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Ethics Statement

The author, whose name appears on the title page of this work, has obtained, for the research described in this work, either:

a) human research ethics approval from the Vancouver Island University Research Ethics Board; or

b) Advance approval of the animal care protocol from the Vancouver Island University Animal Care Committee; or

c) Has conducted this research as a co-investigator, collaborator, or research assistant in a research project approved in advance of the author’s involvement.

A copy of the application has been filed with the Research Ethics Board at Vancouver Island University and inquiries may be directed to that authority.

Vancouver Island University
Nanaimo, British Columbia

Updated Spring 2017
Abstract

Winter Cities are cities which are located in northern or cold climates and where local leaders have made a commitment to addressing the seasonal aspects of their climate in a comprehensive manner. The purpose of this study was to determine if Winter City Planning strategies being implemented in large urban centres in Canada could be adapted by mid-sized communities in the Thompson-Okanagan region of BC to improve the quality of life for their residents year-round. Using document analysis and interviews with planning practitioners from six cities in Canada, the results from this research can be used by mid-sized communities to begin addressing winter conditions in their planning policies and practices in order to improve livability. The findings from this research suggest that mid-sized cities can easily adapt Winter City Planning strategies from large urban centres through focusing on winter policy, winter promotion and winter-friendly public spaces.

Keywords: adaptability; climate sensitive planning; community planning; mid-sized communities; winter; Winter City; Winter City Planning;
Dedication

This thesis is dedicated to everyone who lives in a community that experiences the wonderful season that is winter. Whether you’re someone who smiles when they see the first snowflakes fall or someone who wishes for summer as soon as the cold weather hits, I hope this research will lead to policy and planning in your city that can spark a stronger sense of fondness for the winter season. Because we all know, winter is coming.
Acknowledgements

Thank You to the stranger who inspired this work on a snowy winter day in a small town in BC. You were having difficulty transitioning from the crosswalk to the sidewalk and your scooter was stuck in the snow. We stopped the car and my husband helped you with a little lift and it was in that moment I thought “there must be a way our cities can function better in the winter”.

Thank You to my thesis supervisor Nicole Vaugeois for assisting me to produce this research. Her passion for research is infectious and her guidance in developing my methodology and throughout the research process were critical to the success of this study. I must express my gratitude for having such a strong supervisor who came along on this research journey and was so willing to share her experiences to help me learn.

Thank You to all the planners who participated in interviews for this research. I appreciate the time you spent to discuss this important subject and share your opinions and experiences in planning with me. The enthusiasm for the work you do and for the potential of improving the cities in which you live and work is inspiring for someone who is beginning their career in the planning profession.

Thank You to Pam Shaw and my fellow classmates for your support during the MCP program and for believing in this research.

And a final, heartfelt Thank You is reserved for my husband who supported me while I left our home to pursue my education and new career. I could not ask for a more encouraging and loving partner who supported my decision to jump into a new adventure and who has been unwavering through the challenges and opportunities this has brought.
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# Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Urban Centre</td>
<td>A city with a population of over 200,000</td>
</tr>
<tr>
<td>Mid-Sized Community</td>
<td>A city with a population between 30,000 and 199,999</td>
</tr>
<tr>
<td>Official Community Plan (OCP)</td>
<td>Key planning policy documents that provide direction to communities on long-term desired land use and to manage future growth. Each province regulates what must be included in these documents and they have various alternative names including Municipal Development Plans (AB) or Development Plans (MB).</td>
</tr>
<tr>
<td>Public Realm</td>
<td>The parts of a city (whether publicly or privately owned) that are available, without charge, for everyone to see, use and enjoy (Cowan, 2005 in Chapman, Nilsson, Larsson, &amp; Rizzo, 2017)</td>
</tr>
<tr>
<td>Winter City</td>
<td>A city that experiences a distinct winter season due to its climate, has acknowledged that winter plays a significant role in its operations and development, and has intentional policy and strategy to address the challenges and opportunities that winter creates.</td>
</tr>
<tr>
<td>Winter Lens</td>
<td>A framework through which planners can view their practice focusing on addressing a specific community need or goal. Other examples of planning lenses that may be concurrently applied include sustainability or accessibility.</td>
</tr>
</tbody>
</table>
Chapter 1. **Introduction**

Winter City Planning is a climate sensitive planning approach that saw a large body of literature emerge in the 1980’s primarily, with many seminal writings published by Norman Pressman in this period (Stout et al., 2018). Urban planning and design theories and practices are often borrowed, replicated and altered from one community or region to another. This poses an issue when it comes to climate sensitive planning and design as the climatic conditions of communities vary significantly depending on their latitude and geography.

The primary objective of this research is to contribute to knowledge regarding Winter City Planning between two urban scales in Canada. It aims to investigate whether challenges are similar in cities of different sizes and scales, explore strategies that relate to challenges of winter conditions faced in cities of different sizes and scales, examine the motivations and origins that cities experience during the process of creating such plans, and identify the competitive advantages of mid-sized communities in implementing Winter City Planning strategies.

In Canada, winter is both a part of the collective national identity as well as a season that has gotten a negative image. Louis-Edmond Hamelin, a human geographer from Quebec, has likened Canadians views to winter as “walking to the north backwards with their eyes fixed on their vacation’s palm trees” (Pressman, 1996, p. 522). Too often urban planning and design have ignored the cold climate conditions that exist in cities that are located within northern regions. Local climate is rarely incorporated into the decisions
around urban planning and urban design (Sanborn, 2017) and most urban design guidelines in Canada do not account for the harsh winter climates that almost all cities and municipalities experience (Kumar, 2002). Urban planning and design must consider all seasonal and climatic conditions to produce a built environment that is functional, efficient and pleasant to be in year-round.

There are examples of climate sensitive planning and cold climate planning strategies in Northern cities that experience extreme winter conditions such as those within or close to the arctic circle in Northern Scandinavia (Sweden, Norway and Finland) as well as some larger urban centres in Canada and the US. As each region’s climate differs depending on local geography and weather patterns, not all Winter City Planning strategies can be applied across the board. This thesis explores how cold climate strategies used in larger urban centres can potentially be adapted to mid-sized communities using the Thompson-Okanagan region as a comparative case study.

Chapter 2 presents a literature review which summarizes current research, past trends and key themes that have emerged in the literature relating to planning for communities in cold climates. It is organized into the key themes of defining Winter Cities and Winter City Planning; challenges and opportunities of winter conditions for cities; winter design; winter mobility; winter culture and livability; and identified gaps in the literature. Chapter 3 presents the methodology for the comparative case study with rationale for the selected research design. Chapter 4 synthesizes the findings from document analysis and planning practitioner interviews which highlight some of the similarities and differences that exist between the two community sizes included in the case study. This chapter explores the references to winter and winter conditions and planning strategies to address the challenges and opportunities that winter creates in
communities. Finally, in Chapter 5, the researcher discusses the adaptability of Winter City Planning strategies from large urban centres to mid-sized communities and compares the findings of the study to those that exist in the literature. The discussion focuses on the strategies or considerations the research suggests are most important for mid-sized communities to focus on. This research has the potential to be used by mid-sized communities in Canada to assist in taking the first steps in transitioning from a winter city (a city that experiences seasonal winter conditions) to becoming a Winter City (a city that is taking intentional actions to address winter related opportunities and challenges).

1.1 **Research Objective**

The objective of this thesis is to determine if mid-sized communities can adapt successful Winter City Planning strategies from large urban centres and to explore how winter conditions affect cities’ efficiencies and livability. Using the lens of climate sensitive planning and design this thesis is based in the proposition that winter conditions create unique opportunities and challenges in cities located in northern climates and that incorporating climate into planning strategies will improve the overall functions of daily life in Canadian cities. This research uses a comparative case study methodology to determine the adaptability of Winter City Planning strategies from three large urban centres in Canada for mid-sized communities, using three cities in the Thompson-Okanagan region as the comparative sample.

Four research questions guided this investigation:

1. What current knowledge or approaches to Winter City Planning exist in large urban centres and mid-sized communities?

2. What are the challenges and opportunities created by winter conditions?
3. What planning strategies can be used to address these winter challenges?

4. Can mid-sized communities adapt successful Winter City Planning strategies from large urban centres?

To achieve the overall research objective, the first step was to identify the current level of awareness of Winter City Planning strategies and the motivations of Winter City Planning among planners in the communities in the study. This first research question identifies which Winter City Planning strategies are currently being used in each community included in the case study and which specific strategies are being implemented.

The second research question looks to identify the challenges that winter conditions create in cold climate cities. Barriers that may be preventing cities from addressing those challenges with a winter planning approach will also be identified. Similarities or differences in the challenges that winter creates will be revealed through the comparative case study. A comparison of the opportunities that winter conditions might create in communities is presented to identify climate specific planning strategies to capitalize or take advantage of those opportunities in large urban centres and mid-sized communities.

This research makes links between the challenges and opportunities that cities face with winter conditions and the potential Winter City Planning strategies that could be used to address them. Through document analysis and interviews, the planning tools and areas of planning or operations that Winter City Planning strategies are being used in cities are identified.
Large urban centres function differently than mid-sized communities due to differences in capacity, resources and reach. With the examples of successful Winter City Planning strategies found in large urban centres, it is unknown if these strategies can be adapted to fit a mid-sized community’s context. Therefore, the specific strategies for Winter City Planning that mid-sized communities would be most and least interested in implementing are outlined to determine adaptability of strategies for mid-sized communities.
Chapter 2. Literature Review

2.1 Winter Cities Movement

There is a distinction to be made between a “winter city”, or a city which meets the various definitions posed later in this chapter and experiences seasonal winter conditions, and a “Winter City”. A Winter City can be defined as “a centre engaged with the international movement to promote a more livable winter environment” (Stout et al., 2018) or more generally as a city which has created intentional policy to address the opportunities and challenges that are created by winter conditions. Being a Winter City means that a local government has identified that being located in a northern climate with a distinct winter season has impacts on sustainability and quality of life (Stout et al., 2018). Being a Winter City means local leaders, both political leaders and staff within the City, have made a commitment to addressing the seasonal aspects of their climate in a comprehensive manner.

Cities that experience northern climate conditions must implement policy and planning strategies as they can have “profound effects on social activity and, in particular, how and whether people utilize outdoor public space” (Stout et al., 2018, p. 2). Winter City Planning has been described by Davies (2015, p. 278) as an attempt “to reduce winter’s negative consequences and to emphasize its positive features and opportunities”. Winter City Planning as a discipline and city building movement aims to apply urban climate knowledge to urban built environments, share best practices for planning and design in northern or cold climates, improve livability and efficiency of cities during winter conditions, and to address how winter conditions affect the lives of the most vulnerable populations in cities (Davies, 2015).
“Cold climate planning” and “climate sensitive planning” are two common terms used in the literature around Winter City Planning (Amiri & Sadeghpour, 2015; Dursun & Yavas, 2015; Pressman, 1995b, 1996; Sanborn, 2017; Setoguchi, 2008). These terms are not interchangeable. Cold climate planning relates specifically to the planning for cities that have cold climates and experience harsher winter conditions. Climate sensitive planning is more general as it can be applied across warm and cold climates. Climate sensitive is a more general term for planning that accounts for the specific climatic conditions of any region.

The integration of climate and urban planning is not a new discipline. Links between climatology and urban planning began appearing in the early 1900’s such as the effects the built environment has on an urban climate (Kratzer, 1937 as cited in Hebbert, 2014). Hebbert (2014) outlines the history of climatology as a consideration in urban and city planning from the 1900’s through to the early 2000’s and highlights while this lens on planning has always been a part of the profession, “factoring environmental considerations into the mainstream of city planning was a slow process” (Hebbert, 2014, p.208). It has also been recognized that the specific discipline of Winter City Planning has been slow to be adopted by the planning profession, even by planners who practice within northern climates, and has only recently re-emerged as a recognized “policy field and, to a lesser extent, an object of academic inquiry” (Stout et al., 2018, p. 2).

Climate sensitive design has emerged as a consideration for city planners to include within their practice. Designing for the local climate requires planners and designers to consider “the impacts of the built form and leverage design to create welcoming microclimates” (Stout et al., 2018, p. 5). Climate sensitive planning and design can be used in any climate, hot or cold, in order to integrate the local and regional climate
conditions to create responsive and functional urban environments within them. Winter City Planning emerged from this theory of planning and design with some of the first published works in this area being published in the 1980’s (Stout et al., 2018).

Norman Pressman is one of the leading authors on the topic of Winter City Planning strategies. In his 1995 book *Northern Cityscape: Linking Design to Climate* he noted that the planning profession is lacking a theoretical framework for how to design and plan “healthy and rewarding climate-responsive winter cities” (p. 3). He has explored the topic in depth in various books and articles and Pressman also provides five principles for winter design which are: 1) contact with nature; 2) year-round usability; 3) user participation; 4) cultural continuity; and 5) the creation of comfortable micro-climatic conditions throughout much of the city’s open spaces” (Pressman, 1996). Another theory, or lens, that Pressman urges planners to consider is bioclimatic design in order to mitigate the challenges created by winter conditions while maximizing the benefits that a northern climate can potentially provide a city or community (Pressman, 1995a).

Bioclimatic design theories began being used in the conversation around Winter City Planning primarily in the late 1980’s and 1990’s (Jahnkassim & Ip, 2006; Swaid, Bar-El, & Hoffman, 1993) while the theories of bioclimatic design have been around since the 1960’s and 1970’s (Cole, 2012). With climate conditions posing various effects on the built environment depending on the location of a city, from warm and humid tropical climates to cold northern climates, incorporating bioclimatic principles can have significant effects on the longevity and efficiencies of buildings and infrastructure (Taesler, 1991). Specific to a northern climate some of the bioclimate issues that can effect both cities and people who reside within them include “the occurrence of cold, wind, snowcover and ice on the
ground, short periods of daylight and frequently cloudy skies strongly influence human
behaviour and well-being” (Taesler, 1991, p.165-166).

Bioclimatic planning and design bases the design of buildings, landscapes and
environments on local climate (Watson, 2012). It is through a bioclimatic planning and
design lens that built environments will be able to respond efficiently to their climatic
conditions by using the natural climate conditions of the local geographical context as
resources (Watson, 2012).

2.2 Defining a Winter City and Winter City Planning

When hearing the term “winter city” what are some of the first characteristics or
places that come to mind? Defining a winter city has been attempted by numerous authors
and associations over the years. These attempts have included narrow and specific
definitions, such as the criteria set out by the World Winter Cities Association for Mayors:
a city that experiences “harsh” winter conditions that include “an annual snowfall of more
than 20cm” and at least “an average temperature of 0°C” in their coldest month (World
Winter Cities Association for Mayors, 2016). Norman Pressman (1999) used a broad and
simple definition for a winter city as one that is “covered by snow, where water is frozen,
and where air temperature is below freezing during a considerable part of the year” (p. 7).
In his book Northern Cityscape: Linking Design to Climate, Pressman used a
comprehensive, yet inclusive, set of criteria to describe a winter city:

1. Temperature – normally below freezing.
2. Precipitation – usually in the form of snow.
3. Restricted hours of sunshine and daylight.
4. **Prolonged periods of the first three factors cited above.**

5. **Seasonal variation**

(Pressman, 1995a, p. 15)

Any city that experiences these five climate conditions contends with the climatic conditions created by a northern or cold climate and are commonly located in arctic or subarctic regions. By using this inclusionary definition of what it means to be a winter city, cities located outside of the subarctic region are still included in the winter city categorization (Ebrahimabadi, Nilsson, & Johansson, 2015; Oikarinen, 2014). Winter cities can be found in countries such as China, Japan, Russia, Sweden, Norway, Iceland, Greenland, the United States, and, of course, Canada (Pressman, 1987a).

> “Winter figures largely in Canada’s climate, cultural experience and mythology. Every aspect of life in Canada is affected by winter, whether by heavy rains on the West Coast, isolation during the long Arctic winters, raging blizzards across the prairies or huge snowfalls in eastern Canada.” (The Canadian Encyclopedia, n.d.)

Norman Pressman writes that one of the most influential factors on the urban form is likely to be climate (Pressman, 1995a) and cautions that “to ignore winter’s presence is irresponsible” (Pressman, 1995b). And yet, local climate is rarely incorporated into the decisions around urban planning and urban design (Couture, 1985; Sanborn, 2017). The impacts of climatic conditions on the urban environment during winter are crucial factors for urban planners and designers to explore when they are working in cities and communities that experience cold climate conditions. Pressman is one of the most influential writers about the impacts of cold climate on the urban environment and public
realm. Pressman, in the book Future of Winter Cities, gives four arguments for the importance of planning for winter conditions:

1. *Urban development and regionally oriented resource-based activities in cold climate areas can be expected to increase*

2. *Traditional inner-city urban and social problems must be avoided*

3. *The Frost Belt has been given a negative image*

4. *In Southern Canada, where the majority of Canadians both live and work, winters can be relatively harsh and lengthy*

(Pressman, 1987, p. 52-53)

### 2.3 Winter Challenges and Opportunities

“there is a consensus that winter—be it dark, long, cold, snowy, or wet—poses significant challenges to urban life.” (Stout et al., 2018, p. 3)

The winter season is one that is easily identified in literature, popular culture and media as being a significant part of Canadian culture and national identity (Coleman, 2009; Pressman, 1987a, 1995b; The Canadian Encyclopedia, n.d.). It has been recognized that city planning has not successfully integrated the effects of local climate and seasonal winter conditions in northern cities and communities (Davies, 2015; Friedman, 2011a; Stout et al., 2018). The conditions that winter creates within cities and communities in Canada are consistent year after year, such as snowfall, cold temperatures, ice and wind, and yet cities still struggle with how to effectively manage these adverse conditions. All Canadian cities experience a distinct winter season and winter conditions to varying degrees and for varying lengths of time. Urban planning and design practices in Canadian
cities are often borrowed and adapted from warmer climates and environments without consideration for the northern climate characteristics that are present during the winter months (Pressman, 1996).

   Everyday, design decisions that originate from warmer climates without modifications for a northern climate are implemented (Couture, 1985). These can have significant negative impacts, as in the case of curb ramps that are found on almost every sidewalk in cities. Curb ramps are depressions in pavement that allow pedestrians to transition from a raised sidewalk to the roadway at crosswalks or intersections. This common design feature in the urban environment originated in California but severely underperforms in winter conditions where the “curb ramp pools with rain, snow and ice, often making it hazardous and inaccessible to nearly all users” (Li, Hsu, & Fernie, 2013).

   The northern climate characteristics present in winter can present significant challenges to the cities that call Canada home. Examples of some of the challenges that cities must contend with include snow clearing and storage, additional heating costs for buildings, maintenance of transportation networks in icy and thawing conditions, increased needs for lighting due to shorter days, and offering protection and shelter from cold winter winds. During a visit to the North Dakota city of Fargo in the winter time, Friedman (2011) contemplates how it appears “there was very little evidence that climate was on the mind of the city’s forefathers” as he viewed how the urban form of the city ignored winter climate characteristics like wind, snowdrifts and reduced daylight hours.

   Despite the physical challenges that winter presents, one of the most significant challenges created by winter conditions is the unpleasant attitude it creates within the people who live in northern climates, and their disposition to view winter as an obstacle
instead of an opportunity (Coleman, 2009; Jensen, 2004; Pressman, 1995b, 1999). According to Pressman “our perpetual summer ‘state of mind’ has been a serious impediment to the development of meaningful solutions for winter living” (Pressman, 1999, P. 9). Davies (2015) acknowledged that the range of negative attitudes towards winter is broad and can be anywhere “along a scale from finding it ‘an inconvenience’ to feelings of ‘fear’” (p. 284). Shifting the mindset of residents of cold climate cities is one of the first steps to create a city that is livable year round (Coleman, 2004).

Strategies for a winter city must incorporate year-round planning and design considerations and should not be implemented in isolation. Winter City Planning is more of a lens or framework that can be applied to planning practices that are being implemented in northern climate cities alongside other planning lenses like sustainability planning, social planning or resiliency planning. Like the many lenses that planners must view their practice through, Winter City Planning can be seen to lend cities a competitive economic advantage (Coleman, 2004; Pressman, 1999) as residents and businesses are encouraged to capitalize on the unique northern climate conditions present in their communities. An example of this can be drawn from a study where tourists to northern climates specified the value of “natural factors such as snow and darkness” (Heimtun, 2015, P. 26) as a northern destination feature and was seen as an escape from busy and hectic lifestyles.

One of the earlier pioneers of relating urban planning strategies to accommodate the winter conditions that exist in northern cities was the architect Ralph Erskine (Sanborn, 2017). Erskine has contributed to the creation of cold climate or winter grammar that Pressman considers one of the first steps to shifting the views of how urban planners and designers interact with winter conditions in their work (Pressman & Zepic, 1990). Erskine’s
architectural designs attempted to mitigate the effects of wind and snow drift (Ebrahimabadi et al., 2015), and while his practice was in the field of architecture, urban planning strategies that translate the goals of Erskine’s cold-climate building designs provide an example to build upon. Erskine was one of the first city builders to identify that the “internationalizing tendencies of modernism” (Stout et al., 2018, p. 3) led to the creation of placeless spaces that could not respond to their surroundings and seasonal conditions.

Norman Pressman provides a large body of literature on Winter City Planning considerations, strategies and principles. Examples of Winter City Planning, or climate sensitive planning, in practice can be found in many larger urban centres. In Canada, Edmonton AB is a leading example of a large urban centre actively working to implement Winter City Planning through their strategy “For the Love of Winter: Strategy for Transforming Edmonton into a World-Leading Winter City” (2012). This strategy developed by the City of Edmonton comprises four main pillars: Winter Life, Winter Economy, Our Winter Story and Winter Design (City of Edmonton, 2012) and provides a detailed example of the community based, interdisciplinary approach used in its creation and implementation. The City of Saskatoon is also currently undertaking the creation of a Winter City Strategy and is in the process of strategy development. Following Edmonton’s lead, Saskatoon is engaging the public and stakeholders to develop the strategy’s priorities and vision. Winnipeg is another active large urban centre in the development of Winter City strategies. Winnipeg and Edmonton are the only two Canadian cities that are currently members of the World Winter Cities Association for Mayors, which also has member cities in Norway, Finland, Japan, Russia, USA, Estonia, China, Korea, and Mongolia.
Some of the reasons why these climate-responsive principles are not seen as common in the field of urban planning and design have been “a lack of knowledge and tools, unclear policies, and time and cost pressures” (Ebrahimabadi et al., 2015). In relation to the effects of wind on urban planning it has been found that “there is a lack of simple tools to take account of wind flows in architectural and urban design” (Reiter, 2010). Other challenges include the trend that “Canadian architects continue to look toward Mediterranean designs, often ignoring the elements of winter” (Lozowy, 2007). These barriers to effective Winter City Planning are complex including lack of resources and funding to a lost winter identity.

2.4 Winter Design

The implications of winter conditions were rarely incorporated into planning and design prior to the 1970’s when the beginnings of the Winter City movement began out of the Northern United States (Pressman, 1987a). The focus of many urban design strategies has been to maximize the use and enjoyment of public space in summer months or during warm, pleasant weather conditions, leaving outdoor public spaces underutilized during prolonged periods of inclement weather often experienced during marginal seasons spring and fall and unwelcoming during winter (Hong & Cun-Yan, 2017; Pressman, 1987a).

Design considerations in the built environment and public realm play a significant role in the creation of livable cities that provide a high quality of life for residents (Tibbalds, 2001). Good urban design can be said to be one of the most important functions of planning practice (Tibbalds, 2001) and should concern itself with “urban form, livability and aesthetics” (Gunder, 2011, p. 184). Planners can influence good design through the use of design guidelines and regulations that translate into the desired urban form being
shaped and built by developers. Some of the criteria that should be incorporated into good urban design generally include references to local character, capitalizing on existing natural and man-made assets of a city, and creating human scale developments that are aesthetically pleasing and user-friendly (Punter, 1999).

When thinking of urban design in a cold climate context beyond “improving the three-dimensional built environment” (Pressman, 1995b, P. 221), authentic design should incorporate the local climate context to produce a livable city year-round that is guided by the climate, geography, culture and history of a place. When an authentic cold climate urban design is incorporated into local planning practices of northern cities they will be able to respond effectively to resident needs through working with climate instead of against it (Pressman, 1995b). Recognizing the importance of both the geographic location of a city and its climate characteristics (Jensen, 2004) is a critical practice in applying a winter lens to urban design. Through this lens cities will be able to use design to produce public spaces and outdoor environments that are welcoming during winter conditions and incorporate cold climate principles such as “contact with nature, year-round usability, user participation, cultural continuity, and the creation of comfortable micro-climatic conditions” (Pressman, 1996. P. 521).

Many examples can be found in the literature linking the form of the built environment to a strong sense of place (Haas & Olsson, 2014; Pressman, 1999; Punter, 2003; Talen, 2009). Sense of place, or the concept that physical space can become an important element of social order and society, has been explored since the early 1900’s (Jacob & Hellström, 2010). Norman Pressman expressed that sense of place occurs when “ordinary space is elevated in the minds and hearts” (Pressman, 1999, P. 21) of the people who use and belong to the place. This phenomenon of a physical space shifting into an
intangible place creates a public good that embodies the values of the environment and city in which it is located (Haas & Olsson, 2014).

To achieve this sense of place in cities within a northern climate, Pressman outlines a number of potential strategies to apply with a winter design lens:

1. Compact urban form
2. Orientation of footpaths, streets and dwellings
3. Enclosed residential courtyard concept
4. Climatic simulation modelling
5. Utilize energy-efficient principles
6. Provide high-order community services
7. Plan for either total or partial climate-protections
8. Understand the social determinants of design
9. Develop an “Aesthetic for The North”
10. Test innovative ideas

(Pressman, 1996, P. 523)

Using these design strategies and the principles of Winter City Planning, cities can employ a variety of winter-friendly design interventions to produce more livable cities in the winter. Examples include building orientations that “maximize passive solar gain wherever possible”, creating “welcoming outdoor public space for use in marginal seasons” and “a spatially cohesive town centre linked to major and community-orientated nodes” (Pressman, 1996, p. 523). A winter design lens extends the incorporation of cold climate considerations into various aspects of design of the built environment form macro
interventions such as site and building designs to micro interventions such as utilizing local materials and vegetation (Coleman, 2004).

Pressman also provides five principles for winter city design which are “contact with nature, year-round usability, user participation, cultural continuity, and the creation of comfortable micro-climatic conditions throughout much of the city’s open spaces” (Pressman, 1996). These principles of winter city design can be achieved through the creation or adaptation of planning strategies and planning regulations that consider winter conditions and provide recommendations on how to mitigate the negative effects of cold and winter conditions. “The attempts to generate ‘climate-responsive’ northern urban form are part of a relatively recent phenomenon and field of investigation” (Pressman, 1996) and as such are often not seen explicitly expressed in many urban planning documents and plans.

A compact urban form is a key component of winter city design (Davies, 2015; Pressman, 1995b, 1996). Many winter cities are considering in-fill development strategies to address this design principle in order to increase density in urban environments that were built without consideration of the winter season and northern climate (Davies, 2015).

### 2.5 Winter Mobility

Many of the challenges created by winter conditions in cities have significant effects on mobility and transportation. The difficulties of moving around a city during winter are experienced by all residents regardless of their mode of travel and certain resident populations, such as seniors or residents with physical disabilities, are more vulnerable to the adverse conditions winter can create (Garvin, Nykiforuk, & Johnson, 2016; Navagrah,
Winter conditions such as ice and snow have been shown to contribute to higher rates of falls in public places which are extremely serious hazards to senior populations in regards to health and well-being (Li et al., 2013).

Universal design is one of the design theories that calls for urban environments that are safe for all user abilities in all weather conditions (Li et al., 2013) and can be used when considering winter mobility strategies. Universal design can be used in the built environment to make “life easier, healthier, and friendlier” (Steinfeld & Maisel, 2012, p. 29) year-round, under most common weather and climate conditions and for all resident populations. These design principles when applied to winter mobility will produce networks within cities that incorporate local climate contexts into their designs to facilitate safe and equitable movement.

Pedestrian and cyclist mobility are often secondary considerations when cities prioritize the mobility of automobiles in their winter transportation strategies. It’s a common occurrence to find snow that has been cleared from roads to allow easier accessibility for cars and their drivers to be left piled onto sidewalks and crosswalks in many cities, creating more difficult mobility for pedestrians, cyclists, strollers and scooters (Coleman, 2009). Winter cities must incorporate human scale mobility in their planning lens to place a higher priority and significance on creating comfortable sidewalk and bike lane experiences during winter conditions.

Integrating a winter lens into a year-round active transportation plan that aims to “minimize travel time and distance for cycle users and pedestrians” (Pressman, 1999, P. 23) can also be a strategy to achieve the goals many cities have to increase sustainability and reduce greenhouse gas emissions. Encouraging and facilitating a more winter-friendly
environment for pedestrians and cyclists could result in a reduction of the number of vehicle trips taken by cities’ residents. Some of the ways to achieve such an environment include prioritizing snow clearing of major active transportation routes after a snowfall in addition to major transit and automobile routes; providing bus stop shelters that protect transit users from wind and slush from passing cars; and a road and crosswalk design that sheds slush away from the pedestrian route to prevent pooling (Coleman, 2009; Pressman, 1996, 1999).

Covered and enclosed walkways are another strategy to maximize mobility during winter conditions in cities that experience significant snowfall, extremely low temperatures and wind-chill and are considerations for areas with vulnerable populations with mobility limitations (Noguchi, 2004). These covered walkways or skywalks can provide safe and protected pedestrian routes between buildings within higher density and central business districts (Nash, 1981; Noguchi, 2004). While there are benefits to such a design intervention in northern climates, there are also many negative effects they can have such as perpetuating the negative attitudes towards being outdoors in winter conditions and taking people away from existing street level businesses (Bergum & Beaubien, 2009; Coleman, 2009).

To improve mobility in winter conditions cities should consider factors such as maximizing sunlight on sidewalks and pedestrian walkways, snow removal and storage strategies that do not negatively impact sidewalks and bike lanes, infrastructure design to increase safety in winter conditions, mitigating the effects of wind and ensuring major pedestrian routes are well lit especially during reduced daylight periods (Bergum & Beaubien, 2009).
2.6 Winter Culture

One of the most significant challenges of cold climate cities is the negative attitude of residents towards the conditions created by winter in northern climates (Pressman, 1999). One of the effects this has on a city can be seen as the tendency for people to move indoors instead of coping with harsh winter conditions outdoors (Pressman & Zepic, 1990). The study of the attitudes towards winter and its effect on culture in northern climates has been explored in a few cases (Coleman, 2004; Heimtun, 2015; Ogasawara, 2004) although this link between climate and culture is one of the missing pieces in understanding the social environments of northern cities (Nash, 1981; Pressman, 1987a).

In a 2004 study on how residents of a northern climate adapt to winter conditions it was found that attitudes of residents are “tolerating and accepting as a whole” (Ogasawara, 2004, p. 10). A more celebratory and appreciative view of winter among residents is needed to create a truly livable winter city (Enai, Pressman, Lütgen, Zheng, & Heikkinen, 2004; Ogasawara, 2004). Bridging this gap in attitudes towards the winter season and winter conditions is part of creating a positive winter culture (Pressman, 1996). A positive winter culture is one of the most important strategies for cities who are committed to implementing Winter City Planning to improve the year-round experience in their cities.

There are a number of strategies that can be implemented to foster positive attitudes towards winter and to create a celebratory winter environment. “The importance of colours, lights and arts” (Dunin-Woyseth, 1990, p. 353) should not be overlooked when cities are looking to position winter in a positive light. Incorporating native species into landscape design and using appropriate building materials can provide colour and visual
interest to the winter landscape in cities (Coleman, 2004; Pressman, 1995b). Colour in the built environment is an important characteristic in creating a sense of place that is reflective of local climate and culture (Synnes & Akre, 2004). An analysis of the local colour palette across all seasons can inform building and landscape designs to create places that provide excitement and interest even when winter conditions are present (Synnes & Akre, 2004).

Many of the elements present during winter conditions such as snow and ice can also be used in promoting positive attitudes towards the winter season. Snow and ice sculptures or ice fountains and be created to provide seasonal public art installations in the public realm (Pressman, 1995a, 1995b). Public art that represents and reflects the winter landscape should also be considered. Reduced daylight hours during the winter months can be an opportunity to explore creative lighting designs in public and private spaces that extend beyond the holiday season and can create a warm atmosphere in outdoor spaces when cold and dark conditions are present (Pressman, 1995a).

Embracing winter conditions through outdoor festivals and events have proven to be a successful way to promote sociability among residents and encourage use of the public realm in the winter months (Pressman, 1988, 1995a, 1996). Winter celebrations have a long history of contributing to the culture of northern communities that include events such as the Quebec City Winter Carnival, Winterlude in Ottawa, and the Sapporo Snow Festival (Couture, 1985; Dunin-Woyseth, 1990; Lozowy, 2007; Pressman, 1995a). Cities are cautioned however to take steps to reduce the commercialization of such festivals and events in order to maintain authenticity and to make these events synonymous with the identity planners have of their winter city (Lozowy, 2007; Pressman, 1995a).
Encouraging and supporting outdoor recreation activities that are possible during winter conditions such as skating, skiing and tobogganing is another way for cities to contribute to a positive attitude towards winter. Considerations of how winter conditions effect the built environment can also impact the attractiveness of year-round recreational and physical activities by considering elements of “trail connectivity, aesthetics, and scale of streets” (Vanos, Warland, Gillespie, & Kenny, 2010, p. 320). Bioclimatic urban design can be used when creating environments that are comfortable during marginal seasons for physical activities (Vanos et al., 2010) and to create new opportunities for recreation that are integrated into the city such as cross-country ski trails or skating routes where pathways are covered by snow and ice (Coleman, 2009; Pressman, 1996).

Many of the opportunities and positive aspects of winter conditions in cities are used by the tourism industry to promote winter destinations. The beauty of the clean, snow covered landscapes and exhilarating outdoor activities such as skiing often associated with winter are some of the motivations for visitors to choose cold climate cities as their vacation destinations (Heimtun, 2015). Winter conditions have been romanticized in arts and literature form northern climates and are part of the culture of the northern lifestyle (Pressman, 1999). “The rhythm of urban life frequently changes with respect to climate and season” (Pressman, 1999, p. 8) and this slower rhythm can be promoted as a benefit of living in a northern climate.

It has been shown through studies of schoolchildren’s perceptions of winter conditions that there is a positive relationship between the amount of time spent outdoors and the rate of adapting a more positive attitude towards winter conditions (Enai et al., 2004). Making outdoor public spaces more inviting and comfortable in winter conditions can improve the social connectedness of a community while decreasing the negative
effects of social isolation that can occur during winter months (Garvin et al., 2016; Lozowry, 2007). Reducing isolation can have significant impacts on the mental health of residents in a winter city (Pressman, 1996) through the incorporation of a winter lens when designing and programming public spaces.

2.7 **Winter Planning Strategies**

There has been a significant amount of literature that has explored various considerations of the challenges and opportunities winter conditions create in cities located in northern climates (Coleman, 2009; Davies, 2015; Ebrahimabadi et al., 2015; Eliasson, n.d.; Enai et al., 2004; Garvin et al., 2016; Pressman, 1995a, 1999). There have been fewer studies that have focused on measuring the effects of Winter City Planning strategies in cities that have implemented them as there are few cities who have incorporated cold climate planning strategies (Couture, 1985; Ryser & Halseth, 2008). Of the studies that have investigated in place or potential applications of Winter City Planning, most have been focused on large urban centres. Canadian examples of such studies or reviews have included Calgary, AB (Brookes, 2011), Edmonton, AB (Garvin et al., 2016; Pihlak, 1994; Sanborn, 2017), Prince George, BC (Ryser & Halseth, 2008), Toronto, ON (Zepic, 1987), and Winnipeg, MB (Henke, 2006; Kok, 2001; Mckechnie, n.d.).

In the past 20 years, there have been many authors who offer their views on the most important strategies for cities to focus on. Pressman (2004) suggests that the main goal of a city planning for winter conditions should be to “preserve those quality-of-life factors which make winter communities special places” (p. 18). Pressman speaks to the unique characteristics that generate a sense of place in northern communities and goes on to elaborate that Winter Cities must reject “denial of our potentials and opportunities”
Walljasper (2009), similar to Pressman, views the main goals for Winter Cities is a vision that includes consideration of winter activities and celebrations, a focus on local identity and improving the public realm to create more vibrant public spaces. Davies (2015) also speaks to improving quality of life as being a goal of Winter Cities and encourages shifting perceptions of winter being a season to be endured to a season to be celebrated. Stout, et al (2018) conclude, in their review of the Winter City movement, that Winter Cities’ goals are to improve the livability of their environments.

All of these more recent contributions on the subject of Winter Cities have common themes in the goals of planning strategies to address winter conditions: celebrating the season of winter and improving the quality of life for residents in northern climates. How cities should begin achieving these goals ranges from showcasing playful winter activities and attributes (Walljasper, 2009), improving active transportation (Henke, 2006), incorporating climate sensitive urban design principles in the built environment (Pressman, 2004; Pressman, 1995a) and the creation of comfortable microclimates in public spaces to increase their use in the winter season (Knowles, 1987; Oikarinen, 2014; Pressman, 1995b).

While “it has often been said that a livable home is by far the most important ingredient of a northern city” (Pressman, 1999) livability in the winter must extend beyond the private realm of climate responsive homes and workplaces to also include the transportation networks and public gathering spaces. Through a focus on providing year-round comfort in the built environment, transportation (specifically active transportation) networks and in spaces that facilitate events and winter activities, winter cities can improve the quality of life of their residents. In order to meet the needs of all residents during the winter, the needs of the most marginalized populations should be the considerations that
are put in the forefront of any winter planning strategy (Davies, 2015; Li et al., 2013; Pressman, 1995b; Stout et al., 2018).

Current planning applications of formal Winter City strategies can be found in Edmonton, AB through their Winter City Strategy that began implementation in 2012 (City of Edmonton, 2013) and Saskatoon, SK where the development of a Winter City Strategy is currently underway (Wallace, 2017). Both examples are from large Canadian cities and few examples in the literature were found in small or mid-sized Canadian cities. Barriers that have been found that hinder the application of cold climate planning principles and Winter City Planning strategies in cities include lack of climate knowledge, financial constraints, and lack of policies that address climate conditions (Ebrahimabadi et al., 2015; Ryser & Halseth, 2008) despite the interest in Winter City Planning that has been experienced by many cities starting in the late 1980’s when the Livable Winter City Association began activity in Canada and the US (Coleman, 2009; Couture, 1985; Sanborn, 2017).

2.8 Summary

This chapter has outlined the theoretical traditions and planning influences that have led to an increased awareness around Winter Cities. Pressman (1995b) calls for more systematic studies of how quality of life in winter context can be improved from all levels of government, from national down to local strategies. Coleman (n.d.) calls on cities in northern climates to begin learning more about being a Winter City and seeking ways to address winter conditions as a local government.
The literature on Winter Cities thus far provides a strong case for the need for planners working in Canadian cities to integrate Winter City Planning into their policy and practice. Canadian cities are developing without key climate considerations such as seasonal winter conditions being incorporated into the built environment and urban form (Davies, 2015; Friedman, 2011b; Hebbert, 2014; Pressman, 1996, 1999). Winter, and how cities have developed in the absence of a comprehensive winter lens, presents a number of challenges and opportunities that cities must address in order to be sustainable, efficient and livable year-round (Stout et al., 2018). Planners are influential in shaping the future of growth and development within cities and regional contexts. Planners from northern climates should be applying a winter lens when writing policy and regulations or reviewing development applications.
Chapter 3.  **Methods**

### 3.1 Methodology

This research was designed using a comparative case study methodology based in a qualitative design. “Comparative case studies involve the analysis and synthesis of the similarities, differences and patterns across two or more cases that share a common focus or goal” (Goodrick, 2014). Using a mix of secondary and primary research, the two purposive case units of large urban centres in Canada as well as mid-sized communities in the Thompson Okanagan region were chosen as the sample for the study. Case studies were also selected as they are an important tool for planners as a way to share and communicate best practices and contribute to knowledge amongst the profession (Yang & Li, 2016).

A qualitative design for research was chosen as the most appropriate method for interpreting the current awareness levels and practice of Winter City Planning as this research is concerned with localized context in the Thompson-Okanagan region. The methods used were content analysis of key planning documents and semi-structured in depth interviews with planning practitioners from each of the sample cities and communities. Combined with the purposive sampling method employed, content analysis and semi-structured interviews are all strong characteristics of qualitative research (Cresswell, 2014).
To define a cold climate city for the purposes of this research, the researcher used the characteristics posed by Norman Pressman (1995a) that are experienced over the winter season months: below freezing temperatures, precipitation in the form of snow, and restricted day/sun light. Winter conditions are not an isolated occurrence in Canada, almost every city in the country experiences these climate conditions in the winter months which lends to the importance for cities to be considering winter conditions in their planning practices. Since winter conditions are present in every part of Canada, the results from this study could be transferable to communities outside of the case study areas so long as local climate and geography are considered as the local context.
The Thompson-Okanagan region was selected as the study area for this thesis. The Thompson-Okanagan is one of eight regions that make up the province of British Columbia. These eight regions have been defined by the province of BC based on their “unique geography, climate, economy, history and cultural diversity” (Welcome BC, 2018). The Thompson-Okanagan region is the “third most populated region in the province and home to 12 percent of the BC population” (Work BC, 2018) and the region exhibits all the characteristics required for resident communities to be classified as cold climate cities. With winter temperatures at or below freezing, significant inversion effects leading to low cloud cover in the Okanagan Valley, and average winter precipitation of 12-19cm from 2015 to 2017 (Klock & Mullock, 2001; Pacific Climate Impacts Consortium, 2013; World Weather Online, n.d.).

The minimum population sizes for classification in this study were selected based on combining two sets of data. Statistics Canada uses a three-tiered classification of population centres:

- **small population centres, with a population between 1,000 and 29,999**
- **medium population centres, with a population between 30,000 and 99,999**
- **large urban population centres, with a population of 100,000 or more.**

(Statistics Canada, 2017c)

An analysis of several articles published in the peer reviewed Canadian Journal of Urban Research in the past three years revealed a broader range of classification of a mid-sized city between 130,000 – 900,000 (Agarwal & Collins, 2016; del Canto, Engler-Stringer, & Muhajarine, 2015; Goodman & Lucas, 2016; Jones & Teixeira, 2015; Kushner & Ogwang, 2017; Sylvestre, Kerman, Polillo, Lee, & Aubry, 2016). This research defined
a mid-sized community as having a population of between 30,000 and 199,999 and a large urban centre having a population of over 200,000.

The sample of mid-sized communities in the Thompson/Okanagan region were purposively selected based upon population sizes that are between 30,000 and 199,999. To delimit the sample the three highest population communities within the mid-sized community category in the region were selected for the case study. There are five communities in the Thompson-Okanagan that meet the criteria of a medium population centre: Kamloops, Kelowna, Penticton, Vernon and West Kelowna. The communities with the three highest populations are Kelowna (127,380), Kamloops (90,280), and Vernon (40,116) (Statistics Canada, 2017d, 2017a, 2017b) and each are located in varying geographies within the approximate centre of the Thompson-Okanagan Region.

To match the sample size of the Thompson-Okanagan region community sample, three large urban centres were chosen that met the definition of a cold climate city for this research. Each city as a population of over 200,000 and were identified through secondary research as being actively engaged or interested in Winter City Planning. The three sample cities that were chosen that met the criteria are as follows:

- Edmonton, AB – Pop. 932,546 (WinterCity Strategy, Host of 2015 and 2017 Winter Cities SHAKEUP Conference, Member of World Winter Cities Association for Mayors)
- Winnipeg, MB – Pop. 637,000 (Member of World Winter Cities Association for Mayors)
- Saskatoon, SK – Pop. 271,000 (Currently developing WinterCityYXE Strategy)
3.2 Recruitment

A stakeholder sampling method was used to select planning practitioners to be interviewed in each community. Recruitment emails (see Appendix A) were sent to the director or manager of the planning department in each community identified requesting interview participants to participate in an hour-long telephone, Skype or in person interview. The recruitment email asked for the researcher to be put in contact with planning practitioners who had a minimum of two years working for the municipality to ensure that the participants had experienced at minimum one full winter season within the community. Twelve interviews were conducted, two for each community, to gain as rich and comprehensive information on the state of planning as possible.

After the researcher conducted the first interview or made contact with the first interview participant from a community, a snowball sampling method was used to identify a second interview participant from that same community for the research. The planning practitioner that was first identified as a good fit for participating in the research was asked to put the researcher in contact with another participant that the first participant felt would also be a good fit for the research.

3.3 Data Collection and Analysis

3.3.1 Interviews

Many of the winter planning strategies in larger Canadian centres are newly developed or currently being developed, which means there is little documentation of their implementation, challenges or successes. Interviews were chosen as a data collection method to uncover information on how planners are or should be working towards
incorporating considerations of winter and winter conditions into their practice which would not be found in planning documents.

A total of twelve interviews were conducted with planning practitioners. The researcher conducted two interviews with planning practitioners from each of the communities included in the case study. Interview questions were developed to answer the four research questions and the interviews were semi-structured in its design. The interview questions were open ended to allow for the interview participants to provide in-depth and detailed answers, and some interviews contained unique follow up questions based on the interviewee responses or to expand on their discussion. The researcher received ethical approval from the Research Ethics Board at Vancouver Island University and each interview participant was informed of the purpose of the research, how the information would be used, and provided their consent through a signed consent form as to how the information they provide could be presented and attributed (see Appendix C).

Interviews with planning practitioners from mid-sized communities in the Thompson-Okanagan region contained the same questions as the interviews with planning practitioners from the large urban centres. The intention was to understand what similarities, differences or patterns exist between large urban centres and mid-sized communities in relation to Winter City Planning.

The Interviews were conducted between June and September of 2018. Interviews were all audio-recorded with the permission of the interview participants. Most interviews were conducted over the phone, with the exception of the interviews with planning practitioners in Vernon and Kelowna which were conducted in-person. The interviews
The researcher transcribed each interview and provided the full transcriptions to each interview participant to review prior to beginning analysis. The transcriptions were partial transcriptions as the researcher removed filler words or duplicated phrases for clarity. Interview participants were all given the opportunity to change, add or remove content from the transcription for a period of two weeks after receiving the copy of the transcriptions. Some interview participants asked not to be directly quoted in this research and others asked to not be identified by name. For this reason, direct quotes were only used from interviews where the researcher had consent to use direct quotes, and none of the quotes are directly attributed to any individual but instead are attributed generally to an interview participant with the community they are representing identified.

3.3.2. Document Analysis

Document analysis was used to identify challenges and opportunities that winter conditions create, identify where any discussion or policy references were being incorporated into key documents as well as identify if any Winter City Planning strategies were being implemented or considered by cities in each case study. Five types of common planning documents were selected for the document analysis that the researcher reasonably expected to find for each city included in the research:

- Official Community Plans
- Neighbourhood or Special Area Plans
- Design Guidelines and Regulations
- Transportation and Active Transportation Plans
- Park and Open Space Plans
Eight keywords were identified through the literature review that are used often to describe winter, the season, its context and the conditions it creates. These eight keywords were:

- Winter
- Snow
- Ice
- Cold
- Wind
- Season
- Climate
- Weather

The researcher downloaded the five key planning documents from each city in each case study, and up to three of each were selected for document analysis if there were multiple options for each document, as in the case of Area Plans where a City might have over ten Area Plans for different neighbourhoods or areas of the city. A full list of the documents included in the document analysis can be found in Appendix D.

3.3.3. Analysis

The researcher then used NVivo software to code the interviews based on the research questions that were developed to meet the research objective and determined key themes. A first round of deductive coding was applied to group interview answers based on the research question they were answering. A second round of inductive coding was used to determine the themes that emerged from the interviews and were derived as the researcher read through each grouping of interview answers. The researcher reviewed each set of interview answers twice to ensure that the coding and key themes were accurate and concise.

NVivo software was also used to mine the qualitative data from the key planning documents. First, it was used to run a word count analysis to identify the number of times each keyword appeared in each type of planning document. A key-word-in-context
analysis was then conducted to determine the key themes that were being talked about or addressed in each document in relation to winter, based on the key word searches. The researcher removed words if they were found to not be used in a winter related context or if they appeared in document headings, sub-headings. Most of the terms removed from the content analysis were used in relation to climate change, non-winter seasons, or were duplicated content where one document would have the same winter-related guideline in multiple sections or tables.

3.4 Limitations

This research is subject to limitations that the researcher was aware of prior to the research and limitations that were identified during the data collection and analysis. The first limitation that is a product of the research design is that the sample sizes for the case study are small. Only three communities of each size were included in the case study in order to constrain the sample size. A broader sample size would provide more comprehensive data on how large urban centres and mid-sized communities in Canada plan for winter conditions.

In addition to only selecting three communities from each size of city for the case study, due to time limitations for data collection and analysis, only two interviews were conducted with planning practitioners in each community. Expanding the number of interviews could also provide more generalizable data on this topic and could confirm or expand on the similarities and differences that are included in the discussion of this research. Only planning practitioners were asked to participate in the interviews for data collection as a part of the case study. In many interviews, the researcher was asked if they would be interested in talking to a staff member from the operations, public works, or
engineering departments. Again, due to time limitations and to constrain the sample size, the researcher was unable to expand the interviews beyond the identified participants on planning practitioners. Therefore, the results of this research can only reflect the opinions and perspectives of planning practitioners and may not reflect the diversity of professions who are engaged in Winter City Planning.

While each community selected to be a part of the comparative case study met the criteria of what it means to be a cold climate city as defined by the researcher, the geographies between the mid-sized communities in the Thompson-Okanagan and the large urban centres are different. The three large urban centres are all Prairie cities with relatively flat topographies, and each have rivers running through them. The mid-sized communities in the Thompson-Okanagan have valley topographies with steep hillsides surrounding each of the communities and city centres located in the valley bottom. Average temperatures are also different between the communities selected in the case study with much colder temperatures existing in the large urban centres during winter months than the more moderate winter temperatures that are experienced in the Thompson-Okanagan.

One example of how the difference in winter temperatures affects the strategies that planners from the different communities might be considering shows in relation to winter warming huts. Only participants from the large urban centres indicated they are looking at winter warming huts as a way to address the cold temperatures of winter since the mid-sized communities don’t experience prolonged periods of extremely cold or windy weather in the winter time to necessitate them. Choosing mid-sized communities that more closely align with the winter characteristics of the large urban centres would offer a closer comparison between the scales of city size and winter planning adaptability.
Interview questions were developed to identify what participants felt needed to be considered when thinking about planning for winter conditions as well as to identify what strategies were already being implemented to address winter and winter conditions. During analysis of the interview responses, the researcher identified that most interview responses did not clearly distinguish between a consideration and a strategy. When asked how to address winter challenges or opportunities, many interview participants did not reference specific strategies but instead re-identified the considerations they had already identified in earlier interview questions.

It was therefore difficult to determine in all of the interviews what between what could be considered by participants and was being considered by participants. It was also difficult to differentiate in some interviews what was being considered but not implemented and what specifically was being implemented. Further refinement of the interview questions would be needed to clearly distinguish between considerations and strategies.
Chapter 4. Findings

4.1 Introduction

This chapter will present the findings from the document analysis and interviews with planning practitioners exploring how cities plan for winter conditions. This chapter will first outline the findings in regard to the level of awareness of Winter Cities and Winter City Planning and how planners are learning more about this planning topic. Next this chapter will outline the challenges and opportunities that interview participants identified winter conditions create in their communities. Next, the chapter will introduce the considerations and strategies that participants feel could be used to address the unique challenges and opportunities that winter creates.

The findings will highlight some distinct differences between how large urban centres and mid-sized communities in Canada are approaching planning for winter and winter conditions. There were also differences between how participants perceived their consideration of winter conditions and how winter is referenced in their guiding planning documents, particularly in the case of mid-sized communities. Finally, this chapter will present findings on how mid-sized communities can adapt Winter City Planning strategies from large urban centres.

4.2 Awareness of Winter City Planning

The first research question sought to determine the current level of awareness and implementation of winter planning or winter planning strategies. Key planning documents were analysed to identify what aspects of winter were being considered by each of the
communities in the case study. During the interviews, planning practitioners were asked to identify if they were aware of the concepts of “Winter Cities” or “Winter City Planning” before their participation in the case study and to define the terms in their own words. Interview participants were also asked where they first learned about the concepts of “Winter Cities” or “Winter City Planning” and to identify any other resources they had used or were aware of to learn more about this planning topic. Finally, interview participants were asked if their departments had implemented any winter specific policies or strategies that they were aware of.

4.2.1. Winter Consideration in Planning Policy

“As a winter city, Edmonton’s specified standards for snow clearing are key to ensure mobility and safety of all users of the transportation system.” – Edmonton, Winter Design Guidelines

Most planning documents included in the case study offered some policy references to winter and winter conditions, with most references occurring in documents from large urban centres. Snow management and active transportation (which includes walking, cycling and transit) were the most common topics addressed in relation to winter. The creation of comfortable public spaces and microclimates at the street level was mentioned by numerous Official Community Plans (OCP’s). Winter related design considerations were the most common topic for Area Plans to address in relation to winter
Snow management includes considerations in relation to snow clearing, snow storage and snow melt. Snow management considerations were included in all stages of development and city building, from the design and material selection stage through to landscaping and operations. Selection and provision of appropriate snow storage areas was mentioned by multiple cities as a key consideration so that snow accumulation and storage does not default to public spaces or walkways that would prohibit their use in the winter months. Every communities’ Transportation Plans made reference to snow management considerations in relation to winter and winter conditions. Most cities’ plans reference the need to prioritize snow clearing activities on major pedestrian and active transportation routes in the winter. Almost all the Transportation Plans, when discussing snow clearing and snow management topics seemed to reference pedestrian, transit and cyclist considerations more frequently than automobiles.
Open Space Plans had a focus on providing amenities and activities that support year-round or four-season use when referencing the winter related keywords. Designing parks and open spaces to accommodate activities and events all year round was another key theme that was discussed in the Open Space Plans. A particularly common theme was the provision of year-round and winterized washroom facilities to accommodate people using the parks, trails and public spaces during the winter, especially families with children.

**Figure 3 Policy References to Winter from Large Urban Centres**
One interesting finding from the document analysis was which documents from each community size included in the case study had the most or least references to winter conditions. Mid-sized communities’ Official Community Plans (OCP’s) had much higher numbers of references to winter and winter conditions. The researcher attributes this to many OCP’s from British Columbia including Development Permit Areas and Design Guidelines within their OCP’s. Design guidelines contained the least references to winter related keywords in mid-sized communities, but the highest in large urban centres. This large disparity can be attributed to two key factors. The first is that Edmonton, being far down the path of embracing the Winter City identity through their WinterCity Strategy, has developed Winter Design Guidelines which were used as part of the document analysis. The second is that, as already mentioned, in British Columbia, many design guidelines or regulations are not published as a stand-alone document but instead are included within OCP’s and Area Plans.
4.2.2. Planners’ Level of Awareness

“I had never really heard of “winter city” [before]. So, it’s a new buzz word to me”. – Interview participant from Kamloops

All of the interview participants from large urban centres indicated that they were aware of the terms “Winter City” and “Winter City Planning” prior to participating in the case study. Most participants identified first learning about the planning topic as part of their planning studies in university and also through learning from other cities who were active in planning for winter conditions either in North America or other countries in places like Scandinavia or Europe.

In contrast, more than half of the interview participants from mid-sized communities indicated that they were not aware of the terms “Winter City” or “Winter City Planning” prior to their participation in the case study. While all interview participants from mid-sized communities were able to provide comment on what they felt could be a winter planning lens, only two had learned about this planning topic during their time in university. Some participants were unsure if they would even define their cities as Winter Cities even if they had prior knowledge about Winter City Planning from their planning education in university or hearing about initiatives such as the winter warming huts or skating trails that had been highlighted through planning literature and professional awards.

“... through research [I] identified other communities that had been developing thinking around this. I can’t remember them all but there was a handful of communities in western Canada especially that started to develop some policy and strategy around [winter planning].” – Interview participant from Edmonton
When asked where interview participants have found information regarding Winter Cities or Winter City Planning, the most common source of knowledge on this planning topic came from researching or hearing about winter related planning initiatives from other cities in North America. One prevalent source of knowledge was through planning conferences, specifically the Winter Cities Shakeup conference that was held in Edmonton in 2015 and 2017. Another common source of winter planning knowledge for participants came from planning initiatives in Scandinavia or Northern Europe. Two participants from Edmonton indicated that visits to other countries by themselves or colleagues led them to thinking more about winter planning in their own communities and a participant from Vernon indicated that they often use Scandinavian countries as a comparator in climate contexts when discussing planning initiatives or projects that require consideration of the winter season.

4.2.3. Defining Winter City Planning

“... I would say it’s about planning based on the actual context of your city and if you’re a winter city, and that’s a core part of an identity, it’s incorporating that winter lens into everything that you do.” – Interview participant from Edmonton

When it came to the question of defining what a “Winter City” or “Winter City Planning” was, interview participants were consistent in how they viewed the most important aspects of this planning lens. “Design” and “Considering the Season” were the two most common themes from participants when asked to define these terms in their own words. Participants referenced building design and orientation, development layout and design, site planning, landscaping and aesthetic components such as materials and colours that are part of the built environment.
“My understanding of it is not shying away from the reality of people living in a northern climate or a southern climate, a super southern climate, and embracing winter.” – Interview participant from Vernon

A common consensus among the participants interviewed was that being a Winter City meant you were a city in a northern climate that had a winter season. Participants felt that planning for winter means that they should be considering the four-season realities of cities in northern climates in everything that they do. Being a Winter City means applying a winter lens with intentional efforts to address both the challenges and opportunities that winter creates. Understanding the local context in terms of climate and winter conditions was another common theme that participants identified when defining what it meant to engage in Winter City Planning.

4.2.4. Perceived Level of Implementation

“We’re working on our winter city specific strategy but that doesn’t mean that we haven’t been piloting different things. As things come up as an opportunity for us to work on something, we’re using it as an opportunity to try things out.” – Interview participant from Saskatoon

Interview participants were asked if their departments had implemented any policies or strategies that related specifically to winter planning. The majority of participants from large urban centres felt that their cities were either in the beginning stages of implementing winter planning and participants from both Edmonton and Winnipeg indicated that more moderate engagement in winter planning was taking place. Most participants from mid-sized communities responded that there was no implementation of any intentional winter planning initiatives or strategies. While some
participants acknowledged that there was some consideration given to winter conditions through Design Guidelines or the development review process in mid-sized communities, they referenced this as more of a subtle consideration of winter in the planning process without a comprehensive winter lens applied.

“I don’t think we’ve done anything to [address] directly being a winter city. Looking at it in that lens. It’s just more general guidelines that may be able to address some of the issues raised because we [have a winter climate]. Nothing so specific.” – Interview participant from Kamloops

Interview participants were also asked if they felt their city’s current planning policies and documents were encouraging or discouraging the use of a winter lens. Most participants felt that the incorporation of a winter lens in their policies and documents was neutral in that they neither encouraged or discouraged a winter friendly lens. More participants from large urban centres felt that a winter lens was encouraged in their current policies and documents, and two participants from mid-sized communities felt that a winter lens was encouraged. No participants from any of the cities that participated in the case study felt that their policies and planning documents discouraged applying a winter friendly lens.
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<thead>
<tr>
<th>City</th>
<th>Level of Awareness</th>
<th>Level of Implementation of Winter City Planning</th>
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<tr>
<td>Edmonton</td>
<td>High</td>
<td>• Define Winter City Planning as:</td>
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<td></td>
<td></td>
<td>• Focus on winter design</td>
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<td>• Comprehensive winter lens</td>
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<td>• Comprehensive WinterCity Strategy being implemented</td>
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<td>• Community led and collaborative approach to winter strategy development</td>
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<td>• Have a WinterCity office with dedicated staff to research and implement winter strategies</td>
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<td>• Strong winter policy references in key planning documents and winter specific planning documents (WinterCity Strategy and Winter Design Guidelines)</td>
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<td>• Winter project or event funding program</td>
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<td>Saskatoon</td>
<td>High</td>
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<td></td>
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<td>• Designing for winter</td>
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<td>• Improving livability through mobility, infrastructure and activities</td>
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<td>• Goal to be a leading winter cycling city</td>
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<td>• Strong policy references in key planning documents</td>
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<td>• Snow Management &amp; Design</td>
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<td>• Development Standards &amp; Recreation</td>
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<td>• Design and Addressing winter conditions</td>
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<td>• beginning to think about winter in relation to development and design, mobility focus for pedestrians over cyclists</td>
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4.3 **Challenges and Opportunities**

The second research question sought to determine what challenges and opportunities created by winter conditions were being considered by participants. Interview participants were asked to identify the challenges and opportunities that winter conditions, such as snow, ice, wind and cold temperatures created in their cities. They were also asked to identify any barriers that would prevent their communities from addressing the challenges or capitalizing on the opportunities that winter creates.

4.3.1. **Winter Challenges**

“Mobility”, “Maintenance Costs”, and “Snow Clearing” were the most prevalent challenges identified by interview participants. In the interviews, participants spoke about mobility challenges relating to active transportation methods such as cycling, walking, transit, and skiing or skating in addition to the mobility of vehicles in the winter season. Most common was the identification of the mobility challenges for cyclists and pedestrians in snow. Snowy sidewalks and bike lanes are seen to limit the mobility of all residents, particularly seniors or those with pre-existing mobility challenges. Not only was moving around the city during the winter identified as hazardous by participants, the additional layer of winter conditions preventing people from attempting to walk, bike or take transit was also identified as a challenge.
“If [the public is] not confident it’s going to be maintained or if it’s not a level of maintenance or snow clearing that [the public is] comfortable with then it might affect people’s decision to choose active modes.” – Interview participant from Winnipeg.

The perception that people don’t or can’t bike or walk in the winter was brought up often by interview participants. According to the participants, bike and pedestrian networks are viewed by the public as warm or fair-weather investments. When winter maintenance of these networks is not consistent to provide confidence in their usability, the public does not associate them as priorities for development in the first place. Active transportation infrastructure is perceived to be underused in the first place and unable to be used during winter. This speaks to another barrier to addressing the challenge of mobility that participants identified, which is the car-centered mentality of transportation that exists in North American cities.
“The more services you provide for snow removal, the higher your taxes are going to be. I don’t think people make that connection all of the time.” – Interview participant from Kamloops

Complementing, or adding to, the challenge of mobility in the winter time is the cost of winter maintenance. The high costs of providing adequate snow clearing was brought up by every participant interviewed. Challenges relating to maintenance costs range from the costs of purchasing specialized equipment for snow clearing to the staff costs required from operations or public works departments during snowfall periods to perform the task of snow clearing to the ongoing maintenance and replacement costs as winter conditions deteriorate public infrastructure faster than is perhaps experienced in cities that have warmer climates. Snow clearing challenges identified ranged from the ability to keep networks clear during heavy snowfalls, sufficient areas to clear or remove snow to, and how to prioritize routes that require clearing first or more often.

The allocation of resources and justifying increased tax rates in communities to address maintenance costs associated with winter conditions was a barrier that was identified by many interview participants. Participants acknowledged that all municipalities are constrained by budgets which are largely reliant on their tax base. Maintenance and snow clearing is but one of many budget areas that officials must choose to allocate resources to in a local government or municipality.

“Snow clearing is a big [challenge]. That obviously impacts design of roads. That’s a big budget cost… to the city and again its hard to manage the expectations of citizens.” – Interview participant from Kelowna
Physical barriers relating to snow clearing included cars parked on streets that prohibit efficient and complete snow clearing, balancing the desire for narrower roads that also need to accommodate snow plows and snow storage, and windrows left behind by snow plows. Some of the perception barriers identified in relation to snow clearing were the expectations of snow clearing standards from the public and business community in regard to frequency and the time it takes to clear snow from road networks. Another barrier identified was the difficulty in balancing snow clearing among road networks, bike networks and pedestrian networks.

Other challenges that were mentioned frequently by interview participants were challenges related to a lack of urban and building design for winter conditions, the public’s perception of winter as an unfavourable season, and the variable weather conditions that cities experience over the course of a winter season. The challenge of neglecting to incorporate winter design was touched on in all areas of planning including road networks, public spaces, bike lanes, density, and subdivision layout for new neighbourhoods. One of the barriers to addressing this challenge that was identified by a participant from Winnipeg was that best practices and design standards are often developed in cities that don’t have winter or cold climates. The “summer state of mind” that a participant in Edmonton see’s as a challenge to planning for winter conditions is another product of the focus on urban design standards that are produced from warmer climate cities and communities.

“I think in terms of attitude I would say our summer state of mind is a challenge. It’s not just having negative thoughts about winter but it’s having a constant summer state of mind and just forgetting about the winter context [and forgetting] to design for it.” – Interview participant from Edmonton
4.3.2. Winter Opportunities

"Winter cities, and that cold, could actually inspire really great placemaking and denser communities and better transit, transportation and pedestrian connections." – Interview participant from Saskatoon

When asked what opportunities winter conditions create in their communities, interview participants felt that rethinking “Transportation” was a major opportunity. This ranged from opportunities for winter specific transportation modes such as skiing or skating, to improved winter cycling networks and facilities, and moving away from a car centered transportation focus through improved transit efficiency.

Figure 6 Opportunities Created by Winter Conditions

Relating to winter design, a more compact and denser city centre is important for cities that experience winter in order to improve transportation efficiencies by reducing the number of kilometers of roads or sidewalks that are required to be cleared of snow. One participant in Kelowna also identified how snow-covered roads allow transportation participants to better observe traffic patterns and can lead to a justification for narrower
streets and increased pedestrian infrastructure such as wider sidewalks or bump-outs at crosswalks or intersections.

Dedicated bike lanes and a priority network of cycling routes to be cleared of snow was identified as an opportunity by a participant from Winnipeg. As they put it, “cold isn’t the barrier, it’s the infrastructure and maintenance of the infrastructure” that is the barrier to winter cycling in the city. Another barrier that is preventing cities from capitalizing on the opportunity of improved winter transportation are the attitudes towards transit and transit users as being unimportant or less important than private vehicles during the winter time. As one participant from Vernon noted “trying to get bus stop clearance of snow as one of the priorities instead of just the main arterial roads” has been a difficult and ongoing challenge.

“All people look forward to the first snowfall because they get to finally pull out their cross-country skis and do all of these things you can’t do in the summer… Those are things you can’t do in summer so the people who love winter are really excited when it starts to get cold and then the first snow starts falling, then you have the snow cover.” – Interview participant from Edmonton

Interview participants identified “Winter Recreation” as an important opportunity for their cities to take advantage of. Winter recreational activities included skating, cross-country skiing, tobogganing, snowshoeing, snowmobiling, downhill skiing or snowboarding and fat biking. These forms of recreation were also interchanged as new modes of transportation in the large urban centres (cross country skiing, skating, and fat biking) and to a lesser extent in mid-sized communities (fat biking). Most often the winter recreational opportunities were identified as being able to take place in natural areas or
parks with minimal need for a city to provide specific infrastructure or investments. The opportunity of winter recreation for many participants came down to providing the space for these recreational activities to take place. Recreational infrastructure was seen in the responses from the participants from mid-sized communities more often in relation to the provision and maintenance of skating rinks. Both community skating rinks on natural ponds and outdoor rinks in the city centre were mentioned as opportunities. Skating trails on the river systems that are present in the large urban centres included in the case study were a unique opportunity that were afforded by the presence or rivers in each of the cities.

“...it’s kind of a domino effect, and you think about “Well if you’re going to be having people skating there, what else do you need to make it comfortable?” I’ll tell you skating out there on some winter days is not pleasant. So, a fire pit was added, food and beverage was added, and washrooms were added in order to provide comfort to people coming down there.” – Interview participant from Kelowna

Creating welcoming public spaces was a prevalent opportunity identified by interview participants. One participant in Kelowna identified that creating public plazas that function well 365 days a year and that aren’t dead spaces in the winter is becoming more of a priority for them. Another participant from Kelowna identified one of their already successful spaces, Stuart Park, as being an example of how public spaces can become winter opportunities for recreation, play, and gathering through the provision of amenities to provide comfort in colder weather.
4.3.3. Winter Barriers

“I think with any city policy changes can take time. Just the fact that there is a large bureaucratic organization and there are specific reasons for every policy that we have.” - Interview participant from Saskatoon

One of the major barriers to addressing the challenge of a lack of winter focused design is the silence of policy on the topic of winter. Timelines to change policy are often long and there first must be council support in order to begin any policy review with a view to incorporate any new lens, including a winter friendly policy lens. Many of the challenges surrounding how cities have been designed and built in the winter resulted because participants were working without intentional policy that was directing them to consider winter conditions. This was also noted as a barrier to bringing various city departments together to tackle the winter design challenges by a participant from Edmonton.

Figure 7 Barriers to Addressing Winter
“I think any of the solutions for making a better winter city are cross-departmental or need a lot of collaboration between different divisions within the city.” – Interview participant from Saskatoon

Department separation or a lack of communication between departments was highlighted as another barrier to successfully addressing winter challenges. The most common references about departmental separation were often centered on the disconnect between planning and maintenance or operations. This was noted in the different priorities each department may have or the level of understanding between the departments about each other’s priorities. A participant from Winnipeg noted that that many of the decisions about how cities are built revolves around transportation, “by how transportation is designed, managed and maintained”. Another communication gap that was identified by a participant in Kamloops was when snow clearing operations are shared between the parks and operations departments and result in a cleared sidewalk or pathway being immediately covered again in snow by a snow plow clearing the streets.

“We’ve challenged [staff] to think of winter, and to use the Winter Design Guidelines but they’re also under pressure to think about twenty other things all at the same time.” – Interview participant from Edmonton

Limited staff education or knowledge about Winter City Planning was noted as a barrier to addressing the challenges that winter creates by many interview participants. Staff lack understanding of what winter design is, or could be, and are not afforded enough time to dedicate to learning more about winter design or conducting a policy review on top of the day to day workload of participants.
Staffing levels were another barrier, even for large urban centres where some cities had dedicated staff working on Winter City policies or strategies. Balancing the multiple lenses that participants must use when evaluating proposals or producing longer-term plans is another barrier that relates to planning staff limitations.

“I think one of the biggest barriers is cultural. For as many people that love and embrace winter there’s many people that want to flee winter as well. I think that manifests itself in terms of either having negative feelings towards winter or having very positive feelings towards it. And that’s difficult.” – Interview participant from Kelowna

The perception of winter as an overall negative season plagued by many challenges posed by its conditions was also mentioned as a barrier by many interview participants. Planning cities under the perception that winter is a negative season leads to reinforcing decisions that create challenges, or at least do little to improve the livability of cities, in the winter. Examples of this include the car-oriented city design or the lack of priority placed on transit users in the winter time. Seasonal variability in weather was viewed as a challenge for activities such as sidewalk and bike network maintenance and snow clearing for most participants.

“I think that there are a lot of really small things that can be done to, if nothing else, remove the excuse people have of not walking on the street or taking their time, doing some shopping, meeting some friends, or having a good time.” – Interview participant from Edmonton

A result of the challenge of winter being perceived as negative or unpleasant season is the publics’ reluctance to be outside during the winter. This includes both the
reluctance to commute or travel using active, outdoor modes such as cycling or walking as well as a reluctance to spend time in public spaces or parks during the winter months. As a participant from Saskatoon brought up, if people are reluctant to spend time outside in the winter there’s often little public support for investment to improve outdoor spaces or networks in the winter unless it’s for cars and roads. Sometimes this reluctance to spend time outdoors relates to the poor weather conditions during winter storms, but most participants referenced this reluctance in relation specifically to cold temperatures.

“…winter is really hard on the infrastructure. Winter might make it an undesirable place for some people which then you might think should translate into lower property taxes. In reality, you need more [budget] because winter is such a burden that way.” – Interview participant from Winnipeg

Infrastructure challenges relating to winter included the provision of amenities such as winterized washrooms in public spaces, dedicated space and systems for snow storage that also accommodate snow melt, drainage, and managing infrastructure disruptions such as water main breaks due to long-term exposure to winter conditions. Most often it was the costs associated with the solutions to these infrastructure challenges that were prohibitive, not the lack of available solutions or the need for new solutions.

4.4 Strategies to Address Winter

The third research question sought to identify potential strategies for addressing winter challenges and opportunities created by the winter season and winter conditions. Interview participants were asked to identify planning strategies that they might use or implement to address the challenges and opportunities they had already identified as
being created in their city by winter conditions. Another question asked the participants to identify any areas of Winter City Planning that they may have already been researching or looking into. The purpose of posing these two questions was to separate what participants might consider implementing, or considerations of winter planning, in contrast with actual strategies they would see their departments implementing. There was a lot of crossover amongst the answers to each question which suggest that the interview questions were not clearly presented to participants in order to distinguish between considerations and strategies. For the purposes of presenting the findings, considerations and strategies will be presented separately to attempt to show some of the differences that could be extrapolated between the two.

4.4.1. Considerations for Winter Cities

“...there has been some conversation about how Winter City Design Guidelines and how land use planning could become a better way to recognize that we are a winter city.” – Interview participant from Saskatoon

When asked about considerations that planners working in northern climates should have, participants indicated that having Design Guidelines and an overall acknowledgement of being a Winter City were important. The acknowledgement of being a Winter City was described in many ways by participants including creating a city’s winter story, engaging in Winter City thinking, ensuring winter is found in guiding documents and policies, and asking the question “how can we take advantage of the winter?” A participant from Kelowna indicated that cities could learn from mountain resort municipalities for how they have integrated the winter season into their buildings, spaces and amenities. A participant from Edmonton noted that getting the public to acknowledge that they live in a
Winter City was one of the easiest tasks they have encountered as part of the WinterCity Strategy so far and that by understanding their winter story has helped to shift those attitudes.

**Figure 8 Considerations for Winter Cities**

“Our division would be very much interested in looking at what are the built environment issues that we can address and should be pushing forward.” – Interview participant from Winnipeg

Understanding how Design Guidelines can contribute to how a city embraces or sets aside the winter context was another consideration that interview participants identified as being important for Winter Cities. Looking for examples of successful winter design in other countries with similar winter climates was a consideration that a participant from Vernon identified. Participants from Edmonton indicated that the Winter Design Guidelines that they’ve developed have been received well by the development community but that it’s still too early to fully measure their effectiveness in implementation.
“We have a weekly meeting with Community Planning, Operations, and Development staff, and often realities of snow management come up in that situation.” – Interview participant from Vernon

Snow clearing was another important consideration that interview participants felt was key for Winter Cities to understand and research more. A participant from Kamloops indicated that staff had been working on extensive research into how other municipalities manage snow clearing operations due to a number of public complaints that pushed their council to allocate staff time to the topic. A participant from Saskatoon felt that a Winter City should be more concerned with the most effective way to move people through their city when it snows versus how to clear the most roads. Participants also mentioned the importance of thinking about snow clearing operations during the design phase of new developments and how materials used, or different design interventions could improve how a development or new infrastructure would perform in the winter season.

4.4.2. Potential Strategies

“We have to continue to work hard on design, that’s the one [area] where we’ve seen the least real change. We’ve planted a lot, a lot of seeds. But it takes a long time to see changes in urban form.” – Interview Participant from Edmonton

Interview participants were asked to identify strategies that could be implemented in their cities to address the challenges and opportunities they had identified as being created by winter conditions. A prevalent strategy identified by participants was the development of winter specific Design Guidelines or a review of current design standards in an effort to incorporate more of a winter lens. This also was linked to having sufficient policy to address the winter context. Design guidelines that address winter conditions were
seen to be a long-term strategy to affect how the built form in cities could change over time. A participant from Saskatoon likened having winter policy references as “reminding people to be thinking of how something functions in the winter”. Edmonton has already created Winter Design Guidelines and participants from Edmonton both spoke of their success in impacting the built environment in a way that positively addresses the winter conditions that city experiences. Implementing an update or a review of Design Guidelines and standards was also mentioned to be a way to keep the winter lens top of mind for planning and development staff who are reviewing projects, plans and proposals. Design Guidelines were mentioned as ways to improve new development as well as the re-development of existing buildings to create buildings in cities that respond to winter conditions while also creating public spaces and a pedestrian environment that will provide increased comfort for people in the forms of weather protection, visual interest, and thermal comfort.

Figure 9 Potential Winter Strategies
“At the end of the day, you want people to leave their houses in the winter. You don't want them hibernating in their house.” – Interview participant from Kamloops

Mobility was identified as an important strategy by participants from Winnipeg, Edmonton, Kelowna, and both participants from Kamloops. Keeping sidewalks clear, addressing mobility challenges of seniors, developing a priority cycling network, and prioritizing transit were all ways that participants felt mobility needs to be addressed in the context of a Winter City. A participant from Kelowna felt that there were residents in their city whose quality of life was suffering in the winter time due to winter conditions that create challenges for mobility. Some of the consequences of not addressing mobility through a winter lens were safety hazards for seniors, social isolation for people who have difficulty moving around their cities in the winter time and a decrease in economic benefits to the business community in the downtown core.

“…an overhaul of the way we think about our maintenance and operations. There are different techniques, technologies, and equipment that could be used that other cities are utilizing that we’re not.” – Interview participant from Kelowna

A snow clearing strategy or defined snow clearing standards were identified as a strategy that should be implemented. Some participants talked about policies to “make sure that the pathways are cleared for the pedestrians in a timely manner” (interview participant from Kelowna), while others talked of raising standards and increasing response times in relation to a snow clearing strategy. Priority snow clearing networks that accommodate all kinds of travel modes was mentioned many times by participants from large urban centres and mid-sized communities. A participant from Edmonton pointed to
the success of their operations department’s first comprehensive public engagement around snow clearing, which resulted in many of the same conclusions that the participants had heard in regard to snow clearing and their WinterCity engagement. A participant from Saskatoon indicated that snow management strategies became a priority during the development of their Growth Plan which included the building of a Bus Rapid Transit network.

“Even things like the snow angel program that we have, making people aware of that program and encouraging neighbours to work together…” – Interview participant from Saskatoon

An Interview participant from Vernon noted the issue of snow clearing on most sidewalks in the city rests on residents and private business owners. This is difficult for two reasons: many seniors or residents with mobility challenges are unable to clear snow on their own and it’s difficult to ensure everyone follows the bylaws about snow clearing. A participant from Vernon also indicated that communication to the public about snow clearing needs to change from “bylaw language” to be more approachable and effective. Participants from Saskatoon and Vernon mentioned the inclusion of a neighbourhood snow clearing program to assist residents with physical disabilities or challenges to remove snow from their driveways and sidewalks as a strategy that is already implemented but that could be expanded or promoted better.

“I would say over the last ten years there’s been a definite transition from the thinking from how we provide a meaningful network of bike facilities to support biking in the summer to year-round. We’ve come to recognize the importance of the separated network.” - Interview participant from Winnipeg
Creating a cycling network that is available for use year-round and in all conditions was another strategy that was important for almost all participants who were interviewed. Participants from Edmonton and Winnipeg have already implemented priority bike networks that receive a higher standard of snow clearing than on the major cycling routes on separated bike lanes. While participants in mid-sized communities also noted that encouraging winter cycling was a strategy that could be implemented, concerns with the cost of maintenance were raised. A participant from Vernon indicated that keeping on-street bike lanes operational in the winter is a challenge as their operations departments use bike lanes to store cleared snow from the road network. They indicated there has been success, however in clearing these bike lanes earlier in the spring of sand and gravel for late winter or early spring cycling. Having policies that addresses snow clearing was mentioned by participants from Kelowna, Winnipeg and Edmonton as an important part of a successful snow clearing strategy.

“The more you enhance these [winter] facilities the more you can market yourself as a good place to live and a good place to go to in the winter time.” - Interview participant from Kamloops

The promotion and support of winter related recreation activities and events was another strategy that participants from almost all communities indicated was important for Winter Cities to develop and implement. This was identified by one participant from Saskatoon as being the most important strategy, while another from Saskatoon felt it was the most important short-term strategy, but not the most important strategy overall. Both Edmonton and Saskatoon spoke of the winter grant programs they run that provide financial and staff support for winter festivals and events in their cities that are organized by community groups or external organizations. Other participants mentioned the link to
tourism marketing as a strategy to increase promotion of winter opportunities related to events and activities. Partnering with local tourism agencies proved successful in reimagining what winter looked like in Edmonton by changing how organizations talked about winter and using more images in online and print marketing that showcased the winter season in a positive light. A participant from Vernon highlighted the need to continue to support and embrace existing winter events and activities as contributors to a livable Winter City.

4.4.3. Evaluating Winter Planning Strategies

“I would say getting public feedback. Surveying, interviewing, open houses. Let them tell you if it’s successful or not.” – Interview participant from Kamloops

Participants were asked how they would, or how they are, evaluating the success of a Winter City Strategy. This was one of the most difficult questions for participants to answer and many participants only had one or two suggestions for evaluation, whereas when asked about challenges, opportunities, considerations and strategies almost all participants were able to provide multiple examples or ideas. Utilizing traditional community engagement techniques to gain community feedback was the most common evaluation method participants proposed for their winter strategies. Participants from Saskatoon and Edmonton have built their strategies in the foundation of community feedback and engagement and have used methods such as interviews and committees to garner feedback. Surveys were also mentioned as a means of evaluation. Participants from Kelowna, Kamloops and Edmonton specifically mentioned semi-annual community wide surveys that their cities have used to engage the public on a variety of topics as an
opportunity to get community feedback on a Winter City Strategy or to start developing one.

“For me it would be monitoring people. Counting users. Are people out using the infrastructure?” – Interview participant from Winnipeg

Usage counts related to infrastructure such as on pedestrian pathways or bike lanes was another evaluation tool that participants mentioned would be used in measuring the effectiveness of a Winter City Strategy. Collecting baseline statistics before the implementation of any strategy is important to compare usage once the strategy has been developed and implemented. Another evaluation method proposed was project evaluation, specifically in relation to development and the built environment. This type of post-build evaluation would need some sort of checklist of winter friendly design elements that could be measured to see if any change in policy or Design Guidelines was being realized.

“We just did our evaluation of the first four years of implementing the strategy… and we know we’ve made a big difference, but we [also] know we aren’t nearly done. We have to be careful not to get complacent because we’ve got a lot of work still to do.” – Interview participant from Edmonton

Edmonton was the only case study participant who has developed their WinterCity Strategy, along with supporting policy such as the Winter Design Guidelines, and has been implementing their strategy long enough to engage in a comprehensive evaluation of their efforts. Participants from Edmonton felt that measuring the success of any Winter City Strategy was a critical lens that participants must include from the beginning of any work to become a Winter City. A participant from Edmonton likened a successful Winter City
Strategic as being a broad social change which is hard to measure. Their evaluation report was based in some statistical trends such as the number of attendees at winter festivals or quantitative data from their community wide surveys, while much of the evaluation came down to intuition and more qualitative methods such as sharing stories and interviews with community members. Another participant from Edmonton noted that many of the small changes that the WinterCity Strategy seeks to achieve are not tied directly to planning and are more directly tied to community education.

4.5 **Comparing Large Urban Centres and Mid-Sized Communities**

Overall, large urban centres had a greater focus on the human scale and experiential aspects of Winter City Planning while mid-sized communities had a greater focus on the physical and operational aspects of Winter City Planning. Planning documents from large urban centres had significantly more references to winter and winter conditions than the planning documents from mid-sized communities in the case study.

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<th>LARGE URBAN CENTRES</th>
<th>WINTER REFERENCES</th>
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Official Community Plans (OCP's) from large urban centres had relatively few references to the winter related keywords (the second lowest number of references) while OCP’s from mid-sized communities had relatively high numbers of references to the winter related keywords (the second highest number of references). Transportation Plans had the second highest number of references to winter and winter conditions for large urban centres and the highest for mid-sized communities. Open Space Plans from all communities generally had low numbers of references to winter related keywords (the lowest for large urban centres and second lowest for mid-sized communities).

Participants from large urban centres did not agree on what the most important winter strategy was for their cities to implement to improve livability in winter. They were split between focusing on Design Guidelines, events and activities, or mobility in the winter. There was more consensus among participants from mid-sized communities, where half of the participants interviewed believed mobility to be to most important focus for cities to improve livability in the winter. A focus on a winter cycling network that is cleared of snow and maintained during the winter was a top strategy identified by both participants from large urban centres and mid-sized communities.

4.5.1. Policy from Large Urban Centres

The planning documents from large urban centres had a much stronger focus on addressing active transportation, particularly cycling, in relation to winter and winter conditions. Festivals, events, and recreational activities were also more prevalent in planning documents from large urban centres. There were a number of topics that were only addressed by planning documents from the large urban centres such as warming huts, vibrancy and aesthetics, policy support and winter cycling education. Large urban
centres defined what it meant to be a Winter City or how the winter context should be considered and addressed in many of their planning documents. Many planning documents addressed how to integrate other policies, planning documents, bylaws or regulations to contribute to creating more livable urban environments in the winter season.

“As a winter city, design should consider factors such as snow, ice and snow storage. Good design ensures safety and security by allowing people of all age groups, especially children and the elderly and also those with physical disabilities, to function more independently within their communities.” – Edmonton, Municipal Development Plan

Only Official Community Plans (OCP’s) from large urban centres directly identified winter as a primary contextual analysis factor that was used to influence the vision for land use and development through the OCP. Both Edmonton and Winnipeg’s OCP’s specifically identified themselves as a “Winter City”. Pedestrian mobility was a prevalent topic that was addressed by the OCP’s from large urban centres. Addressing pedestrian mobility in winter conditions was seen to be necessary to creating a safe city for residents to move through and as an opportunity to provide more comfortable and aesthetically pleasing pedestrian environments.

“The Plan creates a city for all seasons. A series of designs and policies are included to mitigate the cold. They will allow for enjoyment of the warmer seasons and increased shelter during the colder seasons.” – Saskatoon, City Centre Plan

In general, Area Plans from large urban centres addressed a wider variety of winter topics and considerations. Active transportation, lighting, creating microclimates and
addressing what it means to be a “Winter City” were all topics that Area Plans from large urban centres addressed exclusively. The most central topic of discussion in Area Plans from large urban centres in relation to winter and winter conditions was to design the built environment to incorporate and celebrate a northern climate with winter conditions. Designing for a northern climate was described as not creating “year-round summer conditions but instead to celebrate the northern climate” by the Imagine Idlwyld Drive Area Plan from Saskatoon. The 104 Avenue Area Redevelopment Plan from Edmonton identifies that it was “written through a winter lens and considers winter design outcomes”. The idea of celebrating the northern climate rather than just mitigating challenges that winter causes was mentioned in Area Plans from all three large urban centres included in the case study. Winnipeg’s Corydon-Osborne Area Plan identified their goal of a quality public realm as addressing “the seasonal climate and is a source of community pride”. Saskatoon’s City Centre Plan is “designed to celebrate the colder months” and Edmonton’s Capital City Downtown Consolidation Plan also proposes to “celebrate our winter climate” through the design of public spaces, facilities and buildings.

Active transportation considerations in relation to winter were also prevalent in Area Plans from the large urban centres. Considerations such as end-of-trip facilities (bike parking and showers or change areas) for cyclists were mentioned as being especially important during winter conditions by Edmonton in their Capital City Downtown Consolidation Plan. Covered or heated transit shelters were another consideration to improving the experience for transit users in the winter months along with ensuring that transitions between sidewalks and transit stops or at intersections and crosswalks are kept clear of snow and ice build up.
“As a winter city, it is important that we design for our dominant and defining season at all levels of city building. Monitoring and evaluating urban design, particularly across an entire city, is no simple task.” – Edmonton, Winter Design Guidelines

Design Guidelines from large urban centres were much more comprehensive in the variety of topics that they covered in relation to winter and winter conditions. The most common topics were snow management and improvements to the public realm. Building design and pedestrian mobility were also common considerations. Active transportation, another common topic discussed when referencing winter, was only addressed by the large urban centres in their Design Guidelines. Other than a few references to weather protection, landscaping, and snow clearing in Design Guidelines from Saskatoon and Winnipeg, most of the winter references and topics came from Edmonton’s Design Guidelines. Topics of lighting, creating vibrancy, landscaping, creating microclimates, materials, and considering pedestrian comfort were all included only in the Design Guidelines from Edmonton. Edmonton’s Design Guidelines show the breadth of considerations that must be viewed through a winter lens in order to truly become a Winter City.

“While Winnipeg is known for its glorious hot summers, it is also known for the long and often bitterly cold winters. Winnipeg is a true winter city with snow generally arriving in November and staying as long as May. It experiences more hours of sunshine than Phoenix. It is famous for its windy downtown corners.” – Winnipeg, Downtown Urban Design Guidelines
It was common for the Design Guidelines documents to include a description of the local climate and winter season context through describing what types of conditions define the winter season. Precipitation, snowfall, temperature and days of sunshine were all metrics used to create a winter season profile of conditions that required consideration through the Design Guidelines.

“For walking, many Winnipeggers pointed out the lack of sidewalks or sidewalks in poor condition, poor snow clearing, as well as safety and security concerns as key current barriers to walking. The top priority identified among workshop and survey participants was more snow removal to allow for clear sidewalks in the winter.” – Winnipeg, Pedestrian and Cycling Strategy

In Transportation Plans from large urban centres, snow management was the most common topic discussed in relation to winter and winter conditions. Edmonton’s Transportation Master Plan calls for the development of a maintenance and snow clearing program that speaks to year-round mobility and also to apply a Winter City lens to parking policies in the city. The second most common topic discussed in relation to winter and winter conditions in Transportation Plans from large urban centres was snow management specifically for bike lanes. Many of the Transportation Plans from large urban centres call for increased maintenance and snow clearing in bike lanes to accompany the increased investments proposed for cycling infrastructure. Saskatoon and Winnipeg both indicated they need to “designate and prioritize a winter cycling network for snow removal” (Saskatoon Plan Reference) in order to provide a city wide cycling network that was guaranteed to be cleared for cyclists in the winter and during snow events.
Active transportation and pedestrian mobility were also common themes around winter in the Transportation Plans from large urban centres. Winnipeg’s Pedestrian and Cycling Strategy addressed the challenge that “bicycle route maintenance can often be overlooked or neglected due to tight operating budgets…” which makes promoting a year-round cycling culture difficult and unsafe. Many Transportation Plans discussed the need for improved pedestrian mobility in the winter months, especially for residents with mobility challenges such as seniors, children and people with disabilities. Edmonton’s Transportation Master Plan also addressed the need to focus resources on maintaining the pedestrian network year-round with an aging population of seniors. Winnipeg’s Pedestrian and Cycling Strategy identified that a unique challenge they have in relation to snow clearing is that the City is “responsible for snow clearance on all public sidewalks” where most other municipalities in Canada require the adjacent residential or commercial property owner to maintain snow clearing on public sidewalks.

The most common topic referenced by Open Space Plans from large urban centres in relation to winter and winter conditions was to provide four season uses and opportunities for winter activities. Cross country ski trails and outdoor skating rinks were popular outdoor activities that were suggested, with important amenities such as skate changing areas and wayfinding signage to support these activities. Open Space Plans from large urban centres also discussed the importance of winter lighting, providing warming shelters in parks and along trails and the importance of keeping walking trails clear of snow for winter users. Warming huts and weather protected seating areas are similar although the warming huts referenced by Open Space Plans from large urban centres are much more concerned with providing warmth against the cold and wind instead of just protection from precipitation in the form of rain and snow.
4.5.2. Planners’ Perspectives from Large Urban Centres

“As long as you’re walking or cycling you actually generate plenty of heat. This notion of it being too cold to support sustainable modes of transportation is bogus.” – Interview participant from Winnipeg

In responses from the participants working in large urban centres, the top challenges that winter creates are “Discomfort” and “Mobility”. Discomfort was brought up by every participant working in large city centres. Discomfort speaks to the physical levels of discomfort people could experience when they are outside during the winter due mostly to the cold temperatures. It should be noted that all the large urban centres who participated in this study were Prairie cities which experience more prolonged periods of extreme cold and wind is a more prevalent winter condition due to the Prairie landscape. However, even experiencing more extreme cold and windy weather, a common comment regarding the discomfort winter conditions can create for people was that discomfort can be an exaggerated or a perceived challenge by people.

“One of the best ways to show drivers and cyclists the expectations or how to use infrastructure (what they’re supposed to be doing or who’s supposed to be where) is using the pavement to communicate that.” – Interview participant from Winnipeg

Mobility in relation to bike lanes was a challenge for large urban centres. Allocating space on streets for bike lanes, clearing snow from on and off-street bike lanes, and justifying the permanent dedication of bike routes year-round were all barriers that participants from large urban centres brought up. Hazardous conditions due to weather variability when the snow on the sidewalks melts and then freezes into an uneven surface
was identified in one large urban centre as a concern. Another challenge winter creates for promoting active transportation, particularly on-street bike networks, was brought up by a participant from Winnipeg: when it snows and covers the on-pavement signals that could communicate when bike lanes begin, end, or even marking the various traffic lanes, then both drivers and cyclists are unclear as to how to move through the city safely.

A challenge that is unique to the large urban centres is the interior or covered skywalk or pedway networks, covered bridges that connect buildings and make it possible for people to move throughout the city without being outside. While participants noted that these are seen as a positive for the mobility of seniors or people with mobility challenges, they are also seen to perpetuate the perceptions of winter being a negative season and taking away from downtown vibrancy at the street level.

Many large urban centres had already begun a policy review in order to incorporate more references to winter and winter conditions in their guiding policy documents, where no participants from mid-sized communities indicated that any policy work in relation to winter had or was going to be taking place. Participants from large urban centres also spoke more of supportive policy for winter design and activities as opposed to restrictive regulations. A participant from Saskatoon identified how a comprehensive Winter City Strategy that is based in extensive community engagement is expected to lead them to an action plan for the next steps in becoming a leading Winter City.

“I think fundamentally that the biggest challenge is in the attitudes. How we’ve somehow just forgotten. We focus on the snow and ice as a challenge, and the cold as a bad thing, but we’ve forgotten about all the potential of winter as well.”

- Interview participant from Edmonton
Ignoring, or forgetting about, the possibilities of winter was mentioned more frequently by participants from large urban centres. Similar to the summer state of mind mentioned previously, this barrier to addressing winter challenges prevents city staff and the public from realizing the opportunities that winter can present. Businesses were identified as one of the groups who tend to ignore the opportunities winter can present, with the example of restaurants not utilizing their patio spaces in the winter by a participant from Edmonton. Participants noted that by ignoring winter as a season that has opportunities, cities are missing out on a variety of benefits such as economic opportunities or creating a more positive and inviting public realm.

“[Another opportunity is] the events you could have in winter that are a little bit different than what you perhaps might have in the summer.” – Interview participant from Saskatoon

When asked to identify the opportunities that winter conditions create in cities, only participants from the large urban centres indicated that winter specific festivals and events were potential opportunities. Some participants identified winter events that are currently taking place, such as the Festival du Voyageur in Winnipeg, while others indicated that there were opportunities for new festivals or events. Benefits from the opportunities of winter festivals and events were identified as being both economic and social.

Another opportunity that was highlighted by participants from large urban centres was the opportunity to create welcoming public spaces for the winter season. Paired with many of the recreational opportunities, participants from large urban centres saw the presence of winter conditions as a reason to push for better public realm amenities and spaces. From warming huts along the river systems to patios that allow for outdoor seating
during winter months, the public realm and pedestrian spaces were a key opportunity to be addressed through a winter lens in order to have year-round positive impacts.

“With lighting, because it’s a dark time of year, you have this tool, creative lighting, to create a sense of [warmth], to do placemaking. [With] the twinkly lights it can be a really magical time of year, really. With the glistening snow.” – Interview participant from Edmonton

Only participants from large urban centres identified the darker days and nights that cities experience during the winter months as an opportunity to implement creative lighting strategies. Creative lighting was mentioned as an opportunity beyond colourful Christmas lighting that many residences and businesses set up for the holiday season and participants saw an opportunity to extend the warmth that lighting creates through to February and March. This was another opportunity that participants saw as being able to improve public spaces and the pedestrian realm year-round through a winter lens addressing winter season darkness.

“Trying to encourage people to use a winter lens even when we’re having a heat wave. Like we are right now. Think, when you’re planting your gardens, think about how things are going to look when things are dormant, you know, what’s going to add some colour.” – Interview participant from Edmonton

Other considerations that were mentioned by participants from large urban centres were around winter lighting, minimizing the impacts of wind and cold for people who are outside in the winter, and providing warming huts in public spaces. A participant from Edmonton mentioned that winter needs to be considered year-round in the city in order to respond proactively to winter conditions versus the reactive approach many communities
Community education and engagement was a strategy that most participants from large urban centres felt was important for Winter Cities to engage in. The participants in Edmonton and Saskatoon who have already begun working on a comprehensive Winter City Strategy indicated that having a community led process was imperative to the success of the strategies' development and implementation. Strategies for communication and education that were offered by participants included website pages about winter initiatives and programs, social media, a winter experiences guide, as well as policy references to winter and the aspects of being a Winter City. Engaging and communicating among the different City departments was another strategy that was mentioned by a participant from Saskatoon. Engaging with the business community through Business Improvement Associations (BIA’s) was another strategy linked to education and promotion that a participant from Edmonton felt would lead to becoming a successful Winter City.

“As things come up as an opportunity for us to work on something, we’re using it as an opportunity to try things out. Pilot something for a while, see if it works. If it doesn’t, well, ok, we tried. Learned some lessons from it and moved forward.” - Interview participant from Saskatoon

Piloting new programs or amenities was a strategy that a participant in Saskatoon used as an example of a successful Winter City Strategy. Saskatoon borrowed warming huts from Winnipeg to showcase at various events and popular outdoor spaces in the winter. Borrowing allowed Saskatoon to test how their community used and reacted to a
winter amenity such as warming huts and they were able to learn from the pilot project about how they would build or design them differently to work better for their city. A participant from Edmonton highlighted a pilot project around winter lighting through a matching grant program targeting heritage buildings in the city as one way they’re testing winter opportunities such as creative lighting.

4.5.3. Policy from Mid-sized Communities

“Where commercial development is provided at street level, properly designed overhead weather protection on street is required. This protection can take the form of canopies, awnings and colonnades to improve the year round sidewalk shopping conditions and ensure pedestrians are protected from the elements.” – Vernon, Official Community Plan

Providing weather protection to pedestrians and people outdoors was the most common topic addressed by the planning documents from mid-sized communities when addressing winter or winter conditions. Weather protection was often proposed in the form of awnings on buildings to cover sidewalks or covered entranceways to buildings. Landscaping and building design were also more common topics to be addressed in relation to winter in the planning documents from the mid-sized communities. Landscaping was often referenced in relation to plantings that fit with the local climate and, for most instances when planted within the public realm in an urban environment, plantings that can withstand snow storage.
“Enhance the pedestrian environment through well-designed landscaping, canopies for weather protection, outdoor seating for restaurants and cafés, and wider and/or separated sidewalks.” – Kamloops, KAMLPLAN (Official Community Plan)

Mid-sized communities’ OCP’s had a prevalent focus on the built environment with many references to weather protection, building design and landscaping when they reference winter or winter conditions. Area Plans from mid-sized communities, while having relatively few references to winter conditions, focused mostly on providing weather protection for people walking or spending time outdoors, and improving the public realm and built environment through climate sensitive design. Kelowna’s Civic Precinct Plan identifies building orientation as a consideration to address energy performance and solar heat gain in the winter months. Vernon’s City Centre Neighbourhood Plan identifies their parks and open space network as needing to “promote activity in those spaces at different times of the day, all days of the week and throughout the seasons”.

“On steeply sloping sites, designing and installing driveways presents many challenges, such as significant elevation change, limited parking capacity, limited visibility at the road, difficult access in winter conditions and space for residential pick-up and delivery.” – Vernon, Hillside Guidelines

The few references to winter and winter conditions that were found in the Design Guidelines from mid-sized communities were mostly focused on street design and snow management. Street design considerations regarding slopes were of particular importance in the mid-sized communities due to their topography and hillside neighbourhood developments. Kelowna’s Guidelines for Accessibility in Outdoor Areas also spoke to the
design of sidewalks and curbs to provide smooth transitions and to prevent water and snow accumulation in intersections. Other snow management considerations mentioned in Design Guidelines from mid-sized communities in relation to winter were for snow storage in cul-de-sac design and provision of covered walkways or ramps to prevent snow and ice build up.

“Bike lanes are either cleared as the same level of service as adjacent roadway or are used as snow storage. Additional resources will be required to prioritize maintenance on new cycle tracks or shared-use pathways so that these primary facilities receive higher priority than local roads.” – Kelowna, Pedestrian and Bike Master Plan

Snow management was by far the most common topic discussed in Transportation Plans in relation to winter for mid-sized communities. Kamloops’ Pedestrian Master Plan identified a review of the snow clearing policy was needed due to an increase in complaints regarding snow clearing operations on streets and sidewalks. Considerations in subdivision and street layouts were also cited by Kamloops’ Transportation Master Plan as a street design that makes snow clearing more difficult in urban environment. The mid-sized community Transportation Plans propose snow storage in bike lanes during the winter, while no Transportation Plans from large urban centres propose this as a potential snow management practice.

The mid-sized community Transportation Plans also referenced maintenance and active transportation in reference to winter and winter conditions. Most of the discussion around mobility in the winter was in regard to safety of mobility due to obstructed sidewalks or icy walkways. Kelowna’s Pedestrian and Bike Master Plan’s sole reference to
pedestrian mobility indicated that “curb ramps and landings, crosswalks and refuge islands must be kept clear so as not to impede safe pedestrian movement”. Seasonal transportation schedules were noted from public feedback as a challenge in the Kamloops Transportation Master Plan.

“Explore the feasibility of providing access to washrooms for a longer season in select Community Parks.” – Vernon, Parks Master Plan

Open Space Plans from mid-sized communities discussed the importance of year-round washroom facilities the most often in relation to the winter related keywords. Many Open Space Plans identified that washrooms in parks were not open in the winter months or that there opening hours were reduced. There were some public comments included in the Open Space Plans calling for increased hours. Providing weather protection for park and trail users in the form of gazebos or covered seating areas was another common topic of discussion in the mid-sized communities’ Open Space Plans. Kamloops’ Riverside Management Plan referenced winter activities such as skating and the Kamloops Heritange Railroad which operates a Christmas event as assets.

4.5.4. Planners’ Perspectives from Mid-Sized Communities

“As we evolve our development standards into the 21st century, snow storage and removal becomes one of the key obstacles to doing that.” – Interview participant from Vernon

For mid-sized communities, “Snow Clearing” was the top challenge created by winter conditions that was identified by participants. A common theme in relation to the challenge of snow clearing related to new development and road design standards. New
developments, particularly on hillsides and steeper slopes in the mid-sized communities, which is unique consideration for the topography of the case study region, presented snow clearing challenges in accommodating the larger snow plows and turnarounds for them. Snow storage from snow clearing activities on hillsides was also mentioned as one of the reasons many new hillside developments end up having much wider road widths, which is in opposition to more compact urban design.

“It just seems so variable here. Some winters it’s pretty light, in terms of snow and ice, and other times you have it all winter” – Interview participant from Vernon

“Weather Variability” was a prevalent challenge identified by participants from mid-sized communities. Weather variability challenges related to temperature fluctuations, the amount of snow fall and the timing of spring melts. This unpredictability in relation to the severity or timing of winter conditions is a challenge for cities that work within annual budget cycles and staffing levels that are not as responsive to the immediate effects of snowstorms or winter events. Some attributed the perceived increase with variable winter weather with climate change, specifically the higher snow packs and earlier spring melts that have resulted in significant spring flooding in the past few years.

The variability of temperature in the Okanagan also posed challenges for winter activities such as outdoor skating rinks on warm, sunny days in the winter. This unpredictability, while providing for pleasant sunny days during the winter, was noted as a challenge for planning outdoor events or providing outdoor activities that require cold temperatures or snow.
“A lot of our subdivisions now are on steeper land. It’s more of a concern on how we deal with all of the issues related to winter conditions like snow and ice.” - Interview participant from Kamloops

Topography was noted by participants from the mid-sized communities as a challenge as it relates to winter conditions. The communities in the Okanagan Valley, due to the geography of the valley with lakes in the valley bottoms surrounded by steeper hillsides, are all experiencing more development of new neighbourhoods and subdivisions in the steeper hillsides. Hillside developments experience earlier and longer winters than neighbourhoods in the valley bottoms and often get higher snow volumes due to the elevation differences. This poses challenges for maintaining a consistent transit system, as noted by a participant from Vernon, when buses can’t access certain portions of their routes due to icy road conditions on steep slopes.

“I was in Whistler and in their Olympic Plaza they… store a lot of the snow and they sculpt toboggan sections for little kids. They make a play park out of it. I’m going to be talking to our own operations and parks people about that.” – Interview participant from Vernon

“Play” and “Tourism” were two opportunities that were emphasized in mid-sized communities. Play was mentioned in regard to the opportunity to use snow to create play structures for children as one participant from Vernon was inspired by on a trip to the ski resort town of Whistler, BC the previous year. Another aspect of play, which can also be considered a recreation opportunity, is the creation of toboggan hills for kids. This was mentioned by participants in Kamloops as a significant winter opportunity in many of their neighbourhood parks that are being located in the hillside neighbourhoods. One of the
most common barriers to capitalizing on the opportunity of promoting winter play opportunities in communities was resource allocation and the costs of investing in infrastructure for outdoor amenities that contribute to play. It was also identified by more than one participant that it is difficult to justify the costs of winter related infrastructure to the whole community when there’s a perspective that many residents wouldn’t use amenities like outdoor ice-skating rinks or toboggan hills.

Tourism, and the ability to promote communities as four-season tourism destinations, was mentioned by participants in all three of the mid-sized communities who were part of the case study as an opportunity. Participants from all three communities also noted the nearby mountain ski resorts as an important factor in both the recreation and tourism opportunities that winter presents. There were no barriers identified to capitalizing on winter tourism opportunities by the participants from mid-sized communities.

“I kept coming up with lots of challenges, but I was hard pressed to come up with the opportunities.” – Interview participant from Vernon

Overall, participants from the mid-sized communities in the case study presented fewer opportunities created by winter conditions in their communities than participants from the large urban centres. One participant from Kelowna noted that many people from the city spend their weekends in the winter at the ski hill. The perspective that winter opportunities are located outside of the city and up in the mountain ski resorts could be a barrier to the identification of winter opportunities within the communities if most positive associations with winter are geographically tied to the resort areas. Another barrier to capitalizing on winter opportunities or the identification of winter opportunities that was identified by a participant from Kelowna was the perspective that mid-sized communities
in the Okanagan weren't true Winter Cities. Comparing the conditions of winter in the cities in the Okanagan to the Prairie cities or even communities in Northern BC made some of the participants from mid-sized communities brush off the importance of planning for winter as a priority.

“If you put the bus system in all it’s scope from bus stops to literally the buses, and the bus routes, and just put all the bus system under analysis of how it could be better in the winter time, wouldn’t that be a fantastic analysis?” – Interview participant from Kelowna

For participants from mid-sized communities, snow clearing was the top consideration they identified. In relation to snow clearing participants mentioned that snow clearing standards must be considered by Councils as well as staff as a priority. Other considerations that mid-sized communities mentioned more frequently than large urban centres were considering pedestrian networks and transportation design. Transit considerations were mentioned by participants from all three communities in the case study as being a key consideration in regard to transportation in a Winter City.

Participants from mid-sized communities saw snow clearing as a more important strategy for Winter Cities than participants from large urban centres did. Every participant interviewed from mid-sized communities in the case study discussed various ways to improve snow clearing operations as a strategy for Winter Cities to implement. Both participants from Vernon and Kamloops indicated that involvement and support from City Council was a key to a successful snow clearing or snow management strategy in order to properly fund any increase in standards or response times or levels of service. A participant from Kelowna noted that coordinating snow clearing operations between
different City departments would be part of a snow clearing strategy along with investment in appropriate equipment for infrastructure such as park pathways and separated bike lanes.

“A couple of years ago we piloted something amazingly high-tech, it was a box filled with grit and sand, placed at key intersections in the downtown…, where we have a lot of seniors.” – Interview Participant from Vernon

One strategy that participants from Vernon highlighted as a success was their grit-box program where the city placed self-serve boxes of grit and sand in key areas that staff knew had high pedestrian traffic in the winter. This reduced the risks of slipping and falling on icy sidewalks for seniors while limiting the costs for City staff to manage the snow and ice immediately and at all times. This is similar to the neighbourhood snow clearing program where snow and ice management becomes shared responsibility between the public and the City through their operations departments.

Another strategy that more participants from mid-sized communities than large urban centres touched on was the need to improve public spaces to provide better shelter or comfort in winter conditions. Strategies identified included providing more year-round public washrooms in parks and public spaces, cleared pathways in parks, lit pathways in parks, or providing shelter for people to gather that is dry and protected from the snow.
### 3 Comparing Community Scales

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<th>Mid-Sized Communities</th>
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<td>• Over half unaware</td>
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<td>• Winter Design&lt;br&gt;• Consider Winter Season into Planning&lt;br&gt;• Snow Clearing</td>
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<td><strong>Planning Documents Referencing Winter</strong></td>
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<td>• Snow Clearing Strategy&lt;br&gt;• Design Guidelines and Standards&lt;br&gt;• Cycling Network&lt;br&gt;• Improved Public Space</td>
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4.6  Adaptable of Winter City Planning

The fourth research question explored if mid-sized communities could easily adapt successful Winter City Strategies from large urban centres, and if so, how. Participants from each city in the case study were asked to identify the most important strategy for their city to focus on in order to improve the livability of their city in winter, as well as the least important strategy. This question was asked to identify if any of the strategies they had discussed during the interview were perceived as unrealistic or unattainable for their cities or departments to implement. This was intended to show if there are similarities or differences between the two sizes of communities based on their answers. Participants were also asked to identify any competitive advantages a mid-sized community might have over a large urban centre in planning for winter conditions or implementing any strategy.

4.6.1. Most Important Winter City Strategy

“I begrudgingly admit that programming is probably very important early on because it's a short-term easy win.” – Interview participant from Saskatoon

The most important strategy that was identified by participants to improve livability during the winter in their cities was to work to improve the mobility of people in the winter. Design Guidelines that address winter conditions was the second most important strategy for planners to consider as identified by the interview participants. Other strategies that were identified as being important were focusing on winter specific events and activities, or winter programming. Participants from Vernon identified development standards and snow clearing as the top priorities for cities to consider while a participant from Winnipeg felt that the first step for cities looking to address winter should be a “comprehensive scan
of what all those opportunities and constraints are” and where to allocate the limited resources cities have for such strategies.

### 4.6.2. Least Important Winter City Strategy

“I’d say nothing’s the least important. We want to do everything. I wouldn’t say anything is least important necessarily.” – Interview participant from Saskatoon

Almost all participants from large urban centres could not identify any strategies were least important or felt that all strategies to address winter challenges and opportunities were important. One participant from Edmonton mentioned that economic development with a winter focus might be not as important from a planning perspective, but also acknowledged that they may feel that way because it is one of the most difficult areas to address.

“If you’re simply just reacting to the opportunity with any given project, then your ability to address the solution is rather narrow. Dealing with things case by case is probably not the best way to do it.” - Interview participant from Kelowna

By contrast, almost every participant from mid-sized communities was able to identify a strategy or consideration they felt was least important to consider. Half of the participants identified recreation infrastructure as the least important strategy for cities to focus on in relation to infrastructure such as outdoor skating rinks or cross-country ski tracks. A participant from Kelowna identified continuing with the status quo of how the city is currently addressing winter as the least important strategy for cities.
4.6.3. **Advantages and Disadvantages for Mid-Sized Communities**

Participants were asked to identify advantages or disadvantages for mid-sized communities who are looking to engage in Winter City Planning strategies to become more livable and efficient cities during the winter season. There were many advantages identified by interview participants as to why it might be easier for mid-sized communities to experience success with Winter City Planning over large urban centres.

> “I think that being a smaller [city] smaller events can have more significance and impact. There is a smaller community where you could change the mindset and get people thinking with that [winter] lens much quicker.” – Interview participant from Saskatoon

For participants from large urban centres, these advantages were mostly related to the size of the local government in mid-sized communities. From their experience participants felt that it would be easier to connect with their community to create a comprehensive and community led planning process to address winter conditions in a mid-sized community. Participants felt that in mid-sized communities, it’s easier for the City to develop relationships with community that will lead to strong Winter City Strategy development. A participant from Kamloops felt that due to their size they are able to better understand the motivations and needs of their residents. A participant from Edmonton felt that mid-sized communities could achieve holistic community building outcomes with a winter lens more successfully due to the tighter knit community that they felt were present in smaller cities.

Participants from large urban centres also felt that their counterparts in mid-sized communities would have an easier time collaborating with the various internal
departments such as operations, parks and administration to address winter conditions and to ensure that a winter lens is applied cross-departmentally and not siloed within the planning department alone.

“In terms of the advantages of that size give us, a good chunk of our population is within walking distance of the downtown. A huge percentage of it is.”

– Interview participant from Vernon

Participants from mid-sized communities saw their smaller size as an advantage, particularly in regard to having a compact city centre and downtown core. The smaller geographic size was also noted as an advantage when it came to the number of kilometers of roads that needed to be cleared or the ability to create a connected bike network that had equitable coverage throughout the city. Half of the participants interviewed felt that their smaller population and area made it inherently easier for mid-sized communities to engage in Winter City Planning strategies. Participants from mid-sized communities felt that their geographical context resulting in a milder climate was an advantage for them to engage in planning for winter conditions.

There were very few potential disadvantages identified by participants that would hold a mid-sized community back from taking a more active role in planning for winter conditions. While some participants saw mid-sized communities as more entrepreneurial or willing to test things out, others felt that the small-town mentality could also present a barrier when decision makers aren’t expected to be innovative or progressive.

The most common disadvantage that participants identified was the fact that mid-sized communities have smaller budgets with which to fund winter planning strategies. A participant from Saskatoon also noted that larger urban centres have more ability to
leverage the opportunities that they’re presented with. However, local government budgets are also, in most cases, relative to their population, and therefore their expenses. Most participants acknowledged this stating that while budgets are higher in large urban centres, so are populations and tax bases, pointing out the relativity when comparing budgets. While mid-sized communities may have smaller overall budgets, they also have fewer overall expenses and without a thorough financial analysis of how budgets are allocated and leveraged between the two city sizes the researcher does not feel that this disadvantage is unique to mid-sized communities.

4.7 Summary

The findings from this research revealed that large urban centres are more engaged with Winter City Planning concepts than mid-sized communities. This was shown through the extensive number of references to winter and winter conditions in the key planning documents and the responses from interview participants about their levels of awareness of the topic. Planners from both community sizes though, are looking to other northern Winter Cities to identify best practices for winter planning. Acknowledging that they are Winter Cities, both from a policy and planning practitioner perspective, stood out as a key shift in mindset for communities who want to transition from being a “winter city” to a “Winter City”. Mobility emerged through the research as one of the key challenges and areas of focus to address in order to improve the livability of cities in the winter season.

While there were similarities between large urban centres and mid-sized communities when it came to identifying challenges and opportunities that winter creates, the most common difference is in the variety and number of these identified. Interview participants from large urban centres presented fewer challenges and more opportunities
than participants from mid-sized communities. There were also more considerations and strategies presented by planners from large urban centres to address the winter challenges and opportunities. Overall, the findings show that mid-sized communities are in a strong position to begin adapting winter planning strategies from large urban centres. There are few disadvantages for mid-sized communities to begin integrating a comprehensive winter lens into planning practices. There were many alignments between the planners’ perspectives in each community size.
Chapter 5. Discussion

5.1 Introduction

The findings from this research suggest that mid-sized cities can easily adapt Winter City Planning strategies from large urban centres. This chapter will integrate the results from the literature review and the findings of this research to present a comprehensive overview of the adaptability of Winter City Planning strategies from large urban centres for mid-sized communities. First, this chapter will revisit some of the dominant literature on winter design which was identified in this research as being a core component of Winter City Planning. Next, the chapter will focus on the importance of policy that considers winter conditions and strategies to address the challenges and opportunities that winter creates. Then, the chapter will provide an overview of the gaps identified in current Winter City Planning knowledge and outline ways to encourage the expansion of this knowledge within mid-sized communities.

The chapter will then turn to answering the question of whether mid-sized communities can successfully adapt Winter City Planning strategies that are found in large urban centres. Five key strategies will then be presented for mid-sized communities to consider as they begin applying a winter lens to their planning practices. These five key strategies are 1) conduct a policy review; 2) promote winter positively; 3) create comfortable, year-round public spaces; 4) snow management; and 5) focus on winter design. Finally, the chapter will outline some of the areas identified for future research to complement this research or to further understand the context of Winter City Planning.
5.2 Applying Winter Design Principles

Designing cities and communities to accommodate the seasonal and climatic variabilities is critical to ensure efficiency and livability. Research has shown that there are numerous challenges that cities in northern climates must address that are unique and directly related to winter seasonal conditions. Seasonal conditions that are created by winter also create unique opportunities for cities and communities to capitalize on. Community planning is a professional discipline that requires planning professionals to integrate social, environmental and economic considerations while looking to the futures of their communities and regions. Planning relates specifically to the “scientific, aesthetic and orderly disposition of land, resources, facilities and services” (PIBC, 2018) to create efficient and healthy communities. Winter City Planning is one of the many lenses that planners from northern climates must integrate into their practice to ensure the built environments they work to shape respond well to the distinct seasons.

Norman Pressman (1996) presented five principles of winter design for planners from northern climates to consider which were: “contact with nature; year-round usability; user participation; cultural continuity; and the creation of comfortable microclimates throughout much of the city’s open spaces”. Most of these principles are being considered by planners in Canadian cities to some degree, while some, such as contact with nature and cultural continuity, are missing from the winter lenses that planners are applying.

Year-round usability was the most prevalent principle of winter design that the researcher uncovered being considered by planners. Most interview participants and key planning documents spoke of year-round usability of sidewalk and bike lane networks, parks and public spaces and supporting year-round events and activities. The idea of
Winter Cities offering visitors and tourists a four-season destination was mentioned by planners as an opportunity to capitalize on. Focusing on year-round mobility and active transportation will result in cities that are accessible by all residents, young and old and for residents with mobility issues. This speaks to having an inclusive and accessible community that meets the needs of even the most vulnerable residents.

User participation was a winter design principle that was prevalent among interviewees from large urban-centres. When participants addressed how their cities approached planning for winter conditions, challenges and opportunities, having a community led approach was important. This community led approach to creating a city-wide Winter City strategy relies on members of the public and community stakeholder groups to become winter champions and begin to change the dominant public perception that winter is a negative season. With user participation from the beginning of the planning process that includes voices from various city departments, political decision makers and the public, the process of creating a Winter City Plan will result in a long-term vision that is valued by the community which will lead to improved implementation and buy-in.

Creating comfortable outdoor public spaces is being considered by most of the communities included in the case study. Area Plans, Design Guidelines and Open Space Plans are the planning documents where there is the most focus on improving the outdoor experience in public spaces. While large urban centres have a greater focus on how to create comfortable outdoor microclimates to improve the pedestrian experience outdoors, mid-sized communities are beginning to address this by requiring the provision of weather protection for pedestrians. With more staff education on Winter City Planning and the importance of incorporating a winter lens, mid-sized communities can further develop their
policies and guidelines to enhance their public realm by focusing on the pedestrian experience in these outdoor spaces.

Contact with nature was not a prevalent consideration in any of the cities who were included in the case study. This may be due to their urban focus and the types of documents that were selected for analysis. When elements of the natural environment were referenced in relation to winter, it was primarily in the mid-sized communities when they spoke of landscaping strategies. Many planning documents from mid-sized communities mentioned the importance of selecting plants that are native to the local climate and geography and were able to withstand winter conditions, particularly snow. Designing with nature can lead to improved performance of the built environment (Yang & Li, 2016) and our cities must be built to coexist with nature instead of attempting to tame it (Couture, 1985).

Cultural continuity was not a consideration among any of the cities included in the case study. Pressman (2004, p. 36, 44) imparts that Winter Cities must “think winter” and work to “generate local and regional pride” that celebrate the northern climate. How can cities be truly authentic, with their own sense of place, if the built environment mimics cities from warmer climates? It is a contributor to why Canadian snowbirds and sun-seeking vacations have become so romanticized by our residents, we’re fleeing the winter season exactly because our cities have not been built to make us feel at home in them during the winter. Cities reflect the culture of the region and their residents, and in order to be livable year-round must begin to embrace the winter season, celebrate the culture of the northern climate and continuously be asking how winter makes them stand out.
5.3 **Incorporating Winter in Planning Policy**

The planning documents selected for analysis are some of the highest-level guiding documents for cities. They contain the overall vision for the future of the community and contain some of the most important policies that guide decision makers and planners as they work with developers and the community to grow. It is important for these key planning documents to incorporate strong references to the winter context that northern communities exist within. They should both acknowledge the climate and four-season conditions while providing clear guidance for planners who must apply a winter and climate-sensitive lens when working on projects or new plans.

Large urban centres in Canada have been engaged in Winter City Planning to a higher degree than mid-sized communities to date, therefore they have much stronger and more developed policy that addresses the winter season and winter conditions that are present in their cities. They have more references to winter conditions in planning documents, and while this could be attributed to the scale of the city, they also address a wider variety of winter related considerations than were found in the planning documents from mid-sized communities. Large urban centres are thinking about winter challenges and opportunities more creatively and with a greater understanding of how winter conditions impact the livability of cities.

The majority of participants from large urban centres, who were all aware of Winter City Planning prior to this research, still felt that their policies and planning documents were neutral in their promotion of a winter lens. Even a participant from Edmonton, a city that has completed both the *WinterCity Strategy* and *WinterCity Design Guidelines*, felt that some of their policies could do a better job of referencing winter in order to promote
a positive winter lens and address winter challenges and opportunities. Integrating a winter lens into policy and planning documents is therefore no easy task.

Winter policy in large urban centres is being driven by Design Guidelines which have the most references to winter and winter conditions. Planners from large urban centres are also engaged in the development of specific Winter City Strategies, which contain policy and guidelines specific to addressing the challenges and opportunities that winter conditions create. These strategies have either already been developed, are in the process of being developed, or were being considered by each of the cities included in the case study from large urban centres. These planning documents were not included in the document analysis as they are not common planning documents that could be expected to be found in most communities by the researcher. However, the development of winter planning strategies has been identified as a key component of becoming a strong Winter City.

5.4 Expanding Winter City Planning Knowledge

One of the first steps planners from mid-sized communities should take in adapting successful Winter City Planning strategies from larger urban centres is through allocating staff resources to learn more about planning in the winter context. Without a strong understanding of what it means to be a Winter City or the variety of considerations and strategies that encompass Winter City Planning, planners from mid-sized communities are at a disadvantage.

Planners from large urban centres have a greater awareness of Winter City Planning and experience in applying a winter lens to their planning practice. More
consideration is needed within mid-sized communities about how winter conditions are impacting their cities and more staff education about winter and climate-sensitive planning is required to support their development of policies and strategies that address winter challenges and opportunities. While this research provides an opportunity for planners from mid-sized communities to think about Winter City Planning in a more creative way, the findings presented here are fairly high-level and general.

Planners from mid-sized communities must learn more and identify a local champion (or champions) in their organization to become leaders in Winter City Planning. A number of the books and chapters presented in the literature review on Winter Cities provide excellent material for planners to read and relate to (Davies, 2015; Pressman, 1995a, 2004; Zepic, 1987). These should be the go-to readings for planners to be inspired to learn more about the subject and to understand some of the history as to why development has thus far resulted in a built environment that does not accommodate or facilitate winter properly.

Winter City Planning should be a part of the planning education for any planning school that is producing future planners intending to work in a Canadian context. Only half of the planners from mid-sized communities identified that they had learned about or heard about Winter City Planning in university during their planning education, indicating a glaring gap in planning education. Planners must be taught to incorporate the local climate context in their planning practice from the very beginning. Attending conferences or professional education sessions that offer insights and resources for cities in northern climates is another important step for planners from mid-sized communities to do and then be ready to apply a winter lens in their practice. Once planners are practicing, these
opportunities to obtain professional development credits are another way to continue to learn about new Winter City Planning developments and innovations.

Finally, planners working in Canadian Winter Cities should be actively sharing knowledge about Winter City strategies amongst themselves. Learning from other North American cities who are engaging in Winter City Planning as well as cities with comparable climates from Europe are key ways to increase staff knowledge on this subject. This research has shown that each city is taking a slightly different approach to how they are achieving the livability objectives of Winter City Planning. Edmonton’s WinterCity Strategy (2012) has resulted in a strong focus on winter design through the creation of Winter Design Guidelines (2016) and the current work to create an integrated lighting master plan. Saskatoon is putting effort into winter pilot projects and supporting community winter events while they work on developing an official Winter City strategy. Winnipeg is focusing a lot of their efforts on addressing winter mobility with a goal to become a leading city in promoting winter cycling through the provision of priority networks and cycling infrastructure. All three large urban centres have taken a slightly different approach to how their communities can best address the challenges and opportunities that winter conditions create in their city. By sharing successes, Winter Cities in Canada can continue to adapt plans and policies to incorporate a strong winter lens and monitor and evaluate the implementation of winter specific strategies.

5.5 Strategies and Considerations

The first step for cities to transition from a “winter city” to a “Winter City” is to embrace the identify of being a city within a northern climate. Local leaders and City staff must be educated about what it means to be a Winter City and about potential strategies
that could be implemented with a winter lens to improve the quality of life for residents within their community. Pressman (2004, p. 23) recommends that cities focus on strategies to “reduce inconvenience, offer protection from the excessive negative stressors associated with winter and optimize exposure to it’s beneficial aspects” when addressing quality of life with a winter lens.

Improving mobility in cold climate cities is made difficult by the challenging winter conditions that are present. Cities in colder climates must prioritize pedestrian and active transportation mobility in the winter months and focus resources to provide sufficient snow management and maintenance of priority networks than their warm climate counterparts. Addressing mobility during the winter ensures that cities are accessible and provide appropriate infrastructure for residents who have mobility disadvantages. Winter Cities that focus on mobility are creating more equitable spaces for residents.

Enhancing winter activities and events can go a long way to shifting people’s negative attitudes towards winter to a more positive view of the season. Cities can highlight the beauty of winter through seasonal lighting and the support of winter events and festivals. Open spaces can provide infrastructure that support various winter recreational activities and winter play if they are designed to be functional and pleasant to be in during the winter season with year-round washrooms, lighting and covered seating or gathering spaces.

The following are five strategies that mid-sized communities could implement once they have made a commitment to address winter conditions and have acknowledged that they want to become a Winter City.
5.5.1. Policy Review

Mid-sized communities should conduct policy reviews to strengthen consideration of the winter season and climate conditions that they experience as cities in northern climates. Kamloops alone, from the mid-sized communities, had a section in their Official Community Plan (OCP) that spoke of designing with the climate and offered specific design considerations that fit with climate sensitive planning theory. Acknowledgement of the winter season as having a significant effect on communities and residents should be incorporated into all key planning documents to remind decision makers, planners, developers and other stakeholders of the importance of incorporating climate considerations into proposals and decisions.

Official Community Plan’s can follow the example set by Kamloops in defining what it means to be a Winter City and incorporating winter design principles. Area Plans should focus on the celebration of the winter season through policy that addresses creating an inviting and comfortable public realm and public spaces that accommodate year-round activities and events. Design Guidelines must incorporate the principles of winter design and focus on the pedestrian experience and a wider variety of winter planning strategies than just weather protection and snow clearing. Building efficiency, orientation and compact urban form are all universal design principles that should be highlighted as lending to improved winter livability. Transportation Plans must continue to prioritize active transportation users through priority networks that receive enhanced maintenance and snow management activities during the winter season. Cities who prioritize clearing cycling networks, sidewalks and transit stops are addressing issues of equity and accessibility within their communities by addressing mobility challenges of some of the most marginalized residents. Finally, Open Space Plans can address winter conditions
with simple considerations of year-round usability and accessibility. There is already a focus in many Open Space Plans to provide weather protection and year-round washrooms. Cities can enhance these plans through policy that supports trail clearing, winter lighting considerations, accommodations of winter recreation activities and winterized washrooms that are open year-round.

The research findings from this study identified that one of the most important considerations for planners working in Winter Cities is addressing winter and winter conditions in Design Guidelines. Acknowledging and embracing the fact of being a Winter City was mentioned by almost all of the participants and Design Guidelines were a prevalent planning tool mentioned by participants in relation to various questions about challenges, opportunities, considerations and strategies. Revised Design Guidelines could be a quick win for participants from mid-sized communities who are interested in incorporating a stronger winter lens into planning policies since Design Guidelines can have such visible impacts on the built environment and adherence to any winter related policy would be easier to measure through post-development reviews.

5.5.2. Promote Winter Positively

Participants from large urban centres are looking to address the social challenges of being a Winter City. Planners from mid-sized communities should collaborate with other city departments and stakeholders to develop positive messaging and communication around the winter season including winter specific operations or events. Reframing winter in a more positive light is a challenge of implementing social change, which is neither an easy nor quick process. Internal department education about how addressing winter conditions through a Winter City lens can produce efficiencies and improved livability will
ensure that a winter lens is being applied across the organization. Having a political champion was identified by participants from Edmonton as being a significant component of success in relation to the development of the WinterCity Strategy and having buy-in from various City departments.

Being a Winter City does not mean that cities ignore the challenges that winter creates. Instead it means addressing winter challenges proactively while also emphasising the opportunities that winter creates in communities. Reframing how winter is perceived by the public is another promotional challenge that planners could assist with. While not expressly within the realm of community planning, by shifting the public’s perception of winter from a negative season to a more positive position, it will help planners begin to develop winter related policies, plans or strategies. Public opposition to increased expenses or costs associated with winter infrastructure and maintenance can be attributed to negative perceptions of winter. With public education and engagement around the importance of addressing winter challenges and opportunities, planners may have more public support for winter strategies when proposed for implementation.

5.5.3. **Comfortable Year-Round Public Spaces**

Discomfort was one of the most common challenges that participants from large urban centres identified winter creates in cities. Planning and city building have not produced places, spaces or networks that provide comfort and sufficient weather protection for people to live, work and play in large urban centres year-round. Participants from mid-sized communities are much more focused on the physical challenges that winter creates for operations, the costs of snow clearing and infrastructure maintenance in the winter than how people feel in their cities during the winter. Discomfort was only
mentioned by two of the participants from mid-sized communities during the interviews as a challenge that winter creates. While mobility was mentioned by most participants from mid-sized communities, participants were speaking of the difficulty people have in moving throughout the city, without directly referencing how uncomfortable or unpleasant people might feel in relation to winter mobility, recreation or events.

5.5.4. Snow Management

Snow, and ice, is a distinctive characteristic of winter that is unique to the season. It was no surprise that across all the cities included in the case study, the most common reference to winter in planning documents related to snow management (including snow clearing, de-icing, snow storage, and protection from falling snow). Snow management is seen as a challenge due to the high costs of snow removal, how the operations of snow clearing on roads can result in reduced mobility on other transportation networks such as bike lanes and sidewalks, and a lack of specialized equipment to maintain various types of transportation networks and public spaces.

In the document analysis from large urban centres, most of the winter related references to winter directly related to snow management and active transportation, with most of these references occurring in the Design Guidelines and Transportation Plans. When asked about challenges, participants from large urban centres identified mobility as one of the top challenges cities face in winter conditions with snow clearing as a secondary challenge. In mid-sized communities, snow management was the most referenced in planning documents in relation to winter and was the most common challenge identified by participants in the interviews.
The difference between how the two community sizes view snow management is evidenced particularly when layering in the participants’ answers about what barriers exist to addressing winter challenges and opportunities. Snow management was mentioned by only a few participants from large urban centres in interviews, while participants from mid-sized communities saw barriers such as lack of specialized equipment and snow clearing expectations to be more significant. While large urban centres acknowledge snow management as a challenge in planning documents, participants from these larger cities were more concerned with some of the higher-level barriers to addressing winter conditions within their cities such as ensuring there is sufficient policy support around winter, bringing departments together to understand the Winter City context and addressing the community’s reluctance to be outside.

5.5.5. Focus on Winter Design

The importance of focusing on winter design for cities in northern climates has been stressed by Pressman (Pressman, 1995a, 1999, 2004; Pressman & Zepic, 1990) as an eminent author on the subject of Winter Cities and Winter City Planning and was identified by multiple communities included in this research as how they would define Winter City Planning. By implementing a winter design lens and developing an authentic aesthetic that reflects the northern climate, cities can provide visual interest, colour, and vibrancy in addition to physical benefits such as weather protection and more comfortable public spaces.

Norman Pressman (1996, p. 523) presented ten strategies for achieving a strong winter design lens in cities. Of these ten strategies, only about half were strategies presented by participants when asked how they would address challenges or opportunities
created by winter conditions in their communities. Strategies that aren’t commonly being considered by participants across both community sizes include climatic solution modelling, enclosed residential courtyards, energy efficiency-principles and developing an “Aesthetic for the North”. A participant from Edmonton did mention the use of wind modelling to assist in the development of the Winter Design Guidelines and some participants did mention solar orientation of buildings in relation to energy efficiency. The concept of creating a design aesthetic that is unique to northern climates was not one that was considered directly, apart from many of the planning documents calling for the use of native plants in landscaping both in parks and through development.

Compact urban form was mentioned by participants from large urban centres as being a current barrier to addressing winter challenges as many North American cities have not been built with as compact a form as they could be. Infill development strategies, as mentioned by a participant interviewed in Vernon BC, are one of the ways participants can contribute to creating a more compact urban form that would have positive impacts on the livability of cities during the winter time. Design Guidelines could also be used to promote a more compact urban form, in addition to Zoning regulations which were surprisingly absent from all of the interviews conducted.

Orientation of footpaths, streets and dwellings was referenced by participants, mostly in relation to maximizing solar orientation during the winter months in relation to building design and siting. Incorporating a winter lens into Design Guidelines and development standards was the top strategy that participants identified to address winter challenges and opportunities.
Testing innovative ideas is one of the strengths that both Edmonton and Saskatoon have taken to applying a winter lens to City policies and planning strategies. Piloting winter strategies that have been implemented in other cities was mentioned by an interview participant from Saskatoon a key way they are evaluate the success of their work. Learning through these pilot projects provide action and evaluation of winter specific approaches to transportation, events and creating comfortable public spaces in tandem, without having to commit as many upfront resources at the beginning stages of developing a Winter City Strategy. An interview participant from Edmonton also encouraged other cities in cold climate to “Dream big. You have to dream big but start small” when starting out with Winter City Planning.

Providing climate protection, in the form of overhead weather protection, is a common guideline found in key planning documents when referencing winter. Some interview participants referenced protection from prevailing winds or cold temperatures when discussing the design of the public realm or open spaces. Only one interview participant from Vernon acknowledged the severe and life threatening challenges winter creates for homeless or vulnerable populations who spend most, if not all, of their time outdoors year-round. Providing protection for people outdoors in a winter climate can not only improve comfort for those recreating, commuting or gathering outdoors, but could provide needed shelter for those residents of a community who have no choice but to be outdoors during the winter season.

5.6 Future Research

This research was intended to determine how mid-sized communities could adapt Winter City Planning strategies from large urban centres. Future research in this area is
required to provide further comparisons that reflect the specific winter climates that cities across Canada experience. In this comparative case study, three large urban centres from the Prairie region of Canada were compared with three mid-sized communities located in the Thompson-Okanagan region of BC. The researcher suggests that a similar comparative case study could be conducted between large urban centres and mid-sized communities from the Prairies and that further analysis of how cities in BC plan for winter would provide more relevant results with similar geographical and planning contexts.

Some interview participants referenced mountain resorts when they spoke of communities that have successfully incorporated winter design. As all three of the mid-sized communities who were included in the comparative case study have mountain resorts within an hour drive of them, it's fitting that they identified these as examples of successful winter design. Further research could be conducted to explore how these mountain resorts, which were developed around winter recreation activities such as downhill skiing, snowboarding and cross-country skiing, address the challenges of winter within village centres and built environment and if mid-sized communities could adapt winter planning strategies from the mountain resorts.

Interview participants comprised of only planning professionals due to the time limitations for this study and the nature of the researcher's interest in the community planning profession. Many of the interview participants spoke of strategies to address winter challenges and opportunities that fell outside of the scope of the profession of planning. Future research on how other City departments such as Operations or Engineering would address winter conditions should be conducted within each of the cities that were included in the case study to gain a comprehensive overview of how cities, instead of just planning departments, may work to better apply a winter lens to professional
practice. Citizen perspectives on some of the most important challenges to address or research on public use of space and transportation networks in Winter Cities should also be included in future research in each community.

Further research will also be needed within each of the communities included in the case study on the impacts of any winter strategies that are implemented. Evaluation and metrics to determine success should be incorporated into any winter planning strategy from the beginning. As Winter City Planning is a relatively new area of planning for many cities, it is especially important for planners to conduct ongoing assessments to understand how the implementation of any winter strategy might positively or negatively impact the objectives or goals of the community in relation to growth, development, social wellbeing, mobility or the economy.

5.7 Conclusion

Winter is a complex season that provides many opportunities and many challenges for cities. Cities located in northern climates must address the unique seasonal conditions they experience and begin applying a winter lens to community planning policies and practices. This research has explored the opportunities and challenges winter conditions create in Canadian cities and has provided insight into how mid-sized communities might adapt successful winter planning strategies from large urban centres. Winter has not been considered comprehensively in planning documents and practices in mid-sized communities to date and cities are perhaps too focused on how to eliminate the physical challenges winter creates without first acknowledging that they must begin to think about winter more holistically.
Large urban centres in Canada have taken the lead in developing winter planning strategies and testing new ideas when it comes to addressing opportunities and challenges created by winter conditions. The policy documents that have been or are being created by large urban centres are useful tools for planners from mid-sized communities to use and reference when developing their own winter lens approach to planning and city building. Mid-sized communities are in strong positions to have significant impacts on future growth if they can incorporate winter design into guiding policy documents.

Becoming a successful Winter City will require significant changes in how cities are built and how cities operate, however efforts to address winter will result in more sustainable and efficient cities. By applying a winter lens to planning practices and policy review, cities in northern climates can become more livable, efficient and equitable. Winter Cities can capitalize on the many social benefits of addressing winter conditions such as increased civic pride, improved quality of life and less social isolation during the winter season. Physical benefits include improved snow management, improved use of active transportation year-round, and a built environment that responds better to the northern climate.
References


Statistics Canada. (2017a). *Kamloops, CY [Census subdivision], British Columbia and*


Appendix A.

Recruitment Email

Subject Line:

Request for Interview Participants for Master’s Thesis Research on Winter City Planning

Email Body:

Good [Morning/Afternoon],

I am a student in the Master of Community Planning at Vancouver Island University (VIU). My thesis research, entitled “Adapting winter city planning strategies from large urban centres for mid-sized communities – A comparative case study in the Thompson-Okanagan region”, aims to determine if mid-sized communities can adapt successful winter city planning strategies from large urban centres and to explore how winter conditions affect cities’ efficiencies and livability. While winter city planning and potential strategies have been explored in some contexts, specifically large urban centres and cities, no literature was found referencing the Thompson-Okanagan region relating to winter city planning and little literature was found that linked winter city planning with mid-sized Canadian communities. My hope is that my research will contribute to future planning practices in the Thompson-Okanagan region and will assist mid-sized communities to adapt successful winter city planning strategies from large urban centres.

I am contacting you as the [position title] for [department name] in the [city/community local government name] as my research seeks to interview planning practitioners from your [city/community] about their professional knowledge and opinions about winter cities and winter city planning. I am looking to speak with one to two participants from your department who have been working as a participant with your community for a minimum of one year and who have interest in or knowledge of the topic of winter cities and winter city planning as participants in this research.

Participation in this research involves participating in a face-to-face, telephone or skype research interview. Participants would be asked questions concerning their professional knowledge and opinions about winter cities and winter city planning. With permission, the interview would be audio recorded. Participation in this research would require approximately one and half hours of time for the interview and up to one and three-quarter hours of preparation and post interview review which are suggested but not required for participation in this research.

I would like to assure you that the study has been reviewed and received ethics clearance through a VIU’s Research Ethics Board.
If you or any planning staff in your department are interested in participating, please contact me at hmrilkoff@gmail.com and indicate if you are available for an in-person, telephone or skype interview. I will then send a confirmation email with potential interview times and locations (for in-person interviews) and provide you with further information concerning the research including a consent form and an overview of the interview questions. Your participation is completely voluntary. You may withdraw from this research at any time where practicable, for any reason, and without explanation. If you choose to withdraw as a participant from this research, please email me at hmrilkoff@gmail.com.

Sincerely,

Hailey Rilkoff, Student
Master of Community Planning
Vancouver Island University
hmrilkoff@gmail.com
Appendix B.

Interview Script and Questions

Script prior to interview:

I’d like to thank you once again for being willing to participate in the interview aspect of my research. As I have mentioned to you before, the objective of this thesis is to determine if mid-sized communities can adapt successful winter city planning strategies from large urban centres and to explore how winter conditions affect cities’ efficiencies and livability. Our interview today will last approximately between one and one and a half hours during which time I will be asking you to provide your professional knowledge and opinions on the research subject of winter cities and winter city planning strategies.

When we were setting up the time for today’s interview, I provided you with a copy of the consent form which I will have you sign once we’ve concluded the interview today. The consent form asks you to indicate that I have your permission (or not) to audio record our conversation.

Are you comfortable with me recording our conversation today?

___Yes ___No

If yes: Thank you! Please let me know if at any point you want me to turn off the recorder or keep something you said off the record. I’ll be providing you with a transcript of the interview to review within a month. Upon review of the transcript you can withdraw any statements or add any significant points that were missed during our conversation today.

If no: Thank you for letting me know. I will only take detailed notes of our conversation and will provide you with an interview summary within a month. Upon review of the interview summary you can withdraw any statements or add any significant points that were missed during our conversation today.

[review aspects of consent form]

Your participation in this research is completely voluntary and you may withdraw your participation at any time where practicable, without any reason.

Before we begin the interview, do you have any questions?

[discuss questions]

If any questions (or other questions) arise at any point in this study, you can feel free to ask them at any time. I would be more than happy to answer your questions. Are you ready to begin?
If yes: I’m going to begin the audio recording now.

[State date of interview and name and position of interviewee for audio recording.]

Interview Questions:

1. Had you heard of winter cities or winter city planning before your participation in this research? If so, could you tell me how you would describe these concepts?

2. What challenges do winter conditions such as snow, ice, wind or cold temperatures create in your community?
   a. What are the challenges in incorporating planning strategies to address these challenges in your community?
   b. Are there any challenges in incorporating planning strategies to address these challenges in your organization or department?

3. What opportunities do winter conditions such as snow, ice, wind or cold temperatures create in your community?
   a. What are the challenges in incorporating planning strategies to address these opportunities in your community?
   b. Are there any challenges in incorporating planning strategies to address these opportunities in your organization or department?

4. Have you, or your department, ever researched or discussed winter cities or winter city planning to address any of the challenges or opportunities created by winter conditions in your community?
   a. What specifically were you, or your department, interested in or researching about winter cities and winter city planning?

5. If you are aware of winter cities and winter city planning, where did you first learn about these topics and what other resources or sources of information have you consulted since first learning about them?

6. What current planning tools do you feel are the most applicable to incorporating winter city planning into for your community?

7. Do you feel that your community’s current planning policies and strategies currently encourage or discourage the incorporation of winter city strategies or a winter city lens?
8. Have you or your department implemented any winter city planning strategies or policies into any of your planning practices or documents? If so, which planning practices or documents?

   a. What types of strategies or policies have you implemented that are winter city strategies and how would you describe their level of implementation and any evaluation so far?

9. Thinking back to the challenges you identified that are created by winter conditions in your community, can you discuss how each could be mitigated or resolved through a winter city lens or winter city planning?

   a. Can you provide specific examples for each challenge?

10. Thinking back to the opportunities you identified that are created by winter conditions in your community, can you discuss how each could be enhanced or capitalized on through a winter city lens or winter city planning?

   b. Can you provide specific examples for each opportunity?

11. If your community has implemented winter city planning strategies, which strategies have been successful and how has your [city/community] evaluated their success or effectiveness?

12. Of all of the potential winter city strategies we’ve discussed today or that you are aware of, which strategies do you feel are the most important for your community to implement or engage with to improve the livability and efficiencies of your community?

13. Of all of the potential winter city strategies we’ve discussed today or that you are aware of, which strategies do you feel are the least important for your community to implement or engage with to improve the livability and efficiencies of your community?

14. Can you identify any competitive advantages mid-sized communities would have over large urban centres in implementing winter city planning and strategies?

15. Is there anything important you would like to add? Is there anything else you think I need to know about winter city planning for your community?

**Script after interview:**

Thank you for participating in today’s interview for my thesis research. I’m going to stop the audio recording now.
Do you have any questions about the consent form or the research process?

I'll now ask you to sign the consent form. I'll provide you with a digital copy of the consent form within two to three days, so you can have the research information as well as contact information for myself, my thesis supervisor and VIU’s research ethics board in case you have any questions.

My next steps while I’m conducting the other interviews as part of this research, is to begin transcription of our interview today. I will be providing you with a copy of the transcript within one month, and possibly sooner, for you to review. You can make any changes including withdrawal of any statements or additions of significant information you may feel will add to your interview answers today. Once I have provided you with the interview transcript for review, you may withdraw your participation up to two weeks from receiving the transcript.

Once my research is complete and my thesis has been successfully defended and approved, I will be providing all the research participants copies of the thesis document. This is expected to be in approximately May or June of 2019.

Thank you again for your time today.
Appendix C.

Consent Form

<table>
<thead>
<tr>
<th>Principal Researcher</th>
<th>Student Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hailey Rilkoff, Student Master of Community Planning Vancouver Island University <a href="mailto:hmrilkoff@gmail.com">hmrilkoff@gmail.com</a></td>
<td>Nicole Vaugeois, Associate Vice President Scholarship, Research and Creative Activity Vancouver Island University <a href="mailto:Nicole.Vaugeois@viu.ca">Nicole.Vaugeois@viu.ca</a></td>
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</tbody>
</table>

I am a student in the Master of Community Planning at Vancouver Island University (VIU). My research, entitled "Adapting winter city planning strategies from large urban centres for mid-sized communities – A comparative case study in the Thompson-Okanagan region", aims to determine if mid-sized communities can adapt successful winter city planning strategies from large urban centres and to explore how winter conditions affect cities’ efficiencies and livability. While winter city planning and potential strategies have been explored in some contexts, specifically large urban centres and cities, no literature was found referencing the Thompson-Okanagan region relating to winter city planning and little literature was found that linked winter city planning with mid-sized Canadian communities. My hope is that my research will contribute to future planning practices in the Thompson-Okanagan region and will assist mid-sized communities to adapt successful winter city planning strategies from large urban centres.

Research participants are asked to complete a face-to-face, telephone or skype research interview. If you agree, you would be asked questions concerning your professional knowledge and opinions about winter cities and winter city planning. With your permission, the interview would be audio recorded. Your participation would require approximately one and half hours of your time for the interview and up to one and three-quarter hours of preparation and post interview review which are suggested but not required for participation in this research.

The information collected during the interview is likely to be uncontroversial, and thus the research poses only a very small risk of harm to participants. Depending on the information you provide, and whether you choose to be directly identified by name and position title or indirectly identified through a generic title, there is a possibility that the information you provide might cause loss of privacy and professional reputation.

If you choose to participate, all information provided by you for the purposes of this research will be kept confidential. With your permission, the interview would be audio recorded and later transcribed into writing. You will be provided a copy of the transcript within one month of the interview and invited to make changes to the transcript as you wish (e.g., if you would like withdraw a particular statement you made during an interview). Electronic data will be stored on a password-protected laptop computer, password protected student computer account at VIU, a password protected external hard drive and a password protected Dropbox account. Dropbox is an internet-based data storage and sharing platform.
Consent Form – Winter Cities - Hailey Rilkoff

that hosts data on servers in the United States and around the world and is subject to oversight by the U.S. Federal Trade Commission. Signed consent forms will be stored in a filing system in my home office. Data from the research interviews will be processed using Transcriptable, an application used for transcribing audio files, and analyzed using NVivo qualitative analysis software. Paper copies of the consent forms will be shredded at the end of the research project, approximately June 30, 2019. Interview data will not be deleted at the end of the project but will be archived on a password protected hard drive.

The results of this study will be published in my Masters thesis available through VIU’s online theses database and the researchers online portfolio and website, and may also be used for conference publications, presentations, and published in peer-reviewed journals.

Your participation is completely voluntary. You may withdraw from the study at any time where practicable, for any reason, and without explanation. You will be given an opportunity to review and potentially make changes to the transcript of the interview within one month of the interview date, you may withdraw up to two weeks from the time of being provided a copy of the transcript. If you choose to withdraw from the study, all information you provided during the interview would be withdrawn from the study and destroyed.

I have read and understand the information provided above, and hereby consent to participate in this research under the following conditions:

I consent to the interview being audio recorded. □ Yes □ No

I consent to having my personal identity disclosed in the products of the research. □ Yes □ No

I consent to being quoted in the products of the research. □ Yes □ No

Participant Name ________________________ Participant Signature ________________________

Date ________________________________

I, Hailey Rilkoff, promise to adhere to the procedures described in this consent form.

Principal Researcher Signature _______________ Date ________________

If you have any concerns about your treatment as a research participant in this study, please contact the VIU Research Ethics Board by telephone at 250-740-6631 or by email at reb@viu.ca.
## Appendix D.

### Document Analysis

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