COMING TO A STOP
All Ages and Abilities Bicycle Parking in New and Existing Development

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Bike parking is about providing convenient, safe, secure parking for cyclists. It is not about “how do we fit the most bikes into the smallest space possible.”

- Elco Gauw, Urban Racks
Cycling is gaining speed in Vancouver. Riderhip has increased significantly since 2008, thanks in large part to significant upgrades to the city’s bicycle network that have made cycling more safe, comfortable, and convenient. Unfortunately, both official and anecdotal reports indicate that the quantity and quality of bicycle parking has been unable to match this upsurge in ridership. Issues such as bicycle theft, insufficient space, and inconvenient facility locations are frustrating cyclists and threaten to slow the gains in cycling mode share. This report aims to address these issues by focusing on off-street, residential bicycle parking, which is an area of particular concern amongst cyclists.

The Vancouver Parking Bylaw 6059, which contains the city’s bicycle parking regulations, needs to be updated in order to meet current and future demand. The minimum amount of required secure bike parking raised from 1.25 spaces per unit to 2 spaces per unit. The location of and access to bicycle parking are important considerations, as these factors can inhibit users from using the parking facilities. Facilities should ideally be located at grade in a visible, convenient place that allows safe and efficient ingress and egress. Incentives such as density bonuses, expedited permitting, and reduced vehicle parking requirements can help encourage developers to go beyond the minimum and build outstanding bicycle parking facilities. Additionally, issues such as security, monitoring, enforcement, maintenance, and facility management all warrant increased attention in the bylaw.

Many people choose—or are forced—to store their bicycles in their living spaces, which carries a suite of problems: they take up valuable living space, and occasionally, they are banned from elevators and hallways. Upgraded bike parking regulations will hopefully improve this situation, but there will always be people, especially those with expensive bicycles, who choose to store them in their unit. For this reason, the regulations regarding in-unit storage must be clarified, granting bicycles the same treatment as strollers and wheelchairs when it comes to building access. Additionally, buildings should be designed with bicycles in mind, with sufficiently large hallways and doorways as well as at least one closet that is designed to hold a bicycle.

Bicycle parking facility design guidelines, which cover details such as bicycle rack type, layout, amenities, and installation procedures, also require updating. This level of detail, however, is likely best explained in a Bicycle Parking Facility Manual with clear and visually appealing graphics, rather than in a dry, text-only bylaw. The City of Vancouver should create this manual and link it to the bylaw, forming a two-document system such as that of San Francisco and Toronto. The manual would provide structure for planners and developers, allowing them flexibility in design yet ensuring that important aspects such as the use of proper materials and the provision of space for non-standard bicycles are considered.

Finally, the City of Vancouver needs to develop a strong retrofit program to facilitate the enhancement of bicycle parking in existing buildings. The first step is creating legislation that enables residents to initiate a retrofit and encouraging the conversion of vehicle parking and other underutilized spaces into bicycle parking. Once legislation is in place, the City should create a web-based program that simplifies the retrofit procedure, including instructions for residents and building management, links to helpful documents, and contact information for City staff and external organizations.

The recommendations in this report are ultimately intended to further the City’s goal of providing safe, comfortable, and convenient bicycle parking for people of all ages and abilities (AAA). This goal is part of Vancouver’s ambitious plan to become the “greenest city in the world by 2020” (City of Vancouver 2009). If these objectives are to become reality, Vancouver needs to implement bold and forward-thinking regulations that allow the continued growth of cycling and truly set the global standard for green transportation.
2.1 PROJECT BACKGROUND
The Greenest City Scholars Program is a collaboration between the City of Vancouver and the University of British Columbia (UBC) that supports Vancouver’s Greenest City 2020 Action Plan (GCAP). Since 2010, UBC graduate students have worked with staff mentors at the City on a variety of research projects that correspond to the ten GCAP goals. In 2015, there were a total of 20 projects undertaken, making it the largest cohort of scholars to date.

This particular research project, which was initiated by the City’s Transportation 2040 Team, aims to address the issue of off-street, residential bicycle parking. Vancouver’s vision is to make cycling safe, comfortable, and convenient for people of all ages and abilities (AAA), and providing suitable bicycle parking is crucial to making this vision a reality. Often, bike parking is the weakest link in a person’s trip, as it can be inconvenient, uncomfortable, and it may not meet demand. The AAA aspect is key because there are currently many barriers that prevent people from parking their bicycles: not everyone is strong enough to lift a bike onto a vertical rack or down a flight of stairs, not everyone is comfortable being alone in a forgotten corner of a parking garage, and not everyone rides a standard-sized bicycle.

2.2 RESEARCH OBJECTIVES, METHODS, AND LIMITATIONS
The objectives of this project are to (a) recommend updates to the parking bylaw in order to improve bike parking in Vancouver, (b) support the creation of a Bicycle Parking Facility Manual, and (c) design a retrofit program that enables and encourages owners of existing buildings to upgrade their bike parking facilities.

The first component of this research was a literature review to determine common issues and best practices for off-street, residential bicycle parking. This included an examination of reports, journal articles, and bike parking manuals as well as zoning regulations, planning codes, and bylaws from a variety of cities across North America and Europe. The research process also involved reaching out to both City staff and external subject matter experts. A variety of groups and individuals contributed, including MUBA Cycling, a non-profit created to address cycling issues in Vancouver; Elco Gauw, a bike parking consultant from Urban Rivals; and Adam Kebele, an independent consultant with Spoken. Additionally, a request for information was sent out to the Association of Pedestrian and Bicycle Professionals (APBP) and the National Association of City Transportation Officials (NACTO) e-mail lists, and planners from Portland, Oregon and Washington, D.C. were interviewed. Finally, an informal survey was conducted via select e-mail list-serves and social media (this will be explained further in Chapter 4).

There were a few research limitations of note that influenced this project, the first being the complexity inherent in the topic of bike parking. There are so many detailed and interconnected aspects to consider—location, access, rack type, materials, security, enforcement, etc.—that it is difficult to cover everything in one project, especially one that is limited to 250 hours of work as per the Greenest City Scholars contract.

This leads into the next limitation, which was the amalgamation of bike parking in other cities. These cities were chosen for a variety of reasons, including degree of similarity to Vancouver, reputation as a progressive cycling city, and recommendations from knowledgeable professionals. However, given time constraints, it was impossible to discover all progressive bike cities or to read through every bylaw and zoning code that may have been relevant to the project. Additionally, accessing European legislation proved challenging due to language barriers and diverse legislative systems. Some European content was reviewed, but the extra time considerations involved led to a greater focus on North American cities.

The final challenge was that in the North American context, Vancouver is already considered to be a progressive cycling city, with many other cities using Vancouver’s bylaws as positive examples. That is not to say that improvements cannot be made, but many of the regulations that were examined were outdated compared to Vancouver. This meant that a very detailed examination was required in order to identify novel and innovative approaches to bicycle parking, adding to the complexity of the project.

2.3 REPORT STRUCTURE
The next portion of this report provides context for this project, including the growth of cycling in Vancouver (Chapter 3) and specific bike parking issues (Chapter 4). Chapter 4 also includes a collection of “residential bike parking opinions” from Vancouver residents, with the full survey results available in Appendix A. Chapter 5 contains recommendations for updating the Vancouver parking bylaw. These recommendations are summarized in Appendix A, while detailed examples of legislation from other cities can be found in Appendix C. Chapter 6 contains recommendations for the creation of a Bicycle Parking Facility Manual, which would supplement the updated parking bylaw. Chapter 7 explains the current retrofit process in Vancouver and proposes a new retrofit program. Chapter 8 contains the summary and closing remarks, followed by references, image credits, and the appendices described above.

This report should be read with an open mind and an eye to the future. Currently, the quantity and quality of bike parking in Vancouver is inadequate. It is not enough to simply catch up to current demand, though; the City of Vancouver needs to be proactive and create positive spaces for both current and future residents. It may be the case that not every recommendation in this report will be feasible in the current political or economic context, but they are still worthy of careful consideration.
Bicycle parking is an important component of a comprehensive system of cycling infrastructure. It is especially critical for people living in multi-unit residential buildings, where the availability and quality of bicycle parking can be a significant determinant of bicycle ownership and cycling activity.  

- Riekko 2013

4.1 BICYCLE PARKING BASICS

Before digging deeper into Vancouver’s bicycle parking issues, it is important to briefly discuss bicycle parking in general. There are three broad categories of bike parking: short-term (two hours or less), long-term (more than two hours), and event (limited duration for special events) (Alta Planning + Design 2011). Many cities, including Vancouver, also use the terms Class A (or Class 1) and Class B (or Class 2) bike parking. In this class, Class A is referring to secure, long-term parking for residents or employees, whereas Class B refers to transient, short-term, or visitor parking (City of Vancouver 2014a). Bike parking can also be categorized as on-street and off-street. On-street is typically short-term, although outdoor public bicycle lockers would be an example of on-street long-term. Off-street can be either short- or long-term.

This report is focused on off-street, residential, Class A bicycle parking. In the context of this report, residential buildings generally refers to multifamily buildings such as apartment buildings, condominiums, and co-op housing. Due to a lack of available land and soaring housing prices, there is increasingly limited detached home ownership in Vancouver. Additionally, Riekko (2013) notes that there has been “less focus (or even an absence of regulation) on lower-scale residential buildings” such as detached houses, duplexes, and townhouses because residents of these buildings are typically able to find adequate bike storage without government intervention. In these housing types, there is more flexibility to use garages or sheds, and residents have more control over living spaces, allowing them to make bicycle-friendly modifications (Riekko 2013).

Apartments and condos, on the other hand, face a number of challenges when it comes to bicycle parking. Floor space is limited, modifications are difficult or simply not allowed, accessing a unit with a bicycle can be challenging, and building management can ban bicycles from elevators, hallways, and balconies (Riekko 2013). Additionally, Riekko explains that make-up developers are not very keen to construct bicycle parking facilities, a staggering 75% of rental buildings may not consider bicycle parking during their housing search, especially if they don’t own a bicycle. Other considerations such as price, state of repair, unit size, building amenities, and vehicle parking are often more important considerations (Riekko 2013).

Developers may not consider bicycle parking a priority among competing interests for common space in a building: parking spaces for cars represent a viable market for developers in major cities, whereas bicycle parking spaces are typically not as marketable. Prospective condominium purchasers or tenants of rental buildings may not consider bicycle parking during their housing search, especially if they don’t own a bicycle. Other considerations such as price, state of repair, unit size, building amenities, and vehicle parking are often more important considerations (Riekko 2013).

These challenges need to be addressed; as mode share continues to increase, more and more bike parking will be required. If parking is insufficient, gains in mode share may begin to slow, as people are less likely to purchase a bicycle if they have no place to store it (Riekko 2011). On the other hand, quality bicycle parking can help to legitimize cycling, “singing to cyclists that they are invited and welcome” (Bang 2012; Association of Pedestrian and Bicycle Professionals 2005). It is important to get it right as the first place, as bike parking retrofits can be very difficult and expensive. However, Riekko (2013) also cautions that “measures be reasonable, balancing these future needs without placing an undue burden on current residents.”

4.2 OVERVIEW OF ISSUES

In 2008, the City of Vancouver reviewed bike parking and ownership in order to assess compliance to—and the effectiveness of—Vancouver’s Parking Bylaw 6059.


When it came to residential buildings, the report found the following:

- Our survey of multiple residential developments confirmed that bicycle ownership is approximately 1.25 spaces per dwelling unit which is our by-law requirement.
- Most bicycle storage facilities were significantly underused. Overall less than half the provided spaces were used and only 28% of the vertical spaces used.
- Initially none of the bicycle storage areas fully met the City’s security requirements.
- Five facilities had been retrofitted to improve security.
- People with high priced bikes generally prefer to not use their current bicycle storage areas due to theft concerns.

Although nearly a decade old, these findings are a useful benchmark for today’s bike parking issues. It is highly likely that the rate of bicycle ownership has increased since 2008 (See Chapter 5, Section 5.4 for details). Even if bicycle ownership has not increased in the years since 2007, policy should be based on future mode share projections, not the current numbers. It is likely that the second point regarding underused bicycle rooms is also outdated, as crowded bike rooms are now a significant issue in Vancouver. Where underutilized bicycle parking remains, the effectiveness of—Vancouver’s bicycle parking law requirement.

The final three points—that the bicycle storage rooms were not meeting security requirements, that they were in need of retrofitting, and that cyclists refrain from using these rooms due to theft concerns—remain highly relevant. A recent Metro Vancouver study found that “a sizable proportion of bicycle owners surveyed are frustrated by the lack of secured and sufficient sized bicycle parking facilities in their buildings” (Metro Vancouver 2012). When survey respondents who owned bicycles were asked if they used their buildings’ bicycle parking facilities, a staggering 75% per cent answered “no” (Metro Vancouver 2012). The top three reasons for not using it were: (1) there is no bike facility; (2) bike facility is not trustworthy and or they were unwilling to store an expensive bike with others; and (3) there was no more space in bike facility (Metro Vancouver 2012).

4.3 “YOUR RESIDENTIAL BICYCLE PARKING STORY”

The studies described above provide a general overview of the city’s bike parking issues, but they fail to convey the true impact of this issue on the daily lives of Vancouverites. For many people, cycling is one of the most enjoyable activities in Vancouver. It allows people to experience the city’s many sights and sounds in a unique and engaging fashion. For a growing number of people, cycling is also a primary mode of transportation. This means that bike parking problems can be a major disruption to citizens’ enjoyment of the city and their daily working lives.

Storytelling was used to better understand the most pressing issues for cyclists in Vancouver. This can be a powerful technique as it allows real people to express themselves, revealing the nuances of a situation. In this case, an informal survey was used to elicit these stories, simply asking respondents to provide their “residential bicycle parking story.” This question struck a chord: there were 93 responses, many of which contained evident emotion as people expressed their frustrations. There were positive tales of bicycle parking as well, but the overwhelming sentiment was that improvements are badly needed.

The survey was not intended to be representative of the Vancouver population; rather, it was simply meant to provide a small sample of real-life bike parking experiences. It was sent to City of Vancouver transportation staff, HUB Cycling’s listers, and the Facebook groups for Bike Vancouver and The School of Community and Regional Planning (SRC). The following two pages contain select stories that were particularly revealing or that represented a common issue. Appendix B contains the original survey and the complete set of responses.

- Nick

There isn’t enough parking of any kind at my apartment building—not enough for the cars or certainly not enough for bicycles. Instead, the landlord sent out the parking folks to a valet service for neighbourhood restaurants. We have one enclosed room for secure bike storage, but it is overflowing. Tenants have asked to rent and pay for additional parking stalls for bike storage, but the landlords have turned them down as the valet is more lucrative. Now we have bikes chained in the stairwells, which is a fire risk. I fear my bike is located in the closest spot of bike paint and makes marks on the floor every time I take it in and out. I am risking my damage deposit every time I move it. It is a huge deterrent to cycling more often.  

- Christine

Not much to say and no complaints, but the bike storage is crammed on the strata council and we just conducted a bit of bike room housekeeping (tag your bike or it gets tidied), thinking that the bike-room坏了 repair, but it is still just as crammed. Basically means everyone is riding (or at least owns) a bike which is a healthy lifestyle.  

- Jim

There are no bike parking problems in my building and the storage area closes from midnight to 8am. Also my building does not allow bikes in the elevator. So if I come home and am not able to store my bike without a strata rule it is a problem. It is WAY too small for our building. We wait long periods of time to get into a spot and it barely fits my bike in it. We recently got a long tail cargo bike because we want to be able to store more stuff in the bike parking room but there is no way to do it. We couldn’t even secure bike room so instead we park it in our parking stall. Looks to other cyclists like fingers I have found the solution goes into the bike storage. Both of these bikes come in many styles and sizes and that bike rooms will have a place for cargo bikes, too.  

- Carrie

I live in a large condo tower downtown. The building was built in the late 1990’s. The building has wonderful amenities (such as a gym, hot tub, and well appointed interior), but bike parking is definitely one of them. Although the building has 2 secure bike rooms, getting in and out of the room is very difficult.  

- Nick

Although connected to the main ramp of the underground parking, a narrow staircase with a tight Ti-Ford angled landing makes getting bike in and out very difficult. Perhaps the current, old bike rooms that have converted to the current uses, later in the building’s history. The room is also overcrowding with bikes, and my partner and I have found that there are always stacks of bikes and there are a lot of people in the rooms. The bike parking areas are generally small, and not very well lit. Our unit came with two parking spaces for automobiles, but we don’t own a car, and cars, however, rarely fill up these spaces. The parking spaces can only be rented out to residents of the building. Condo bylaws also prohibit the use of these parking spaces for bikes or bicycles.  

- Jim

I live in the building in the Broadway corridor area. In my building the storage area closes from midnight to 7am. Also my building does not allow bikes in the elevator. So if I come home and
W e live in a new (2000) condo building in the Olympic Village. We found out after we moved in that they converted the secured rooms in the parkade that were intended for bike parking into extra personal storage rooms that won't accommodate bikes...

I live in an apartment building with two large parking garages that sit half empty due to the fact that we are downtown. Our building policy is that we must keep our bikes either in our apartments or on our deck. Had two bikes stolen off my car in the garage. I gave up my car to live downtown and at times feel that I might want to give up my bike to enjoy my living space.  

- Alex

For 5 years, I lived in a high-rise tower in Downtown Vancouver. The strata had a no exceptions policy that all bikes were required to be kept in the bike room, and that bikes were not to be brought up to units. The elevators had cameras, and fines were in place for offenders. The bike room seemed minimally secure. I was a self-locked enclosure near the entrance to the parkade. Because there was insufficient space within the enclosed bike room, additional racks were placed outside of the enclosure, with bikes visible from the street through the building's garage door, enticing thieves. As avid mountain bikers, my girlfriend and I had a bicycles worth several thousand dollars. After being caught bringing the bike up to my unit and issued a notice, I bought the bike a secure room in the bike room. The bike room is secure enough, a break-in occurred, and our two nice mountain bikes were stolen. The bike room was broken into in a way that was inaccessible to the thieves. To make matters worse, the janitor was unfortunately hiding bikes going from our unit once we sourced replacement. The building manager was sympathetic and turned a blind eye as we snuck our bikes into the elevator through the parkade, but a self-righteous unit owner tattled to the strata, and we were reprimanded.

We spent the duration of our lease sneaking the bikes upstairs and then giving them to another bike-friendly building.

I was inadequately secure for the building to require us to leave such expensive bikes in such insecure units. Although I made use of a secure bike room, I was still bothered by the lack of security of the bike room. However, even if the bike room was secure, it was infeasible for the building to require us to use such expensive bikes in such insecure units.

- Daniel

4.3 Story Analysis

While these stories reveal a wide array of issues, some clear patterns emerged upon coding the results. Figure 6 breaks down how many times each issue was mentioned in a story (note that individual responses often mentioned multiple issues). By far, the most common issue was the lack of adequate bicycle parking—34 people mentioned an overcapacity bike facility, while in 13 cases, there was no Class A parking in the building. Crowded and messy bicycle facilities were seen as problematic, with 20 complaints of abandoned and unused bicycles. Bicycle parking was also difficult to access (14) and insecure, with 22 mentions of theft. Thirty-one respondents indicated storing a bicycle in their unit, often because the bicycle was expensive and they did not trust the parking facility. In 14 cases, bicycles were banned from hallways, elevators, and in balconies.

There were a few other notable patterns as well. Ten people owned more than one bicycle, some of which were non-standard designs such as cargo bikes and trailers. Seven stories indicated that there were unused vehicle parking spots at their buildings that could be used for bike parking, while four respondents noted that their building had already undergone a retrofit (although in some cases, additional bike parking was still required). Other stories mentioned inadequate guest parking, residents fighting over parking spaces, a facility that is not accessible 24 hours a day, and a woman who felt unsafe in her parking garage.

A small portion of respondents indicated being satisfied with all or aspects of their bicycle parking. Ten respondents mentioned good security, six had adequate space, and five were able to easily access their parking. Only two people mentioned having access to some kind of amenity like a bike pump or work bench. A survey like this presents an excellent chance to air frustrations, which could partially explain the low number of positive responses. In this case, however, this is likely indicative of the generally poor quality and quantity of bicycle parking in Vancouver.

4.4 WHY ARE THESE ISSUES OCCURRING?

4.4.1 Inadequate Regulations

Vancouver’s Parking Bylaw 4059 is meant to ensure a high standard of bike parking, but its provisions lack clarity, precision, and foresight. In the field of bike parking, “the devil is in the details,” and unfortunate bylaw provisions leave too much up to interpretation, allowing savvy developers to get away with ineffective bike parking. Developers are not purposely undermining cyclists for the fun of it; they are simply trying to save money and maximize profits, and because the current regulations allow it, bike parking is often relegated to small, leftover spaces in a building. On the other hand, the bylaw can at times be unnecessarily constritive—if a building contains underused automobile parking and residents wish to convert some of it to bicycle parking, this process can be tremendously arduous (see Chapter 7).

One major issue is that bylaws are generally based on minimums, which are in reality “the beginning of inconvenience” (Elco Gauw Interview 2015). Minimums, such as the minimum amount of required bicycle parking or the minimum aisle width in a bike room, are often treated as “recommended standards”—only the most bike-friendly developer would consider exceeding these base requirements. Worse yet, developers and contractors often take shortcuts, lowering expenses by cutting into these minimums. As a result, users often end up with uncomfortable, insecure, and inadequate bike parking. In order to avoid this issue, minimums need to be set high enough so that even when shortcuts are taken, an adequate experience is guaranteed. Developers are like highway drivers; if regulators want cars to travel no faster than 120km/h, the safe choice is to set the speed limit at 110km/h. Only 120km/h (Elco Gauw Interview 2015).

4.4.2 Poor Design

Inadequate regulations are partially to blame for poor facility design, but it also comes down to the choices made by planners, developers, and contractors. Designing high quality bicycle parking requires thoughtful consideration of a number of elements: rack type, aisle spacing, enclosure type, door construction, facility location and access, etc. As soon as one element is designed inadequately, the entire facility can become compromised.

Vancouver’s bicycle theft epidemic is evidence of this. Between 2008 and 2012, auto theft, robberies, and break-and-enters all dropped significantly, yet bike theft rose from 1,179 to 1,812 – a 50 per cent increase (Skilton 2014). This spike in thefts mirrors the increase in cycling mode share, and without better design, this trend is set to continue.

4.5 THE STATUS QUO

The problems described above will not be new to planners and developers—bike theft, crowded bike rooms, and disputes between occupants and building management are known problems for Vancouver’s bike-cycle scene. The question is whether or not planners and developers are learning from these problems. An increased focus on bike parking is evident in some new developments, especially on the commercial side—the Microsoft Vancouver Development Centre is a positive example. However, even at a time when cycling is becoming more and more popular, many new developments are still providing sub-par bicycle parking facilities due to a combination of inadequate regulations and poor design. The following case study is a prime example of this.

4.5.3 Lack of Monitoring and Enforcement

Even the strongest regulations and most progressive designs can be useless if there is no monitoring or enforcement. Monitoring is necessary to ensure that policies and regulations are achieving their intended results. Enforcement is crucial to ensuring that the provisions in the bylaw are being followed. To be effective, these must be done on a regular basis, which is a significant challenge due to a lack of resources. However, it is no use updating bylaws and developing progressive design standards if there is no enforcement to back it up.
### Five Questions to Read This Chapter

Chapter 5 makes up the bulk of this report as it contains all recommended updates to the Parking By-law 4029. Some of the recommendations are general in nature, while others constitute fine details. In order to make this information digestible, this chapter has been divided into sections that correspond to various aspects of the bylaw. Each section contains (a) a brief explanation of the problem, (b) discussion, and (c) recommendations. These recommendations are summarized in Appendix A.

Additionally, the sections may reference snippets of bylaws or regulations from other cities. These external examples are important because they show the specific wording used in other cities. However, in order to preserve readability and not have lengthy pieces of legislation in the middle of this report, these examples have been placed in Appendix C. Reading through these examples and clicking the arrow button will allow you to find the relevant section in Appendix C. Appendix D allows readers to jump back up to the correct section of Chapter 5.

Note that these recommendations were made primarily with off-street, Class A, residential bicycle parking in mind, as many other general recommendations are also included, but this is not a comprehensive review. Further research is required for short-term, special event, commercial, and institutional bicycle parking.

## 5.2 STATEMENT OF PURPOSE

**Problem**

As Chapter 4 illustrates, the parking bylaw does not explicitly define or explain any key terminology. Section 6 of Vancouver’s bylaw contains all parking-related definitions. The only bicycle-specific terms, however, are “bicycle space, Class A”, “bicycle space, Class B”, and “bicycle space, Class C” (City of Vancouver 2014a). There are many terms that should be defined in order to clarify Section 6.

**Discussion**

The bylaw differentiates between a “bicycle room” and a “bicycle compound” but fails to define them. which could cause confusion. The City of North Vancouver and City of Victoria each offer good but contrasting definitions of these terms. In North Vancouver, a bicycle parking space is not a bicycle parking space, while in Victoria, bicycle rooms “are locked rooms or cages” (City of Vancouver 2011). This illustrates the potential for confusion. Other terms need to be defined including bicycle lock-up, bicycle corral, “expanded metal mesh,” and “non-standard bicycles.”

*San Francisco* provides a simple definition for alternative bicycle parking options. Expanded metal mesh would be best described with images in a separate bicycle parking facility manual (see Chapter 6).

After definitions, the document needs to flow logically and be divided into clear sections. The current bylaw is divided into sections for Class A and Class B parking, but within these sections, it jumps from topic to topic. There are many small subsections that contain minimum measurements for aisle width, kick spacing, etc., which seems disorganized. In order to be effective, a bylaw needs to be rigorous, but if it contains too much detail, it can become too challenging to understand and overly constraining. There needs to be a fine balance between providing structure and allowing flexibility. This can be achieved in part by moving much of the specific measurements and design aspects to a stand-alone facility manual, which will be discussed in Chapter 6.

One final point is that the Vancouver Building By-law contains a small section on bike parking (item 3.7.2.12, Bicycle Parking Facilities) that describes the requirement for water closets, showers, and restrooms in non-residential buildings. This section is referenced in the parking bylaw, but for clarity, it would be much simpler to move this from the bylaw into the building bylaw into the parking bylaw. That way, developers and planners will not have to flip back and forth between bylaws.

**Recommendations**

- That the bylaw be revised to include its clarity and effectiveness.
- That the bylaw be recognized to its clarity and effectiveness.

## 5.4 BICYCLE PARKING RATIOS

**Problem**

The Transportation 2040 calls to “[p]rove abundant and convenient bicycle parking and end of trip facilities,” stating that “minimum requirements should support long-term mode share targets and ownership and include convenient parking for visitors” (City of Vancouver 2010). As Chapter 4 explained, the minimums listed in the parking bylaw (item 6.2: Table 6.2 Off-Street Bicycle Spaces) do not meet current requirements, let alone support long-term mode targets.

**Discussion**

This is one of the most important sections of the bylaw and deserves a lot of attention. The purpose is articulated, it can also be used to defend the regulations that follow. If a clear statement of intent or purpose is articulated, it can also be used to deflect or explain the regulations with a statement of intent or purpose.

**Recommendations**

- To form ‘love of biking’ — celebrating Portland’s bike culture and its focus on cycling; many cities, including Portland, Oregon and Cambridge, Massachusetts, have begun their bicycle parking regulations with a statement of intent or purpose. This section does not do this but it is important in the section of the bylaw if they come under scrutiny from planners, developers, or the general public.

### City of Vancouver

The City of Vancouver should emphasize that the purpose of the parking bylaw is to ensure safe, comfortable, and convenient bicycle parking for people of all ages and abilities, including people who could also use bicycle parking in the overall bicycle network, as well as the GCAP goal of making “walking, cycling, and public transit preferred transportation options” (City of Vancouver 2009).

**Recommendations**

- That the bylaw begin with a statement of purpose or intent that would provide context for the regulations that follow.

### 5.3 CLARITY AND READABILITY

The parking bylaw has been criticized for being unclear or difficult to understand. When a bylaw is confusing, it must not be implemented or enforced correctly, leading to inadequate bicycle parking facilities.

**Discussion**

The first step in making a bylaw clear and understandable is to explain all key terminology. Section 2 of Vancouver’s bylaw contains all parking-related definitions. The only bicycle-specific terms, however, are “bicycle space, Class A”, “bicycle space, Class B”, and “bicycle space, Class C” (City of Vancouver 2014a). There are many terms that should be defined in order to clarify Section 4.

**Recommendations**

- That a clear but brief explanation of the problem be made.
- That discussion be included, but this is not a comprehensive review.
- That a culture where bicycle parking is seen as a priority be formed.
- That the bylaw be updated to include new parking requirements.
- That existing regulations be reviewed and updated.

### 5.4.1 Hassalo on Eighth Case Study

Hassalo on Eighth is a 21-storey, three-building apart-ment project in Portland, Oregon that will provide more long-term bike parking than any other project in the United States (Andersen 2014). The development is promoted as an “eco-community” for people who “drive one bike less than the average” (City of Portland 2014). The project is located in the Lloyd District, which falls within the jurisdiction of Portland’s Central City plan and thus requires 1.5 bicycle spaces per unit.

Hassalo on Eighth contains 677 dwellings and will provide the minimum requirement of 990 Class A bicycle spaces plus an additional 115 Class B spaces, resulting in a total of 1,092 bicycle parking spaces (Andersen 2014). Five hundred and forty-seven of the Class A bicycle spaces will be provided in the “Bike Hub,” a massive underground valet parking complex (Andersen 2014). Hassalo on Eighth is the focus of this study, the average goes down to 0.9 bikes per unit in one-bedroom downtown units to 0.7 bikes per unit in one-bedroom units downtown (Riekko 2013). A study from Eugene, Oregon explains that parking requirements should increase as the number of bedrooms per unit increases, recommend-ing one space per studio, one-bedroom, and two-bedroom units, but two spaces per unit for a three-bedroom unit (Alta Planning + Design 2013).

### 5.4.2 Bicycle Use (E.g. Cargo Bikes, Trailers, etc.)

Bicycle use (e.g. cargo bikes, trailers, etc.) causes problems for long-term mode share targets. In order to preserve readability and not have lengthy piecings of legislations in the middle of this report, these examples have been placed in Appendix C.

### Increased Bike Parking Requirements

In order to truly become the greenest city in the world, Vancouver needs to ensure that its regulations are bold and progressive enough to match its ambi-tious plans.

However, looking only at apartment buildings (which is the focus of this study), the average goes down to 1.25 per household (Statistics Canada 2011). One bike per person times 1.7 persons per household means that there would be 1.7 bikes per household. When compared to the current ratio of 1.25 Class A spaces per household, there is a clear mismatch: 0.45 bikes per household are without secure parking.

### Case Study

Unit size is another variable worth considering. A Toronto study found, unsurprisingly, that bicycle owner-ship increases consistently with unit size, going from 0.7 bikes per unit in one-bedroom downtown units to 0.9 bikes per unit in two-bedroom units downtown (Rekko 2013). A study from Eugene, Oregon explains that parking requirements should increase as the number of bedrooms per unit increases, recommend-ing one space per studio, one-bedroom, and two-bedroom units, but two spaces per unit for a three-bedroom unit (Alta Planning + Design 2013).

### The Bicycle Parking Ratio

Increasing the bike parking ratio from 1.25 to 1.7 would just meet demand if an average ownership rate of one bike per person was assumed. Looking forward and considering that there will be (a) future investments in cycling infrastructure, (b) continued promotion of cycling, (c) a demographic that is less auto-oriented, (d) a culture where many households own multiple bikes for different purposes, and (e) further increase in non-standard bicycle use (e.g. cargo bikes, trailers, etc.) causing more people to own multiple bicycles, a ratio of 1.7 per person is appropriate and probably more ac-ceptable in cities like Portland or Boulder.

### Project Architects

This report recommends a ratio of two Class A bicycle spaces per unit. This should provide enough spare bicycle parking to adequately future-proof buildings, which is important because retrofits can be extreme-ly difficult. In this study, the bicycle ratio was appro-ximately 1.25 per unit per person, but given the increased numbers of households per one or more bicycles, although this study included an unspecified number of UBC residents who are not technically part of the
Discussion

When living units are being designed, bicycle parking is not typically a consideration. However, as the stories in Chapter 4 express, storing a bicycle in a small dwelling unit is a challenge that many Vancoverites encounter. The City should focus first and foremost on ensuring that adequate bicycle storage is available outside of dwelling units, but there will always be circumstances that require in-unit storage—someone who owns two or more bikes, for example, will likely need to store one or more of them in their unit, especially if these bicycles are extremely valuable.

Remarking architects and developers about the needs of cyclists is a good place to start, as they may come up with solutions on their own. However, the City could also actively encourage—and perhaps require—each unit in a new development to contain at least one interior closet or storage area that is large enough to store a bicycle. This could mean designing a front closet that is deep enough to fit a standard adult bicycle when hung vertically, or allowing an owner or occupant of the door to close. Occupants who do not store their bicycle in their unit would of course be free to use that space for other purposes (and would likely be excited to have a larger storage area). Additionally, ensuring that hallways and doorways are wide enough to allow the passage of a bicycle without damaging a wall or door may convince more strata councils and building managers to allow bicycles inside buildings.

The issue of bicycles being banned from hallways, elevators, lobbies, and/or balconies seems to be fairly widespread. Strata councils, landlords, and building owners establish these regulations in order to protect buildings from damage, to keep them clean, and sometimes for aesthetic reasons (bikes on balconies are often considered an eyesore). These building managers are motivated to keep maintenance costs low, but for the most part, bicycles are unfairly targeted. Is a muddy bicycle tire any different than muddy boots or sports equipment? Is the risk of a bike damaging an elevator or hallway any greater than the risk posed by a bully strangling or wheel chair? For whatever reason, bicycles have developed a stigma and are often treated unjustly.

A simple way to solve the problem of wet and muddy bicycles is for both new and existing developments to provide bike washing and drying stations outside of buildings (Timothy Welsh [Hub Cycling] interview 2015). If cyclists are able to quickly clean off dirt and grime before entering the building, conflict could be greatly reduced. Additionally, interior hallways should be coated in a non-slip resistant finish that is easy to clean (Timothy Welsh [Hub Cycling] interview 2015).

Both New York City and San Francisco have passed laws requiring that tenants be allowed to bring bicycles into commercial buildings. Tenants in each city simply need to request bicycle access, at which point management must either provide a bicycle access plan outlining which elevators or hallways are appropriate for use or request an exemption for safety reasons (New York City Department of Transportation 2015, City and County of San Francisco 2012). In San Francisco, the building must either provide secure bicycle parking or allow bicycles in the building (City and County of San Francisco 2012).

New York’s approach is particularly impressive, as the city has set up a web-based program called “Bikes in Buildings” in order to help implement their “Bicycle Access to Office Buildings Law” (New York City Department of Transportation 2015). The program explains the law to tenants, employees, and building owners, making implementation of the law relatively simple for all parties. Neither New York nor San Francisco has extended this law to residential buildings, but nonetheless, these regulations provide a powerful precedent that Vancouver should build on.

5.5 IN-UNIT STORAGE

Many building occupants choose—or are forced—to store bicycles in their living units, often due to a lack of available parking space, a fear of theft, or both. Unfortunately, storing bicycles in units can be very difficult due to a lack of space within the unit or an inability to access the unit with a bicycle, either due to building design or because of regulations banning bicycles from hallways, elevators, lobbies, and/or balconies.

In cases where these best practices are not possible, the following standards should be met. If the parking is located above or below grade, a dedicated access ramp with a width of three meters is preferred, as this minimizes conflicts with motor vehicles (City of Toronto 2008). If a dedicated ramp is not possible, the ramp should be sufficiently wide to provide safe passage for cyclists—“...single lane ramps shared with motor traffic with a width of between 2.75m and 3.25m...” (City of Vancouver 2014b). No stairs on the access route, except that the Director of Planning may allow stairs provided a wheel ramp of a minimum width of 1.50 metres is provided without cutting into the stair tread (City of Vancouver 2014b).

Furthermore, Item 6.3.8 states that “[t]he entry door to a bicycle room or bicycle compound, or bicycle lockers, shall be within sight of building parking security, where such exists, an elevator, or an entrance” (City of Vancouver 2014b). This wording is fairly standard when compared to other North American bylaws and zoning codes, and many improvements are possible.

First of all, the bylaw should require that bicycle parking be located in a “safe, comfortable, and convenient location.” The National Policy & Legal Analysis Network to Prevent Childhood Obesity (INFLAN) sample ordinance requires that parking be “safely accessed by bicycle and by foot in a way that minimizes conflicts with motor vehicles,” while San Francisco requires “safe and convenient access to and from bicycle parking facilities” and requiring it to be “at least as conveniently located as the most convenient nondestabilized car parking” (City and County of San Francisco 2013, National Policy & Legal Analysis Network to Prevent Childhood Obesity [INFLAN] 2012). Making bicycle parking as convenient as motor vehicle parking would prevent bicycle cages from being located in the furthest depths of parking garages, where there is little surveillance or safety. San Francisco’s code is extremely detailed when it comes to access and location—potentially too detailed, as the code segment is quite lengthy. However, it serves as an excellent example of legislation that the City of Vancouver should examine more closely.

Secondly, the bylaw seemingly assumes that bicycle parking will be located in a parking garage. While this is the case in most buildings, it is by no means an ideal situation. One of the most common reasons for cyclists to avoid using bike parking facilities is that it is difficult and inconvenient to move through—automatic doors are preferred, but they should at least have a slow-closing mechanism that gives cyclists time to enter (Cambridge City Council 2010). The Vancouver General Hospital (VGH) Cycling Centre is a fantastic local example of these best practices. These design details are likely better suited for a separate bicycle parking facility manual rather than the bylaw (see Chapter 6).

In cases where these practices are not possible, the following standards should be met. If the parking is located above or below grade, a dedicated access ramp with a width of three meters is preferred, as this minimizes conflicts with motor vehicles (City of Toronto 2008). If a dedicated ramp is not possible, the ramp should be sufficiently wide to provide safe passage for cyclists—“...single lane ramps shared with motor traffic...” (City of Vancouver 2014b).

5.7 THE CITY SHOULD OUTLINE A CLEAR HIERARCHY OF BIKE PARKING LOCATIONS, MAKING IT CLEAR THAT WHILE A PARKING GARAGE CAN BE AN ACCEPTABLE LOCATION, IT SHOULD NOT BE CONSIDERED THE DEFAULT LOCATION.

Best practice dictates that secure bicycle parking be located at grade and have a dedicated entrance for cyclists (Bellville-Ladegaard and Cels 2006; City of Toronto 2008). Any access hallways should be sufficiently wide to allow two cyclists to pass one another and easily navigate the space, and construction points should be minimized (San Francisco Planning Department 2013). Any doors should be located and designed so that it is easy for a cyclist to open and move through—automatic doors are preferred, but they should at least have a slow-closing mechanism that gives cyclists time to enter (Cambridge City Council 2010). The Vancouver General Hospital (VGH) Cycling Centre is a fantastic local example of these best practices. These design details are likely better suited for a separate bicycle parking facility manual rather than the bylaw (see Chapter 6).