

Kelowna Bikeshare Systems

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kelowna.ca

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Executive Summary

The City of Kelowna is a bike friendly city and the establishment of a bikeshare system that allows residents and visitors to access affordable and convenient bikes for short trips would provide a number of community benefits that support the City's transportation, carbon reduction and economic development goals. The rapid expansion of bikesharing systems in North America may provide an opportunity for the City of Kelowna to facilitate a high quality bikesharing system at a lower cost than early systems that were often heavily subsidized, and in some cases owned by their host cities.

The City is currently working on the delivery of the *Pedestrian and Bike Master Plan* which recommends that staff "research and develop a strategy to demonstrate which programs would be most effective in achieving behavioural change to grow the share of residents selecting active modes of transportation". Through this process staff have identified advancements in the bikeshare industry with regards to costs and operating models available.

This report explores a new type of bikeshare, commonly referred to as dockless bikeshare, which has enabled operators to shed costs and, in doing so, bikeshare can operate as a profitable business.

Options/Discussion:

A bikeshare program is a system of bikes available for short term rental that allows users to access a bike at one location and drop it off at another. Bikeshare systems typically use smart phone or other digital technology to find, acquire and pay for bike rentals. Bikeshare systems can be owned and operated by private businesses, municipalities, government agencies or not-for-profits.

Typical bikeshare systems utilizes numerous stations or hubs within a city at which rental bikes are locked and where the bikes are accessed or dropped off. More recently, dockless or "stationless" bikeshare systems have appeared in North America where there are no physical stations or hubs, while internal locks on the bike eliminate the need to lock it to a rack or other fixed physical structure.

Bikeshare programs are present, at a significant scale, in the following Canadian cities:

- Vancouver, British Columbia: Mobi
- Montreal, Quebec: Bixi Montreal
- Toronto, Ontario: Bikeshare Toronto
- Hamilton, Ontario: Sobi Hamilton
- Ottawa, Ontario: VeloGo Ottawa/Gatineau

Many bikeshare users also own their own bike. For example, in Vancouver, more than 60% of Mobi bikeshare members also own their own bike¹. In this fashion, it can be helpful to think of bikeshare simply as a digital rental bike that extends the range of destinations accessible by foot.

¹ City of Vancouver. "Cycling Network." *Walking Cycling in Vancouver: 2016 Report Card*, 2016, pp. 27.

Operating Models for Bikeshare:

There are three basic types of bikesharing systems:

- Ad-hoc
- Docked
- Dockless

Ad-hoc

Ad-hoc systems were the first types of bikeshare systems where operators provided people access to bikes that are easily identifiable and often unsecured. Some systems require payment, others do not. Identification of bikes within these systems is often done through custom painting of the bikes themselves. Ad-hoc systems do not typically utilize technology to allow users to locate bikes. Ad-hoc systems are typically operated by community not-for-profit groups. Maintenance challenges have often meant that this style of system needs continual reinvestment to remain viable.

Docked

Docked systems are the most common type of bikeshare system in place today and typically provide robust, custom manufactured bikes, locked to fixed docking stations anchored in place at designated locations around the program's service area. Technology may be attached to the docks that allow users

to locate and pay for bike rentals using credit cards, digital membership keys or smart phones. In the typical docked system, users must return rented bikes to a designated dock or face steep fees. Docked systems can be owned and operated by a municipality, transit authority or private company.



FIGURE 1 AD-HOC BIKESHARE SPONSORED BY VANCITY CREDIT UNION



FIGURE 2 DOCKED BIKESHARE SERVICE IN MINNEAPOLIS

² Dugas, Kate. "Untitled." *Flickr*, Yahoo!, 27 June 2007, www.flickr.com/photos/juicylucymamma/639902053/.

³ 2012/2016, Prefeitura de Goiânia. "Bikeshare." *Flickr*, Yahoo!, 14 Apr. 2015, www.flickr.com/photos/prefeitura_goiania/16941518577/.

Because of the need to place substantial docking infrastructure on sidewalks, parking areas or within parks, these systems almost always require licensing or leasing agreements with their host municipalities. The docked system is the most capital intensive and therefore the most expensive form of bikeshare system in use. Examples of docked systems include Hamilton's SoBi, Vancouver's Mobi and Toronto's Bikeshare Toronto (formerly Bixi).

Dockless

Dockless or "stationless" systems are the most recent innovation in the of bikesharing industry and the fastest growing form of bikeshare. Dockless bikeshare does not rely on established docks, kiosks or hubs and instead either have no requirement for where the bikes are placed or use designated zones for users to return bikes when they complete a trip.



FIGURE 3 DOCKLESS BIKESHARE PROVIDER, LIMEBIKE, IN SEATTLE

bikes offered, dockless systems tend to be very inexpensive to implement and rent. In turn this has, for the most part, eliminated the need for a government subsidy for these systems, with regards to both capital and operational costs.

Dockless systems are typically owned and operated by private bikeshare companies and may or may not have agreements in place with their host municipalities for their operation. The lack of physical docking stations can also contribute to a more disorderly placement of unused bikes. Within some municipalities, such as San Francisco, Chicago and Austin, the introduction of dockless systems has caused concerns when bikes obstruct sidewalks, get left in inappropriate locations, fall over or become abandoned if damaged. In some cases, private dockless bikeshare companies have begun

With dockless systems, the technology to locate and unlock the bikes is placed on the bike. Dockless bikes often have an integrated rear wheel lock so that locking to a rack or other structure is not required. GPS devices located within the bikeshare bikes also help to prevent theft. These dockless systems are popular in Asia and increasingly in North America and Europe and typically use a lower cost and less robust style of bike than docked systems. Because of the lack of docking infrastructure and the style of

⁴ SounderBruce. "LimeBike at Amazon Domes, Seattle." *Flickr*, Yahoo!, 19 July 2017, www.flickr.com/photos/sounderbruce/35884726721/.

operating within municipal right-of way without permissions or consultations with their host cities and have opted to compete against existing bikeshare systems in high demand areas of cities. Such rogue styles of bikeshare can undermine existing bikeshare systems and create negativity towards bikesharing.

Benefits of Bikeshare:

Solving Public Transit's Last Mile Problem

The first or last part of the trip between the bus stop and a user's final destination is one of the main challenges that often pushes residents from regularly using transit. Bikeshare can help connect residents to higher order transit services and make transit the first choice.

A 5-minute walk is roughly 400m, by bike you can cover 4 times that distance. Multimodal trips using bikeshare in other cities have been integrated into trip planning software (such as Transit App) to make trips more flexible and ultimately faster. In many cases bikeshare might enable transit riders to eliminate a transfer or more seamlessly feed into higher order transit.

Better Evidence-Based Decision Making

While multiple bikeshare models deliver different types of data, all bikeshare systems would give us access to data about A and B points as well as travel patterns for users. This would help the City of Kelowna make better decisions in prioritizing infrastructure and understanding where people are biking.

Reducing Greenhouse Gas (GHG) Emissions:

A bikeshare system will provide additional transportation options to Kelowna residents that will help to reduce auto dependency for certain residents in our community. Roughly 20% of all bikeshare trips in other cities would have been made by automobile⁵.

Bikeshare is supportive of Kelowna's GHG reduction goals as described within the draft *Community Climate Action Plan*.

Supporting active transportation:

The creation of additional cycling infrastructure and programs aligns with the *Pedestrian and Bicycle Master Plan*. A bikeshare system could potentially support Council's objective that "by 2036, 25% of all trips less than 5km in length are made by walking and cycling".

⁵ Fishman, Elliot, et al. "Bike share's impact on car use: Evidence from the United States, Great Britain, and Australia." *Transportation Research Part D: Transport and Environment*, vol. 31, 2014, pp. 13–20., doi:10.1016/j.trd.2014.05.013.

Improving road safety:

In cities with bikeshare, they found a decrease in injury rates (per km ridden) with respect to both general injury and head injury compared to numbers from control cities without a bikeshare system⁶.

Bikeshare collision and injury rates are also lower than previously calculated rates for personal bikes.

Improving Transportation Choice and Cost of Living

Bikeshare programs are typically affordable and low cost to use. The availability of bikes for point to point rental improves transportation choice for Kelowna residents and visitors.

Reduction in Car Use and Congestion

Using data from Capital Bikeshare in Washington, DC researchers have found measureable reductions in automobile congestion following the introduction of bikeshare programs⁷. This is a possibility with a bikeshare system in Kelowna but would depend on various factors.

Supporting the tourism economy:

Bikeshare systems are attractive for tourists and visitors to Kelowna who want to experience the city without the cost and inconvenience of driving and parking. A bikeshare program would be a valuable amenity that would improve the experience of many visitors and enable tourists to visit businesses and attractions beyond a comfortable walk.

Tourism Kelowna has expressed their support for a bikeshare system.

Governance Models for Bikeshare:

In general, there are three types of ownership/operating models for bikeshare programs:

- Publicly owned and operated (like London, England's Santander Cycles),
- Public-private partnerships (like Hamilton's SoBi system), and
- Private bikesharing operators (like New York's Citi-Bike).

The public ownership and operation model:

In this model, a public entity such as a municipality, utility or agency owns and operates the bikeshare system in a manner similar to the provision of public parking or transit. Purchase of bikes,

⁶ Martin, Elliot, et al. "Bikesharing and Bicycle Safety." *Mineta Transportation Institute*, Mineta Transportation Institute, Mar. 2016, transweb.sjsu.edu/project/1204.html.

⁷ "Bicycle Infrastructure and Traffic Congestion: Evidence from DC's Capital Bikeshare." *Resources for the Future*, Resources for the Future, 20 Mar. 2017, www.rff.org/research/publications/bicycle-infrastructure-and-traffic-congestion-evidence-dc-s-capital-bikeshare.

stations and technology is done through capital budgets. Operating budgets typically rely upon revenues from user memberships and rental fees, and can require subsidy from the public owner.

In Canada, grants for capital funds from upper levels of government or government agencies have been used to purchase equipment and fund the start-up of bikeshare programs. The availability of additional grants for operating expenses or fleet replacement is less common.

Examples of this model include the Santander Cycle system in London, England.

The public-private model:

This is the model that is probably the most common and most diverse in the details of its implementation. In this model, a public entity, such as a municipality, provides support for a bikeshare system that can be owned and operated by a private company, or partially owned by the municipality and operated by a business or not-for-profit organization. As the owner of the public right-of-way, municipalities have a significant stake in determining who may operate public bikeshare on the right-of-way and under what terms. Also within this model, municipalities may choose to provide start-up or ongoing financial support to a bikeshare partner. The degree to which a municipality or other public entity is involved can vary from being the owner of assets, to being the primary financial sponsor, to simply licensing access to the right-of-way for a selected bikeshare partner(s). Historically in Canada, the public entity pays for capital costs of the bikeshare system and a private operator collects user fees that fund day to day operations.

Examples of the public-private model include SoBi Hamilton, Mobi in Vancouver, and Bikeshare Toronto.

Commercial or not-for-profit ownership and operation:

In this model, the bikeshare system is owned and operated by a third party organization with little to no financial support from the municipality. This model of ownership and operation can exist with or without municipal permission (licenses) to operate. There has recently been concern expressed by some municipalities where “rogue” bikeshare companies have attempted to operate within the public right-of-way without proper consultation with the municipality.

Examples of the commercial model are ofo, Spin Bike and Limebike operating in Seattle, Washington.

Objectives for Bikeshare in Kelowna:

The options available to Kelowna for bikeshare are numerous and each will have its own implication with respect to user experience, cost to users and the municipality, impact on the municipal right-of-way, and overall financial viability. A bikeshare service could be a valuable asset to the city. Ideally, Kelowna would take steps to enable a bikesharing service that:

1. Is of sufficient size and configuration to provide a useful and convenient mobility option to residents and visitors;

2. Is affordable and easy to use;
3. Provides reliable and functional bikes;
4. Creates minimal disruption to the municipal right-of-way; especially sidewalks and accessibility features;
5. Supports the existing public transit system;
6. Requires a minimum capital investment from the municipality;
7. Requires a minimum operational investment from the municipality;
8. Supports economic growth through creation of new commercial activity and tourism within Kelowna; and
9. Protects the City of Kelowna from financial risk in the event of lower than anticipated use or revenues.

The variety of bikesharing systems and operators that are active in North America likely presents an opportunity for bike friendly cities like Kelowna to enable bikesharing without taking on all the financial or operational responsibility of creating a new municipal service.

Opportunities for Bikeshare in Kelowna:

- 1. Partnership potential:** Kelowna is home to many community-based organizations that could contribute to a bikeshare program through sponsorship, hosting locations, assisting with fleet maintenance, as well as promotions and operations.
- 2. Density of destinations and infrastructure:** The financial viability of a bikeshare venture no matter the governance model depends on user revenues and Kelowna has many locations that offer a high density of potential users with origins and destinations within relatively short distances. Neighbourhoods, such as Lower Mission, Pandosy, Downtown North End, Glenmore, Capri-Landmark, Midtown and Rutland Centre, may be good candidates for dock or haven locations that allow use of rental bikes for short (less than 5 kilometre) trips.
- 3. Cycling infrastructure:** Kelowna has an established network of cycling infrastructure in the form of, multi-use pathways, bike lanes, cycle tracks, wayfinding, bike lockers and bike racks.
- 4. Tourism:** Kelowna is a popular tourist destination with a high density of destinations surrounding the downtown and waterfront areas. With tourists increasingly seeking opportunities to integrate physical activity into their stay, the opportunity to use a bikesharing service would seem attractive and complementary. Other bikeshare systems have aligned pricing to generate a higher proportion of funds from tourists allowing the delivery of a subsidized option for residents.

Opportunity for Pilot Testing:

Staff have approached multiple bikeshare service providers in our market research stage to effectively evaluate the industry landscape. Staff believe we will be able to permit at no cost to the municipality, the establishment of a pilot dockless bikeshare service in Kelowna in 2018.

The opportunity to assess a bikeshare system through a pilot test is attractive because it will enable the City of Kelowna to learn more at virtually no cost to the municipality while also allowing us to back out if we feel dockless bikeshare does not deliver value to our residents and our transportation network.

Elsewhere dockless bikeshare has been criticized for providing poor quality bikes, cluttering sidewalks and public space with bikes that are improperly parked, and in poor states of repair or abandoned. Staff believe that a dockless system may be able to conform with the recommendations put forth by the National Association of City Transportation Officials (NACTO) within their review and critique of dockless systems⁸, but also that a more definite demonstration of system performance can be obtained through the proposed pilot test.

Based on market research, a dockless bikeshare operator that would work with us through a pilot would equip bikes with GPS and LTE that allows for remote unlocking of the bike. This unit would ensure the bike is trackable and alerts the operator if it is stolen. Bikes would be accessed through a mobile application requiring a smartphone, internet access and a credit card.

Staff has consulted with multiple departments including Communications, Traffic Operations, Parks, City Clerks, Economic Development, By-law Enforcement and Purchasing. We have also consulted with external stakeholders including Downtown Kelowna, Pandosy Village Business Association, and Braintrust Canada. Staff will integrate the comments of those stakeholders into the terms of a future license agreement by which we will permit an operator to operate within the City right-of-way.



FIGURE 4 Ofo DOCKLESS BIKESHARE IN LOS ANGELES

Key Issues for a Bikeshare Pilot

⁸ Engel, Alexander. "Rogue Bike Share Providers Raise Concerns For Cities." *National Association of City Transportation Officials*, National Association of City Transportation Officials, 13 Apr. 2017, nacto.org/2017/04/13/rogue-bike-share-providers-raise-concerns-cities/.

⁹ Waltarrrrr. "Ofo Dockless Bike-Share Comes To Los Angeles." *Flickr, Yahoo!*, 7 Nov. 2017, www.flickr.com/photos/waltarrrrr/26450755849.

Safety and the Helmet Law

Through staff's evaluation of the safety impact of bikeshare in other jurisdictions and through stakeholder engagement the question of how we design this service to comply with the mandatory helmet law and the safety of riders has been discussed.

Each additional person on a bike wearing a helmet has a safety benefit. Yet there are additional factors other than helmet use that impact the safety of each person on a bike in Kelowna.

To assess the safety of bikeshare we looked at per kilometer statistics for personal bikes and bikeshare bikes, while also comparing cities with bikeshare to those without. This helps staff determine both the marginal benefit or detriment of one trip on bikeshare and also understand the city-wide safety impacts of having a bikeshare system.

When comparing bikeshare to personal bikes on a per km basis we have found bikeshare trips have a *lower non-fatal injury rates than prevailing North America benchmarks for personal bicycles*¹⁰.

Experts attribute this lower injury rate to various factors including the low speed, the presence of lights, and the low center of gravity of most bikeshare bikes and that bikeshare is ridden in places where drivers expect to see people on bikes.

When comparing cities with bikeshare to those without studies have found positive safety impacts from bikeshare being available in a city compared to control cities without bikeshare. Both general injury rates and head injury rates fall across the entire cycling population.

A bikeshare system would likely have a net positive impact for bike safety in Kelowna.

Through a pilot program for the city we considered delivering a helmet with every bike.

Through further analysis, we have decided not to pursue this course of action for two reasons, safety and hygiene.

SAFETY

Helmets are designed such that their effectiveness is greatly reduced after a primary impact. It would be extraordinarily burdensome to continuously test and guarantee the safety benefits behind a helmet fleet that could climb to more than 1000 helmets over the course of the pilot. From a safety perspective there would be no guarantee that a previous rider had damaged the helmet that would accompany a bike. If a rider was injured while wearing a helmet that had experienced prior impact, there is a potential for this risk to be borne by the bikeshare provider and the City because of the lack of safety precautions and system-wide helmet tests.

¹⁰ Martin, Elliot, et al. 2016.

¹¹ Fidler, Eric. "Melbourne Bikeshare Helmet." *Flickr*, Yahoo!, 28 Feb. 2016, www.flickr.com/photos/greatphotographicon/25344650985.

HYGIENE



FIGURE 5 HELMET PROVIDED WITH MELBOURNE BIKESHARE

The vast majority of Bikeshare Systems don't provide helmets with bicycles. Still there are jurisdictions, where bike helmets are given out with bikeshare. These systems exist mainly where mandatory all ages bike helmet laws are in effect and where the municipality pays upfront capital cost for the system. The most notable examples of this are, Seattle's, now defunct, Pronto service, Mobi in Vancouver and Melbourne Bikeshare in Australia.

Staff have not found a measurable difference in terms of helmet use per rider when comparing systems that offer helmets vs jurisdictions that do not offer helmets and expect riders top bring a helmet with them. Bikeshare has a historically lower rate of helmet use than personal bikes. We expect the mandatory helmet law in BC to

bump up helmet use in Kelowna's bikeshare system compared against jurisdictions without an all-ages helmet law.

We also feel there are certain things staff should do that could grow the proportion of riders wearing helmets while on the bikeshare fleet. One such idea is to ensure information about the helmet law and discounts on helmets through the provider's app or other point of sale application by partnering with local bike helmet retailers who want to participate.

No Parking Impact

We plan to use areas of the right of way currently excluded from ability to use for parking due to sightlines as areas for bikeshare. We anticipate no impact to

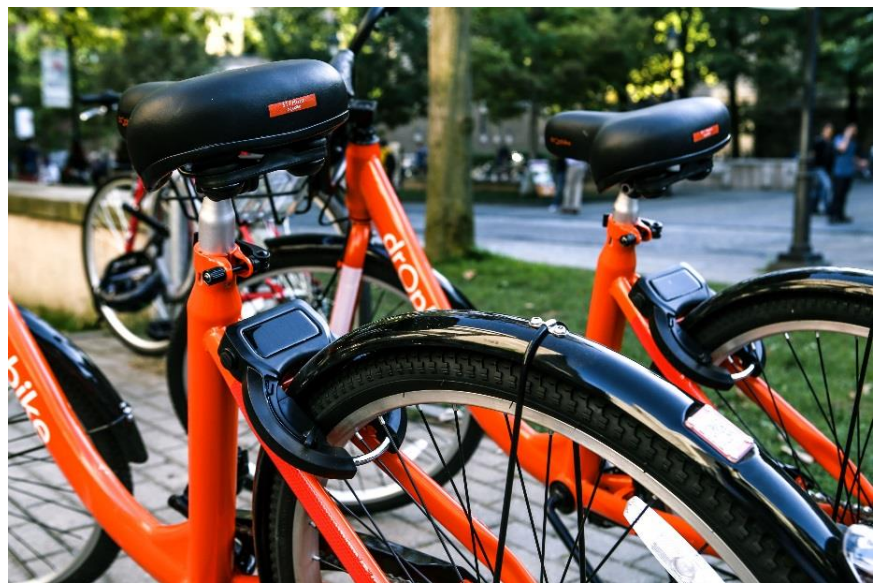


FIGURE 6 DROPBIKE LOCKS ARE POWERED BY SOLAR PANELS AND UNLOCK WITH A SMARTPHONE APP

vehicle or bike parking with this system.

Orderly and Attractive System

It is important that Kelowna residents feel as though Bikeshare provides an orderly and an attractive addition to their community.

The way we can impact this is through havens. If we ensure that havens are no more than 300 meters apart and deliver in a grid within the service area, we can ensure that a high proportion of trips end in a haven.

Additionally, we can encourage a provider to deliver pricing that puts a bounty on bikes dropped outside of a haven. This incentivizes users to end their trip in a haven and would further guarantee an attractive and orderly system.



FIGURE 7 A DROPBIKE DOCKLESS BIKESHARE HAVEN DEMARCATED WITH TEMPORARY ROAD TAPE IN WESTMOUNT, QUEBEC OPPOSITE A DOCKED BIKESHARE STATION ACROSS THE STREET

If another bikeshare user sees a bike outside of a haven they can return the bike to a haven and claim the bounty as a credit on their account. This “bounty” system helps ensure the system is still highly dynamic with a natural magnetism to order. Placing a “bounty” on bikes in this way has been tested with great success in Hamilton’s SoBi bikeshare since its inception.

System Coverage and Expansion Areas

The City would approve all location for bikeshare havens and set coverage areas, we will begin by identifying locations that form a rough 300-meter grid.

We have determined a potential coverage area based on data from the household travel survey about the proportion of short trips and cross-referenced by demographic data from different areas of the city and likely system size of roughly 500-1000 bikes.

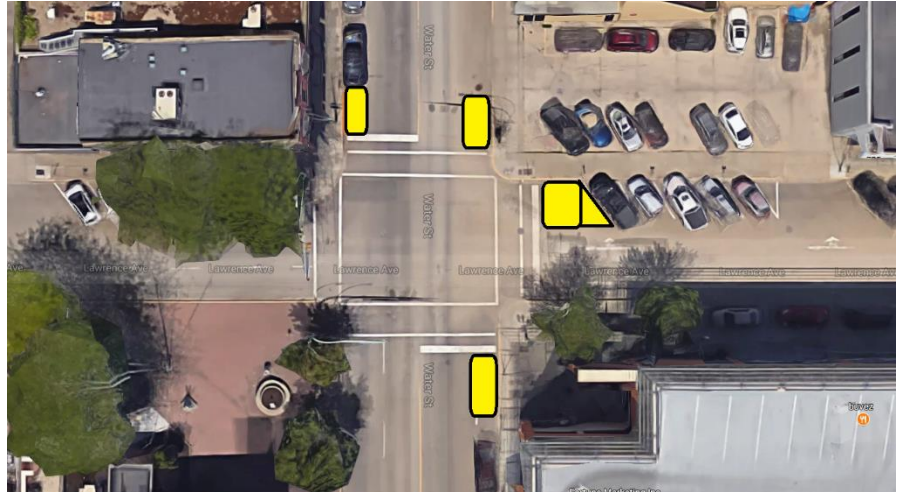


FIGURE 8 POTENTIAL PLACEMENT OF BIKESHARE HAVENS

We have determined that the following locations will see the most success with the adoption of bikeshare. The area with a solid line is the likely primary service area. Dashed areas on the map of Glenmore and Central Rutland are possible expansion areas. See map for a visual representation of these coverage areas with a 300m station density overlay.

¹² *Google Maps*, Google, www.google.ca/maps/.

¹³ "Montréal voit d'un mauvais oeil le vélopartage sans bornes." *Le Devoir*, Le Devior, 11 Sept. 2017, www.ledevoir.com/societe/actualites-en-societe/507697/montreal-voit-d-un-mauvais-oeil-le-velo-partage-sans-bornes.

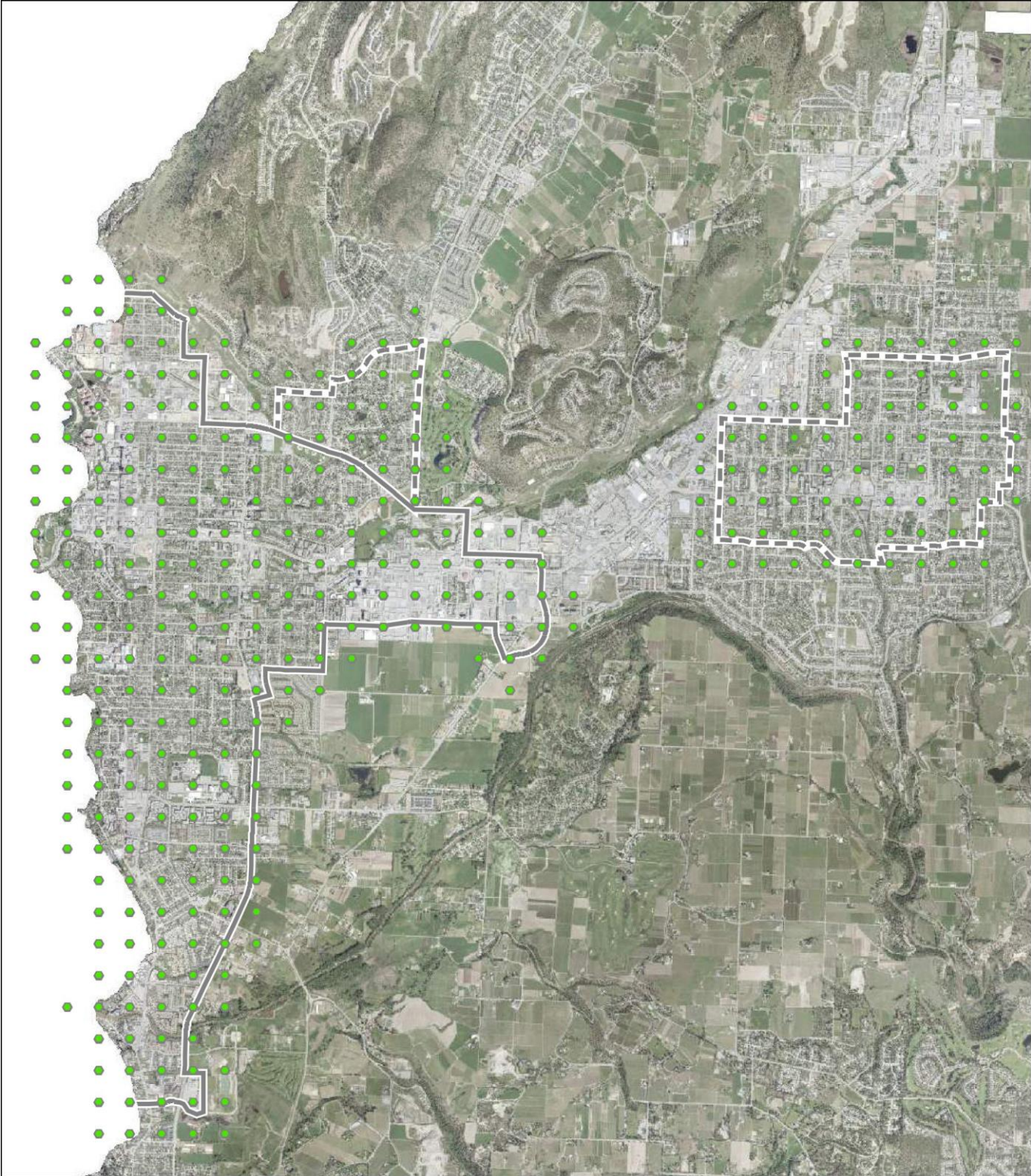


FIGURE 9 BIKESHARE COVERAGE AND EXPANSION MAP WITH TARGET STATION DENSITY OVERLAY

Requirements for Consideration of a Dockless Bikeshare System

In order to facilitate the pilot test, the city would allow a provider to use approved locations within the city's right-of-way network at no cost, through a license agreement that requires as a minimum the following:

1. Selection of bikeshare havens (parking areas for unrented bikes) to be approved by the Manager of Integrated Transportation;
2. A minimum of 500 bikes deployed as early as April 1st 2018;
3. Bikeshare deployment within the coverage area approved by the Manager of Integrated Transportation;
4. Contact information for the bikeshare service provider to be clearly shown on all deployed bikes and user interface point of sale applications;
5. Commitment of bikeshare provider to:
 - a. maintain bikes in a safe and fully functional state of operation;
 - b. remove any bike that is unsafe, damaged or otherwise in need of repair or replacement;
 - c. provide regular balancing of the bike fleet and remove bikes that have been left at improper locations;
 - d. discourage the use of public bike racks within the right-of-way for bikeshare havens;
 - e. operate the system so that it does not create a hazard or restrict access to, from or through any portion of the municipal right-of-way, especially with respect to sidewalks and persons with disabilities;
 - f. take steps to avoid parked bikes being easily tipped over;
 - g. promote the bikeshare service to the entire community;
 - h. respond to inquiries and complaints in a timely and businesslike manner;
 - i. maintain operating data and provide data to the City of Kelowna upon completion of the pilot test;
 - j. remove all bikes and any appurtenances from the right-of-way upon completion of the pilot test; and
 - k. return deposits provided by system users at the end of the pilot or end of user's membership.
6. Insurance and indemnifications to be provided to the satisfaction of the City Solicitor;
7. Refundable financial securities to be provided to the city that are sufficient to pay for the gathering up and disposal of deployed bikeshare bikes and any appurtenances from the city right-of-way;

8. Provisions to end the pilot test early and cancel the license agreement should commitments not be kept or conditions become undesirable to the City;
9. Require the operator to share system-wide trip, user, network data sets with the City as requested; and
10. Require the operator to, at a minimum, alert users to BC's mandatory bike helmet law on all bikes and in all user interface point-of-sale applications.

Monitoring of the performance of a potential bikeshare pilot would be undertaken by city staff within the Integrated Transportation Department with assistance from staff engaged in regular patrol of the coverage area as part of By-law Enforcement.

Next Steps

Staff will finalize internal and external discussions with key stakeholders. Council can expect another report describing a bikeshare pilot project in early January 2018. This timeline gives us the ability to commence a pilot for March/April 2018