional Transit, OCP Policy 19.4 (e) seeks to “<i>Support and advocate for the implementation of effective regional transit services.</i>” For TOD specifically, OCP Policy 12.6 (b) seeks to “<i>Encourage greater residential densities in growth areas identified in Section 9.2.b., neighbourhood nodes generally identified on Schedule C, commercial and employment areas, education centres, and along transit corridors.</i>” To support TOD specifically, further zoning bylaws could be introduced along core transit networks that support additional housing forms.

Socio-political	<i>Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).</i> <i>Consistency with national/local traditions, policies and institutions; acceptable for the local population.</i>	The likelihood that transit improvements would be accepted by DoS residents and stakeholders depends on the type, cost and location of improvements and the impact it would have on taxpayers. Regardless, TOD aligns with the local DoS context. There are existing transit services in DoS, however, they are limited and not frequent/ convenient enough to replace private vehicle use. The COVID-19 pandemic has also played a role in ridership. To make this model more appealing, there can be an emphasis on the increase in density, decrease of reliance on private vehicles, and impact in congruence with CCAP. To be tailored to the DoS context in specific too, greater storage capacity can be added on transit for those engaging in recreational activities and <u>current challenges to transit use</u> (i.e. frequency, lack of schedule alignment, transit facilities such as shelters and schedules at stops etc.) could be addressed.
Sustainability	<i>Ability of the model to maintain its beneficial effects in the longer term.</i>	This model will be possible to maintain over the long-term. It encourages an overall move beyond the car and a reduction in vehicular greenhouse gas emissions by improving public transit service as an alternative mode of travel. To ensure this model is sustainable for DoS, improvements of transit stop infrastructure could be made, additions of an improvements of end-of-trip facilities could be made, and <u>current challenges to transit use</u> (i.e. frequency, lack of schedule alignment, transit facilities such as shelters and schedules at stops etc.) could be addressed.
Technical/ Administrative	<i>Availability of necessary resources and competencies.</i> <i>Degree of ease of implementation, financial/ managerial factors.</i>	Public transit is currently operated by BC Transit, and regional transit is currently operated by private companies (e.g. Squamish Connector). However, adding additional services and capacity may require DoS' role in supporting the expansion of existing transit services (intra-municipal and regional) which may require additional budgeting and grants (e.g. bus shelters, signage). In determining whether to leverage existing DoS resources vs sub-contracting work we have to consider current regional transit capabilities and the potential to grow and provide higher frequency of regional transit. DoS could continue their current partnership with BC Transit and Squamish Connector to support such transit improvements/TOD.
Equity	<i>Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g. lower income, women, children, the disabled, aged, etc.</i>	Transit/TOD may not necessarily be an appealing option for everyone (i.e. people with autism and/or those who experience sensory overload). In addition, core transit users may be priced out of TOD areas. To help address these challenges, DoS could conduct more engagement with users who do not use transit.

Parking Pricing/Adaptable Parking Pricing		
Feasibility Type	Description	Notes
Regulatory	<i>Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.</i>	DoS does not currently have a paid parking structure (i.e. charging for usage of a designated parking space). However, parking pricing aligns with CCAP Big Move #2 Shift Beyond the Car Strategy Action: <i>Develop and implement a strategy to price parking along parts of the core transit network and provide adequate enforcement in order to incent mode shift.</i> Parking pricing also aligns with OCP Policy 20.12 (c) which seeks to “<i>Explore options for paid parking and actively manage on-street parking through parking enforcement and education programs.</i>” Introducing paid parking in DoS would require the introduction of an exclusive bylaw for parking management or an extensive amendment to the existing Traffic Bylaw (with subsequent amendments to the schedule section of the Municipal Ticket Information Bylaw).
Socio-political	<i>Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).</i> <i>Consistency with national/local traditions, policies and institutions; acceptable for the local population.</i>	Given that parking is not highly regulated or enforced in DoS, paid parking/adaptable parking pricing will be a major adjustment for DoS residents and business owners and will likely lead to pushback from residents and business owners. The strategy of parking pricing as a means of disincentivizing private vehicle use does however align strongly with the social and cultural context of DoS, such as the outdoor and recreational lifestyle and the small community character. Therefore consultation with residents and local stakeholders is essential. Similar to parking regulations in general. Approach parking through an educational lens and take a phased approach to rolling out strategies. Residents are often unaware of the cost of parking and enforcement, or how much parking costs during development. Being able to roll-out a parking strategy that highlights the community benefits of parking regulation (e.g. revenue generation for the District that can then be disbursed elsewhere for community amenities, GHG emission reductions, etc.) will help make paid parking more appealing. Education on pricing schemes is also essential such as an adaptable/tiered scheme.
Sustainability	<i>Ability of the model to maintain its beneficial effects in the longer term.</i>	While paid parking can be maintained over the long-term, using this approach to reduce car dependency is not sustainable, as charging for parking does not necessarily correlate

		to reduced vehicle use. Paid parking must be rolled-out alongside other transportation demand management (TDM) strategies that encourage residents to get out of their cars (e.g. improving intra-municipal and regional transit, improving active transportation infrastructure).
Technical/ Administrative	<i>Availability of necessary resources and competencies. Degree of ease of implementation, financial/ managerial factors.</i>	Introducing paid parking will require additional budget, staff, equipment (ie. parking meters) and software (ie. a parking app). Rolling out paid parking will also require hiring an external consultant to produce a paid parking strategy and implementation plan, along with engagement and communications consultants who will support the public consultation of the strategy. While an adaptable parking scheme may be a possibility later in the implementation phase, this would require additional planning and research to determine the zone divisions based on demand and geography and the resulting pricing variations and increases.
Equity	<i>Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g. lower income, women, children, the disabled, aged, etc.</i>	Paid parking disadvantages low-income residents and residents who rely on their vehicle for daily/work-related activities, such as people with disabilities/mobility barriers. Pricing parking starting in Downtown could also disadvantage small business owners Downtown, as traffic may be diverted elsewhere to bigger box stores (e.g. Garibaldi Village Shopping Centre) where parking would remain free. To address these outcomes, DoS could introduce an equitable permitting program for low-income residents (similar to the City of Surrey's Leisure Access Program) that allows residents to receive a subsidized parking permit. Additionally during the initial roll-out of paid parking, DoS could waive parking fees on accessible parking spaces (accessible parking permits would still be accessed through SPARC BC).

Enforcing Parking Regulations

Feasibility Type	Description	Notes
Regulatory	<i>Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.</i>	DoS currently regulates parking through its Zoning Bylaw No. 2200, Traffic Bylaw No. 2220, Setbacks and Cash-in-lieu Parking Bylaw No. 2576, OCP Bylaw No. 2500, Building Bylaw No. 1822, Cash in Lieu of Off-Street Parking Spaces Bylaw No. 2553, Floodplain Management Bylaw No. 2676, Land Development Procedures Bylaw No. 2632, and Subdivision and Development Control Bylaw No. 2649. Failure to comply can result in monetary penalties enforced via the Municipal Ticket Information Bylaw No. 1832.

		Parking pricing aligns with CCAP Big Move #2 Shift Beyond the Car Strategy Action: <i>Update parking requirements to maximize land use efficiency and increase residential and employment density: reduce parking minimums and establish maximums for specific permitted uses along core transit network.</i> Parking pricing also aligns with OCP Policy 20.11 (a) <i>Maintain reasonable parking systems and infrastructure to support resident, commercial and visitor parking in balance with active transportation and Downtown revitalization.</i> While DoS has these various policy tools in place to regulate parking, its enforcement is lacking. See “Technical/Administrative Feasibility” for more.
Socio-political	<i>Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).</i> <i>Consistency with national/local traditions, policies and institutions; acceptable for the local population.</i>	Parking is a contentious issue in many communities, including DoS. Any changes to parking regulations that would further restrict parking availability, will likely lead to pushback from residents and business owners. Given that parking is not highly regulated or enforced in DoS, this model does not align with the current context of DoS. However, the strategy of <i>Moving Beyond the Car</i> in general does align strongly with the social and cultural context of DoS, such as the outdoor and recreational lifestyle and the small community character. Residents are often unaware of the cost of parking and enforcement, or how much parking costs during development, therefore parking should be approached through an educational lens and through a phased approach to rolling out strategies. Being able to roll-out a parking strategy that highlights the community benefits of parking regulation (e.g. revenue generation for the District that can then be disbursed elsewhere for community amenities, GHG emission reductions, etc.) will help make these strategies more appealing to the community.
Sustainability	<i>Ability of the model to maintain its beneficial effects in the longer term.</i>	While parking regulations can be maintained over the long-term, using this approach to reduce car dependency is not sustainable. Regulating parking as a way of reducing car dependency must be implemented alongside other strategies of <i>Moving Beyond the Car</i> , such as adequate public transit and improved active transportation infrastructure.
Technical/ Administrative	<i>Availability of necessary resources and competencies. Degree of ease of implementation, financial/ managerial factors.</i>	While DoS has the tools in place to regulate parking, its enforcement is lacking. Increasing parking compliance and enforcement will require DoS to allocate more budget and resources to bylaw enforcement, e.g. hiring additional Bylaw Officers, purchasing mobile ticketing equipment, hiring clerical staff to manage increase in municipal ticketing, etc.

Equity	<i>Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g. lower income, women, children, the disabled, aged, etc.</i>	Parking regulation can create inequitable outcomes for people who require automobile use for daily/work-related activities, e.g. tradespeople, people with mobility equipment, parents with young children etc. Ticketing costs can also be a barrier for low income residents. To mitigate these outcomes, DoS can work to ensure parking is accessible for residents who still require a vehicle for daily/work-related activities, e.g. accessible parking spaces, flex loading zones, trades parking permits.
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Implementing Parking Maximums		
Feasibility Type	Description	Notes
Regulatory	<i>Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.</i>	This model aligns with CCAP Big Move #2 Shift Beyond the Car Strategy Action: <i>Update parking requirements to maximize land use efficiency and increase residential and employment density: reduce parking minimums and establish maximums for specific permitted uses along core transit network.</i> The current OCP does not have policies to support the implementation of parking maximums. However, the model is in line with OCP objective 20.11 (b) <i>Encourage more efficient use of on-street parking facilities (particularly in peak periods), reduce parking demand, and shift travel to alternate modes (transit, walking and biking) by limiting off-street parking supply.</i> To support this model, DoS could consider adopting an OCP policy to establish an upper bound for the number of parking spaces allowed for each development based on the building use and/ or size. Such adoption should be followed by a revision of the Zoning Bylaw No. 2200 section 41 (off-street parking) by staff.
Socio-political	<i>Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).</i> <i>Consistency with national/local traditions, policies and institutions; acceptable for the local population.</i>	Utilizing parking maximums to limit the construction of parking spaces larger than necessary, dependent upon the number, is a relatively mild parking strategy compared to parking pricing and other enforcements that have more direct impacts. Hence, pushback from residents and tourists is unlikely. However, the model is deemed to be less impactful by DoS due to the generally low parking supply in past developments without any parking maximums implemented. Parking maximums implementation might not be consistent with the social and cultural context of DoS in terms of the generally small scale of developments in the community. To make this model more appealing, DoS could emphasize the increasing population and density within the community as a trend which will sequentially put pressure on

		parking space supply of each new development. They could also consider forming an advisory body to study and keep track of the number of parking supply provided in new developments along core transit networks; and explore the potential to establish a table of uses classifications that determines the parking lot sizes. Consultation with developers would be required to develop the right scale of parking maximums that responds to DoS' social context.
Sustainability	<i>Ability of the model to maintain its beneficial effects in the longer term.</i>	The implementation of parking maximums can reduce the physical size of lots which promotes compact development and reduces stormwater run-off and GHG emissions . The effects of establishing parking maximums to specific permitted uses can be maintained over a long term through permanently reducing parking supply of developments. However it has to be paired with other modal shift initiatives to achieve actual reduction of car dependency. Limiting the construction of parking spaces dedicated to specific uses of a building must be implemented alongside the adequate supply of alternative options (e.g. bike storage and parking facilities within the building, intra-municipal and regional transit network, improving municipal active transportation infrastructure, etc).
Technical/ Administrative	<i>Availability of necessary resources and competencies.</i> <i>Degree of ease of implementation, financial/ managerial factors.</i>	Additional staff and budget could be required for the formation of an advisory body/ working group, and conduction of existing parking inventory. Assessment/ inventory works for determining parking maximums for different uses and sizes should be subcontracted to engineering consultants.
Equity	<i>Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g. lower income, women, children, the disabled, aged, etc.</i>	The successful implementation of parking maximums will lead to a more equitable built environment by preventing construction costs of parking spaces/ lots from offsetting by developers to building users (e.g. renters, homeowners, customers, etc). In the case that parking maximums are implemented, parking provision of any development proposal should still be reviewed under the principle that equity needs of the project must be met - for example, adequate accessible parking should be provided if needed.

Remove Parking Minimums (Parking Allowances)

Feasibility Type	Description	Notes
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Regulatory	<i>Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.</i>	The removal of parking minimums aligns with CCAP Big Move #2 Shift Beyond the Car Strategy Action: <i>Update parking requirements to maximize land use efficiency and increase residential and employment density: reduce parking minimums and establish maximums for specific permitted uses along core transit network.</i> This model also aligns with OCP policy 20.14 (b) <i>Encourage shared auto use (such as car co-operatives) and efficient and/or alternate fuel vehicles by allocating preferred parking spaces and reducing parking requirements for new developments.</i> To further support this model, DoS could consider amendments to Zoning Bylaw No. 2200 section 41 subsection 41.7 Off-street Parking Requirements and potentially eliminate <i>Table 3: Minimum Vehicle Parking Requirements</i> should be considered.
Socio-political	<i>Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).</i> <i>Consistency with national/local traditions, policies and institutions; acceptable for the local population.</i>	Pushback from current residents and business owners is foreseeable. There could especially be concerns around increased parking demand being offset by developments to on-street parking under the removal of parking minimums. To support this model, DoS could ensure the parking provision aspect of any uses and buildings would still be reviewed to ensure its adequacy. They could also emphasize that the intention of removing parking minimums is to avoid the oversupply of automobile parking, rather than suppressing the supply of parking that is needed.
Sustainability	<i>Ability of the model to maintain its beneficial effects in the longer term.</i>	Eliminating minimum parking requirements would better support the goals and objectives outlined in the CCAP and OCP by creating a more compact and complete community, and reducing auto-dependence. However, it has to be paired with other modal shift initiatives to achieve actual reduction of car dependency (e.g. bike storage and parking facilities within the building, intra-municipal and regional transit network, improving municipal active transportation infrastructure, etc).
Technical/ Administrative	<i>Availability of necessary resources and competencies.</i> <i>Degree of ease of implementation, financial/ managerial factors.</i>	Removing parking minimums can be deemed as a form of simplification. The current zoning by-law requires off-street parking spaces to be provided in accordance with <i>Table. 3: Minimum Vehicle Parking Requirements</i>, based on uses and sizes. Frequent amendments on a site-specific basis could be prevented through the removal of the minimums and parking rates. Parking demand studies should be conducted regularly to avoid inadequate parking supply in certain areas which can lead to spillover.
Equity	<i>Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g. lower income, women, children, the disabled, aged, etc.</i>	The needs for accessible parking and the difficulty to access public transit might be overlooked in this model. Therefore, equitable access for certain areas should be reviewed (e.g. the needs for accessible parking, areas which would be difficult to serve with transit).

Mobile Paid Parking Technology

Feasibility Type	Description	Notes
Regulatory	<i>Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.</i>	There are currently no existing tools within DoS to implement this model. A business license or third-party application would need to be authorized for use in DoS to enable this model.
Socio-political	<i>Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).</i> <i>Consistency with national/local traditions, policies and institutions; acceptable for the local population.</i>	Mobile paid parking technology should receive little resistance, but it would be coupled with paid parking and that is expected to receive resistance with stakeholders (business owners and public). Otherwise, it aligns with the social/cultural context of DoS because it is meant to facilitate easy payments. To make this model more appealing, it should be marketed as a tool to save time and make pay parking easier. It should also be emphasized that this model would be cheaper for stakeholders as there is no built infrastructure to implement paid parking.
Sustainability	<i>Ability of the model to maintain its beneficial effects in the longer term.</i>	It would be possible to maintain this model in the long-term based on the length of contract with the third-party.
Technical/ Administrative	<i>Availability of necessary resources and competencies.</i> <i>Degree of ease of implementation, financial/ managerial factors.</i>	Initially, this model will need staff assigned to implement at onset. Also, a cost-benefit analysis would be required for different platforms. The chosen platform can then be incorporated into the budget. Additional resources such as, a subject matter expert on technology implementation and a liaison with the third-part application would be required.
Equity	<i>Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g. lower income, women, children, the disabled, aged, etc.</i>	This model directly disadvantages individuals without a smartphone or access to technology. Typically, this includes older adults who are not adopters of technology, which would further hinder their uptake of this model. To produce more equitable outcomes, the DoS could (a) partner with the mobile technology to create tiered parking payment structure and residential parking permits and (b) Clearly communicate how those without access to technology can participate in this model and onboard them first at a centralized location.

Remote Parking, Spillover, and Shuttle Service

Feasibility Type	Description	Notes
Regulatory	<i>Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.</i>	Current policies that support this model, include OCP policy 18.2.h <i>Work with BC Parks to proactively address impacts of increased visitation on local and regional transportation, and parking infrastructure requirements</i> ; OCP policy 20.12.a <i>Monitor Downtown parking inventory and utilization and secure a location for a shared parking facility as part of, or in close proximity to a multi-modal hub, rather than a proliferation of accessory lots</i> ; and OCP Policy 39.5.b. <i>Where underground parking cannot be accommodated to the satisfaction of the District, parking should be located away from the edges of public spaces and streets, ideally behind buildings and screened from public view.</i> Further tools to support this model would include an agreement with private surface lots to enable a “park-and-ride” function.
Socio-political	<i>Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).</i> <i>Consistency with national/local traditions, policies and institutions; acceptable for the local population.</i>	This model does align with the context of DoS, but resistance by business owners and the public is anticipated, as these park-and-ride spots would be utilizing existing parking infrastructure. To make this model more appealing it would be necessary to (a) consider times for shared parking, (b) framing communication to the public through the notion of a guaranteed spot to access downtown without wasting time looking for parking, (c) framing communication to business owners through the notion that the periphery of the lot will be allocated as a park-and-ride but the spots in front of businesses will be prioritized for patrons, and d) tying in the model with regional and local transit so that individuals would have direct access to Downtown Squamish.
Sustainability	<i>Ability of the model to maintain its beneficial effects in the longer term.</i>	This model will be sustainable in the long-term, but the initial roll out can be seasonal, set for times with peak visitors as a “pilot” to gauge demand. To ensure future sustainability it would be important to determine demand and understand the number of tourists/residents who may make use of this service.
Technical/ Administrative	<i>Availability of necessary resources and competencies.</i> <i>Degree of ease of implementation, financial/ managerial factors.</i>	The resource costs are unknown, as DoS would need to incorporate the cost of acquiring and operating a shuttle, as well as the opportunity cost of having a park-and-ride facility at the perimeter. The location of the perimeter remote/satellite lot also needs to be discussed. It is recommended that the DoS use existing parking infrastructure. Additional resources to be considered include vehicle and operations.
Equity	<i>Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g.</i>	In allocating lots for private vehicles to the outer edges, DoS can consider prioritizing necessary parking infrastructure closer to the centre for those who have limited mobility and people with disabilities who have to drive and be close to their destinations. It would allow the redistributing parking infrastructure in a more equitable way. Additionally, If integrated with local/regional transit, this model would make Downtown Squamish more accessible.

	<i>lower income, women, children, the disabled, aged, etc.</i>	
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APPENDIX F

STAFF MEETING PRIMER

Introduction

The following primer provides an overview of the best practice models and associated case studies with respect to “Moving Beyond the Car” that the team has established so far. Moving forward the team hopes to further analyze these best practice models to establish whether or not they would be feasible for the District of Squamish to apply. As such, this primer is accompanied by a set of preliminary feasibility criteria in order for the District of Squamish staff to support us in this phase of feasibility analysis. Once the team is able to establish and apply this criteria, the next phase of work requires visualization and design prototypes of the relevant feasible models that encapsulate Squamish “Beyond the Car.”

Best Practice Framework

In selecting the best practice models for the DoS to consider, the team applied an adapted SMARTIE goals framework, in addition to considering a similar context as Squamish. This was conducted to assure that these selected concepts are worthwhile to consider and further explore. SMARTIE goals are goals that are Specific, Measurable, Achievable, Relevant, Time-Bound, Inclusive, and Equitable. The team adapted this framework to fit the project scope by altering “Specific” to “Sustainable” to consider the longevity and resiliency of the initiative. “Achievable” to “Actionable” to ensure that the initiative is feasible for the DoS (this will be evaluated in line with our feasibility assessment), and “Inclusive” to “Innovative” since equity is already incorporating inclusive and to emphasize models that are attempting out-of-the box solutions. The framework is as follows:

Sustainable - Is the model sustainable (environmental, social, economic)?

Measurable - Can this model be monitored/regulated?

Actionable - Is this model feasible for the District of Squamish? → Feasibility Assessment

Relevant - Does this model contribute to Moving Beyond the Car?

Time-bound - Can this model be implemented over a short- (1-2 years), medium- (2-5 years) or long-term (5-10 years)?

Innovative - Is the model innovative?

Equitable - Does this model address equity?

Best Practice Models

The best practice models that follow are representative of emerging and existing concepts, evaluated against our SMARTIE goals framework.

BEST PRACTICE MODELS

General TDM Strategies	Car-Free Planning Strategies	Parking Strategies	
Carsharing - Nelson, British Columbia - Halifax, Nova Scotia - San Francisco, California - New York City, New York Ride Hailing - Multiple (many municipalities have ride hailing options including Uber, Lyft, etc. and no individual municipality stands as a case study)	Complete Streets/Active Transportation Integration - Canmore, Alberta - Auckland, New Zealand - Sacramento, California - Zurich, Switzerland Transit Improvements/Transit-Oriented Development - Auckland, New Zealand - Canmore, Alberta Transit Technology - Barrie, Ontario - Austin, Texas	Adaptable/Variable Parking Pricing - Canmore, Alberta - Sacramento, California - Austin, Texas - Jasper, Alberta Parking and Transportation Management District - Austin, Texas Parking Regulations - Penticton, British Columbia - Fredericton, New Brunswick - Halifax, Nova Scotia - Banff, Alberta - Blue Mountains, New South Wales - Boulder, Colorado - Zurich, Switzerland - San Francisco, California - South Lake Tahoe, California - Ghent, Belgium Implementing Parking Maximums - Zurich, Switzerland - San Francisco, California - South Lake Tahoe, California - Ghent, Belgium	Removing Parking Minimums (Parking allowances) - San Francisco, California - Edmonton, Alberta - New York City, New York Mobile Paid Parking Technology - Austin, Texas - Jasper, Alberta - Banff, Alberta - Blue Mountains, New South Wales - Boulder, Colorado - Edmonton, Alberta - Sacramento, California - New York City, New York Remote Parking, Spillover and Shuttle Service - Banff, Alberta - Jasper, Alberta

EXAMPLE APPLICATION OF BEST PRACTICE FRAMEWORK: CARSHARING	
Sustainable	No - not sustainable in the long term does not consider GHG's (lifecycle GHG emissions of EV's, parking required etc) and a future where we don't just rely on cars
Measurable	Yes - Can be regulated with respect to its administered business license, but the ability of monitoring however depends on the source of data (private entity/ public sector)
Actionable	TBD - Subject to Feasibility Assessment <i>Note: Squamish does have Modo car share already but only has two cars downtown (https://modo.coop/); use details are unknown</i>
Relevant	Yes and No - Encourages carpooling but still focuses on cars
Time-bound	Short- and medium-term
Innovative	No - Already exists in Squamish and as a concept has been in existence for a long time, as far back as 1948 in Zurich, Switzerland . It also reinforces car usage and is therefore not particularly innovative as a mechanism to "move beyond the car."
Equitable	Identity - Does not consider people who may be unable to drive; safe travel option for vulnerable/racialized/ marginalized populations Income - Potential cost barrier but also potentially cost-effective for those who cannot afford a private vehicle

FEASIBILITY CRITERIA			
Type	Description	Guiding Questions	Considerations
Regulatory Feasibility	<i>Consistency with current regulatory framework, provincial/federal mandates as appropriate, and community objectives.</i>	- Does DoS have the existing regulatory tools to implement this model? - Does the model align with DoS policy objectives?	- What regulatory tools would need to be introduced? - What amendments would be required?
Political Viability	<i>Acceptability of the model to various relevant stakeholders that hold political power (Mayor and Council, voters).</i>	- How likely is it that this model would be approved by the Mayor and Council? - How likely will this model be accepted by Squamish residents and stakeholders (e.g. business owners)?	- How can this model be made more appealing to local government, stakeholders, public, etc.?
Sustainability	<i>Ability of the model to maintain its beneficial effects in the longer term.</i>	- Will this model be possible to maintain over the long-term?	- What features are missing to ensure this model is sustainable for Squamish?
Social/Cultural Feasibility	<i>Consistency with national/local traditions, policies and institutions; acceptable for the local population.</i>	- Does this model align with the social/cultural context of Squamish?	- How could this model be made to adapt to the Squamish context?
Technical Feasibility	<i>Availability of necessary resources and competencies.</i>	- Does DoS have enough staff with the technical expertise and/or capacity to implement this model?	- When to leverage existing DoS resources/capacity vs. when to sub-contract work?
Administrative Feasibility	<i>Degree of ease of implementation, financial/ managerial factors.</i>	- Does DoS have the budget, resources, and administrative policies to implement this model?	- What additional resources would be required?
Equity	<i>Fair social allocation (distribution) of burdens (may be costs) and benefits among social groups; effect of the problem on special populations, e.g. lower income, women, children, the disabled, aged, etc.</i>	- Does this model benefit some groups and disadvantage others? - Are those disadvantaged by this model already historically disadvantaged/ marginalized?	- How can the model be adjusted to be more equitable?

APPENDIX G

LESSONS LEARNED IN PARKING MANAGEMENT

As an extension of Phase 1: Information Gathering, the project team reached out to a selection of small- to mid-sized communities (Penticton, BC; Whistler, BC; Canmore AB; Blue Mountains, AU) to engage with municipal staff on lessons learned in implementing parking in their communities.

CITY OF PENTICTON

British Columbia, Canada

Topic 1: Introduction and Expansion of Paid Parking in Penticton

Q: Did the City of Penticton take a phased/incremental approach?

A: Historically Penticton had free parking on its Main Street and paid (meter head) parking on most other downtown commercial streets and downtown pay lots. The downtown pay lots also offered one hour free parking. This approach of free parking on Main Street was seen as a way to entice more downtown shoppers – ie competing with the mall and big box stores that offered free parking. The free parking though was difficult to administer as bylaw officers had to chalk tires and monitor vehicles overstaying their 2 hour maximum time limit.

It has long been a City staff initiative to increase the amount of paid parking in the City and to have a more blanket approach (all of downtown vs some areas free and some paid). From staff's perspective, parking is a very valuable taxpayer-owned resource / asset and giving it away for free (in the downtown or elsewhere) is not good management of that asset. As such, several attempts over the years have been made to expand the pay parking program throughout the downtown but also into recreational areas. A parking plan was adopted in 2012 that had plans for parking expansion. That plan however was not implemented due to a poor economy at the time and the plan was revisited in 2018. Council of the day, however, did not support any changes to the parking approach.

In 2020, due to significant revenue shortfalls due to the COVID-19 pandemic, Council directed staff to look at ways of making up the revenue shortfall and specifically cited parking as a way to do so. Staff conducted a fairly large public consultation exercise, building off the work done in 2018, looking at a number of options, including expanding the pay parking program in the downtown but also introducing charging for parking permits in resident only areas and expansion the pay parking program to the waterfronts and recreational areas (arenas pools etc.) The outcome of that public consultation exercise was support

for expanding parking in the commercial areas of the downtown but not expanding elsewhere.

Following the reporting back of this public consultation, Council directed staff to expand paid parking to all commercial areas of the downtown. That direction was followed through with and paid parking in all of downtown went live in May of 2021. There has been little public opposition since implementation – other than some grumbling about how to use the machines and general displeasure overall. Also the downtown Penticton Association (our Business Improvement Organization) has been somewhat critical and is lobbying to bring back the one hour free parking in the parking lots downtown. Nevertheless, the implementation went fairly well and there is no indication that Council will change the approach.

Q: What are some lessons learned from the process of introducing paid parking?

E.g. public response, unanticipated costs

A: It's important to engage the public and show the true tradeoffs of not charging for parking (ie tax rates, turnover in commercial areas, supporting alternatives to single occupant vehicles etc.). For example, we estimate that paid parking when fully implemented just in the downtown is \$1 million dollar a year revenue source. That equates to a roughly 3% tax increase or \$1 million subsidy for downtown businesses. When general taxpayers look at it that way, they generally support paid parking.

Also, linking the revenue to specific items is useful. We linked the parking revenue to downtown safety (graffiti removal program / more bylaw officer presence / camera program / etc.) and downtown vibrancy (events / lightups / etc.). Finally, start with a larger area including all areas of public land where parking is in demand and scale back based on public feedback. For example we added all recreational areas, but pulled back to just downtown.

Topic 2: Resident Only Parking Permit

Q: Has the Residential; Only Parking Permit program helped resolve Downtown parking issues?

A: We have resident only parking areas around our downtown and around our hospital to stop employees from clogging up these residential areas. I don't think this program has resolved any downtown parking issues, it just makes it a bit harder for employees to find free parking. And the program has really helped with the resident's quality of life (i.e. having parking on their street). The program though is currently free and requires the issuance of permits. We only enforce

based on complaint though – not proactively. The signage and enforcement approach seem to be enough.

THE RESORT MUNICIPALITY OF WHISTLER

British Columbia, Canada

Q. How did the Resort Municipality of Whistler implement(RMOW) implement the 2011 Day Lot pay parking strategy? Was any public engagement approach involved?

A: Whistler has added user pay parking to the Whistler Village – not that successfully in 2011 and then more successfully in 2017.

Q. What are some key effective approaches and lessons learned that would make a pay parking implementation more likely to succeed (i.e. the different approaches that were undertaken in 2011 versus 2017).

A: The process for the July 1, 2017 implementation of user pay parking in Day lots 4 and 5 and price changes in Day lots 1,2,3 started back in fall 2015 with the re-instatement of the Transportation Advisory Group in response to traffic and parking congestion that peaked as an issue the summer of 2015.

In 2010/11 when user pay parking was first introduced in Day Lots 1-5, the community hated it so much that all six councilors and mayor were voted out in the 2011 election. Those that were voted in campaigned on free parking and 0% tax increases. (It is also important to note that transit service was cut and transit fares were increased due to budget issues at the same time that user pay parking was introduced. It was a textbook case of what not to do when introducing user pay parking.)

In 2018 election, no one was voted in or out on free or pay parking. That means that the 2017 Transportation Action Plan was a success. The lesson from 2011 is that user pay parking needs to be introduced as a package showing immediate benefits to the community (increased transit service, cut in transit fares, more bike parking, more sidewalks, more bike lanes, etc) and preferably showing how the parking fees are funding all or some of these initiatives going forward.

There is another municipal election in 2022, we will see if user pay parking is an issue. If you are introducing pay parking this summer, it better be a quick success or it will become an election issue in a way that the elected officials don't want.

Q. What were some challenges such as roadblocks from the community that the RMOW encountered during the implementation of the 2021 pilot pay parking program for the four municipal parks?

A: Last summer, 2021, user pay parking was added to 4 Municipal Parks from Canada Day to September 15th. The key lesson is that user pay parking needs to be added with transportation alternatives (better walking, biking and transit/shuttle infrastructure and services).

THE TOWN OF CANMORE

Alberta, Canada

Q. How was engagement conducted in rolling out the parking strategy? What were the public's responses to the engagement and proposals (such as bicycle parking and paid parking in the town centre)?

A: Much of the engagement took place in advance of the parking strategy. We had good participation in a number of workshops that involved downtown businesses and key stakeholders. A big part of our strategy in getting acceptance for the program was to use parking revenues to fund fare-free transit. That essentially provides each resident and visitor a transit pass. We've also introduced a resident parking pass like Banff did which allows 3 hours free in pay parking zones.

Q. How did you decide/shape the boundaries for residential parking management vs town centre parking (page 23 of parking management)?

A: Generally you want to start with smaller zones and increase the size through resident petition (2/3 in favour for example). The reason for this is that it is a burden for residents to administer visitor passes, and accommodate contractors/cleaners etc. However we've gone to a new system that includes 3 hours free parking for residents and local businesses, and that allows people with a resident pass to also park in residential zones. So this allowed us to expand our resident zone.

Q. What was the initial feedback after announcing paid parking for May/June 2022?

A: Initial feedback has generally been muted, not too much negative. We'll see as the program rolls out but expect from Banff's experience that it will be relatively smooth.

BLUE MOUNTAINS CITY COUNCIL

New South Wales, Australia

Q. Based on the similarities with Squamish in terms of high car ownership, a tourism/adventure economy, and challenges with employee parking in the high density core - what was your approach in implementing your parking strategy and what engagement was conducted?

A: Blue Mountains has different parking plans for each precinct. We've introduced Echo Point which is the one with the highest number of visitors. Each precinct has what we call a town centre. Parking precinct zones, like the one at Echo Point, cover a few blocks from the lookout. Right now anyone in the city can park at Echo Point for free, which impacts peak time availability. We got approval through the elected body to introduce bus pay parking. Though we have approval to introduce a new permit scheme, it's on hold because of COVID. Right now at Echo Point, workers can park in the precinct, but that's in the middle of the spot where people want to come, so employees are taking up substantial space, which is in effect costing half a million in revenue. So we asked the question, where can they park if they can't park in the middle? They'll have to park outside the precinct area, which works because there's footpaths outside of the precinct that goes into the middle, or the alternative is you have to pay. "Outside the precinct" is 5-6 minutes away and the footpaths are walkable and well lit.

We have to realize that collecting revenue is the priority, and that implementing paid parking is demand management but it also allows investment into active transport and the public transport network. We have considered a city wide permit scheme, but right now the scale is only at the precincts. The fee is just a council fee, like building a new driveway or submitting a development application. The resident has a 2 year lease of the space. They can park in certain areas in the precinct, but the permit is not allowed to be used in the higher priority areas, it's really just intended for the zone of residence. If outside this zone, then they are considered a public member and have to pay.

The limit is scale. On a larger scale, it works with a larger amount of staff, but right now we're on the lower scale and we don't need that many resources. Our capacity currently is 30-33 parking metres. If we are to look at a city-wide scheme, we would have to look at doing things differently.

Engagement was called "Have Your Say" and it was an interactive platform. We put up all the different plans and supporting documents and people can directly react to them. We also directly engaged with business councils and had a formal procedure to do community engagement.

Currently, every resident has off-street parking, they can have 2 permits per household. If they don't want to pay for a permit, then they can park on their driveway, that's the option given to them. The residents don't own the roads, so we actually have the legislation. Of course you're definitely going to get some pushback, but our argument is that we're taking this revenue and using it to improve infrastructure that is damaged or impacted by visitors that come to this space.

Q. How did you identify what would work best in Blue Mountains, regarding enforcement and how to implement pay parking.

A: Have to start with scope, look at the parking data and occupancy. You have to do counts in the morning, peak weekday afternoon and peak weekend period - usually a Saturday. Look at metrics such as length of stay (LOS) and identify longer periods of LOS. Then you can cater for that behaviour or implement change for that behaviour. If high turnover, then shorter parking restrictions. We also use censored parking and that helps with enforcement, because not a lot of rangers actually come out to do parking. So for example, along Leura Mall the time slot is 1 hour. Visitors get a 15 minute grace period, and then after that we start fining for overstay. The sensors give us a lot of data. Yes, they're embedded into the pavement. There is an ongoing maintenance cost, and we source it out on a contract and the company maintains it.

We've also gone from coin to card only, and this has saved us \$20,000 [AUD] a year for maintenance. It's easy to configure, and the data is on a cloud. There's also recognize-by-plate, and this works in car parks, but we don't use that. For residential you can just have permits and signage.

Q. How does regional transit work with Sydney so close by?

A: There is an intercity fleet between Sydney Central Station to regional hotspots. One of them is the Blue Mountains Line. One is express and one is all stops, like Katoomba. The express comes every 30 minutes during on-peak. If it's all stops, every hour and every day. It's really important to work with other government agencies to advocate for more services.

Q. What comments/advice do you have about communication and moving forward with implementation and engagement?

A: Communication to elected bodies is super important. Always keep in mind what kind of support you have for your proposal. Always research the technologies and consider hybrid options of multiple alternatives. The population in Blue Mountains is conservative and older, so it's important that we adopt a sustainability approach to have better stewardship.

APPENDIX H

PARKING ENFORCEMENT RESOURCES

PARKING ENFORCEMENT RESOURCES

Manufacturer	Product	Municipal Clients	Link to External Site
Hub Parking	<i>Software</i>	Toronto Parking Authority (ON); City of Victoria, BC; City of Red Deer, AB (Downtown Parkade); City of St. Catharines, ON; City of Hamilton, ON	https://www.hubparking.com/solutions-by-location/municipalities/
T2 Systems	<i>Software</i>	City of Surrey, BC	https://www.t2systems.com/municipalities/
UPSafety (a T2 Systems Company)	<i>Hardware</i>	N/A	https://shop.upsafety.net/
GTechna	<i>Software</i> <i>Hardware</i>	City of Norwalk, CA; The Public Parking Authority of Pittsburgh	https://www.gtechna.com/
Precise Parking	<i>Software</i>	City of Vaughan, ON (Metropolitan Centre); City of Ottawa, ON; City of Mississauga, ON	https://www.preciseparklink.com/sec-municipal-parking-solutions
	<i>Parking Meters</i>	N/A	https://www.preciseparklink.com/ps-multi-space-parking-meters
PaybyPhone	<i>Mobile App</i>	BC: Whistler; Vancouver; North Vancouver; Grouse Mountain; Burnaby; Richmond; Surrey; White Rock; Kamloops; Kelowna; Vernon; Nanaimo; Tofino; Victoria Other Provinces: Brockville, ON; Calgary, AB; Edmonton, AB; Halifax, NS; London, ON; Magog, QC; Mississauga, ON; Montreal, QC; Ottawa, ON; Québec, QC; Regina, SK; University of Regina, SK; Saskatoon, SK; St. John's, NL; Toronto, ON; Trois-Rivières, QC; Winnipeg, MB; Yellowknife, NT	https://www.paybyphone.com/parking-operators

APPENDIX I

DESIGN SPECIFICATIONS AND RATIONALE

B7. Close Victoria Street block to vehicle traffic

Design (Width)	Rationale	District of Squamish Documents/ BC Active Transportation Design Guide (BCATDG)
Furnishing zone (1.8m)	Combine existing wayfinding with the zone for street furnitures and pedestrian light poles to incentivise the usage of the space.	BCATDG - exceeds the constrained limit width (0.6m) for basic furnishing zone (BCATDG, C26).
Parklet (2.4m)	Turn six parking spots into parklet spaces with seatings, planters and shading to encourage imprompt pedestrian experience.	Currently, DoS does not have design guideline or regulation on the construction and maintenance of parklets. BCATDG - in line with the recommendation of parklet as a use of Ancillary Zone (BCATDG, C35).
Open street (15.2m)	Designate open street area to create smoother connection between bike route on Victoria Street and the expected pedestrian bridge to Waterfront Landing. Located adjacent to farmers market can be used on Saturdays as dining or entertainment space.	Aligns with the goals and objectives outlined in CCAP and OCP to reduce car dependency by providing a welcoming pedestrian environment.
Lighting (0.5m)	Ensure the open street area is well-lit with pedestrian-scale lighting contributes to the sense of safety.	Abides by the DoS <i>Subdivision and Development Control</i> Bylaw No. 2649, 2018.

B8. Construct a Bike route along Victoria Street

Design (Width)	Rationale	District of Squamish design guidelines/ BC Active Transportation Design Guide (BCATDG)
Furnishing zone (1.2m)	Encourage pedestrian lingering by providing benches. Benches will be placed adjacent to sections of bioswales creating a pleasant pedestrian experience.	BCATDG - exceeds the constrained limit width (0.6m) for basic furnishing zone (BCATDG, C26).
Sidewalk (1.8m)	Widened sidewalk may accommodate higher pedestrian traffic and build a culture for walking in long term.	Meets DoS required minimum width of 1.8m for sidewalk for local street (Subdivision and Development Control Bylaw No. 2649, 2018)

		BCATDG - exceeds the desirable 2.1m wide pedestrian through zone for local road (BCATDG, C14).
Uni-directional bike lane (1.8m)	To support Third Avenue as one of the future major bike routes as identified in <i>Downtown Squamish 2031 Transport Plan</i> (District of Squamish, 2009)	1.8m is identified as best practice in the DoS Active Transportation Plan (District of Squamish, 2016b, p.g.95).
Buffer (0.5m)	The sense of safety that a bike infrastructure offers directly impacts the willingness of people to use the bike lane.	BCATDG - exceeds the constrained limit of 0.3m for buffer (between bicycle lane and motor vehicle lane).
Vehicular lane (3m)	Maintain the width of vehicular lane to the minimum can help with reducing speeding and further develop a hierarchy of travel modes that prioritizes walking and cycling instead of driving.	Meets DoS required minimum 3m lane width for local street (Subdivision and Development Control Bylaw No. 2649, 2018).

B9. Construct an Active Transportation Corridor along Loggers Lane

Design (Width)	Rationale	District of Squamish design guidelines/ BC Active Transportation Design Guide (BCATDG)
Sidewalk (2.2m)	Consider design for all ages and accessibilities, the sidewalk could accommodate two side-by-side operating spaces for wheelchair user.	Exceeds DoS required minimum width of 1.8m for sidewalk for local street (Subdivision and Development Control Bylaw No. 2649, 2018) Aligns with the OCP Accessible + Age-Friendly objective 25.5 (a) <i>Support inclusive participation of all citizens with diverse means, needs, ages, and abilities in all aspects of community life.</i> BCATDG - exceeds the desirable 2.1m wide pedestrian through zone for local road (BCATDG, C14)
Furnishing zone (1.2m)	Allow for pedestrian scale light poles, street trees and benches.	BCATDG - exceeds the constrained limit width (0.6m) for basic furnishing zone (BCATDG, C26)

	As these street trees mature, they may absorb some of the vehicle and traffic noise and pollution, provide an improved residential experience along Loggers Lane	
Bioswales and street tree (2.6m)	Incorporate bioswale that separate pedestrians from traffic and act as a visual and physical buffer. Create an attractive, sustainable, and pleasant pedestrian environment. Intercept rainfall and helps to absorb stormwater.	Supports active transportation infrastructure goals outlined in CCAP and OCP.
Vehicular lane (3m)	Maintain the width of vehicular lane to the minimum can help with reducing speeding and further develop a hierarchy of travel modes that prioritizes walking and cycling instead of driving.	Meets DoS required minimum 3m lane width for local street (Subdivision and Development Control Bylaw No. 2649, 2018).
Flexible bollard (0.9m)	A safe and protected facilities for biking may encourage more frequent usages and lead to shifting travel behaviours. Flexible bollards are more visible than paint, but with lower construction and maintenance costs than planters.	Supports active transportation infrastructure goals in CCAP and OCP. BCATDG - meets the desirable 0.9m street buffer between bi-directional protected bicycle lane and vehicle lane (BCATDG, D36).
Bi-directional protected bike lane (4m)	Loggers Lane is identified to be the major pedestrian and bike routes in <i>Downtown Squamish 2031 Transport Plan</i> (District of Squamish, 2009).	Exceeds DoS required minimum 3m lane width for bi-directional protected bike lane (Subdivision and Development Control Bylaw No. 2649, 2018). BCATDG - meets the desirable 4m Bi-directional Bicycle Through Zone (BCATDG, D34).
Utilities/ Modes Parking Zone (0.9m)	Allow for pedestrian scale light poles, utility poles, and parking zone for other modes (e-scooters, bikes, etc.). Host bicycle parking as well as parking and storage for alternative modes of micromobility that could be introduced to Squamish in the near future.	Exceeds DoS guidelines where the width of 0.2m is advised for light poles.