

SUSTAINABLE URBAN TRANSPORTATION AWARD: TRANSLINK'S BIKE PARKADE PROGRAM

Activity or initiative undertaken

TransLink, Metro Vancouver's transportation authority's, Bike Parkade Program will provide secure bike parking at transit stations throughout Metro Vancouver. The program was launched in 2014 with the opening of a bike parkade at the newly renovated Main Street – Science World SkyTrain Station. In 2015, a second bike parkade opened at the southern terminus of the SkyTrain system at King George Station in Surrey. Bike parkades are planned for two upcoming Expo Line renovations: Commercial-Broadway Station in Vancouver and Metrotown Station in Burnaby. Bike parkades will be built by developers as part of transit-oriented development at Gilmore Station in Burnaby and on the Canada Line at King Edward Station. Current and future bike parkade locations are illustrated in Figure 1 in the appendix.

TransLink's bike parkades feature a variety of security features: fully glazed walls, 24 hour lighting, video cameras, and electronic keycard access. Both have double-decker pneumatic lift bike racks to maximize parking spaces within a small footprint. Main Street – Science World Station has 90 bike parking spaces within 1000sf and King George Station has 70 within 750sf. Both are open during all hours of SkyTrain operations: from approximately 5.30 am to 1.30 am on weekdays and 7 am to 12.30 am on weekends. Other amenities include local bike wayfinding information at both locations and a bike repair station at King George Station. The cost to use the parkades is \$1 per day, with a maximum monthly charge of \$8. After registering for a keycard online, all a bike parkade user needs to do is swipe the keycard at the door, wheel in their bike, and lock it in an empty spot on the racks. Please see Figures 2 through 8 in the appendix for photos of both completed bike parkades.

Planning rationale

The Bike Parkade Program is designed both to address immediate operational issues for the transit network and to contribute to longer term regional transportation goals. There are two immediate objectives: (1) TransLink's desire to fully integrate cycling access with transit services; and (2) an operational need to minimize the volume of bicycles onboard crowded SkyTrain services.

Bicycle parking today at transit exchanges and SkyTrain stations consists of outdoor bike racks and, at most stations, individual bike lockers. TransLink's market research shows that many people don't access transit services by bike because they are concerned about bike theft. In addition the bike lockers have a three month minimum rental commitment, which is a

deterrent to more occasional bike travel. Traditional bike lockers also take up a significant amount of space. At space constrained stations and exchanges, the demand for lockers can exceed the space available, and bike lockers and bike racks may be perceived as clutter and may conflict with other transit operational requirements. This can lead transit agencies to offer less secure bike parking, leading to more demand for car parking and increased pressure on already crowded transit services.

Beyond the immediate benefits they offer, bike parkades also contribute to a number of longer term regional transportation objectives. The goal of TransLink's Regional Cycling Strategy (2011) is to encourage more cycling and safer cycling. As a result, TransLink policy supports integrating cycling and transit through the provision of high quality bike parking at transit. Secure bike parking facilities that provide on-demand access and integrate seamlessly with an electronic smartcard are both features of the Bike Parkade Program.

Overall, the RCS provides guidance to the development of cycling facilities in the region thus supporting regional transportation goals:

- Reducing greenhouse gas emissions by encouraging cycling, expanding cycling facilities, and integrating cycling and transit in order to improve access to transit facilities;
- Most trips in the region being by transit, walking and cycling; and
- Making the region safe, secure and accessible to everyone – including cyclists.

Contribution to sustainable urban transportation

Environmental

The Bike Parkade Program presents several innovations that contribute to sustainable transportation. By providing a seamless connection from cycling to the rapid transit network, the Bike Parkade Program promotes environmental sustainability by encouraging a shift from personal cars to sustainable transportation modes. This reduces pollution and greenhouse gas emissions. It also limits lifecycle product waste by encouraging the use of bicycles, which are less resource intensive to manufacture and maintain than cars. Similarly, the Bike Parkade Program is a more efficient use of available land, since one bike parking space in a bike parkade takes up 10-11 sqft, whereas car parking spaces are usually around 140-180 sqft. This means that up to eighteen bicycles can be stored in the space required for a single park and ride stall.

In addition, TransLink has sought to add sustainable features into the design of the parkades themselves. At King George Station, the parkade has a Cross-Laminated Timber (CLT) roof,

which is a durable, local and renewable material. The parkade at Main Street - Science World is built into the structure of the station itself, creating efficiencies and reducing the need for building materials and construction mobilization.

Economic

The Bike Parkade Program fosters economic sustainability by offering an affordable and efficient service that improves the choice of transportation mode. The construction of the existing and planned parkades takes advantage of planned station renovations (Main Street - Science World, Commercial-Broadway, Metrotown), nearby development (Gilmore, King Edward) or the existing station architecture (King George) to build parkades at higher efficiency and lower cost than would have otherwise been possible. Once built, the bike parkades are efficient and inexpensive to operate due to the computerized registration system and keycard entry system. Registration and day-to-day maintenance are managed by a local company, which contributes to the local economy and local economic sustainability.

Social

The Bike Parkade Program promotes social sustainability by encouraging a healthy transportation option and reducing barriers to accessing the transit system. The health benefits of cycling, as of physical activity in general, have been well documented. They include helping participants maintain a healthy weight, reducing blood pressure, improving cardiovascular health, reducing instances of certain cancers, and improving mood and mental health. Bicycles also produce no emissions or pollution, and encouraging mode shift to cycling can contribute to improved air quality and reduced traffic noise. Both air quality and noise pollution have been found in recent years to have potentially major health impacts.

The Bike Parkade Program reduces barriers to the transit system by offering a service that is cheaper than bus service. Secure bike parking also reduces the risk of bike theft, which has been documented to be a significant deterrent to cycling.

Table 1: Summary of Bike Parkade Program's Enhancement of Sustainable Transportation

Type of Sustainability	Features
Environmental	<ul style="list-style-type: none">• Encourages mode shift from cars to lower polluting and GHG emission intensive modes such as cycling and transit

	<ul style="list-style-type: none"> ● Limits lifecycle product waste ● Maximizes the efficient use of land ● Incorporates renewable resources into infrastructure design
Economic	<ul style="list-style-type: none"> ● Facilitates the use of cycling, an underserved and affordable transportation mode ● Construction efficiencies sought through utilizing planned station renovation processes, nearby development or existing station architecture ● Efficient and inexpensive to operate ● Operated by a local company, contributing to the local economy
Social	<ul style="list-style-type: none"> ● Encourages physical activity ● Reduces air and noise pollution ● Provides inexpensive access to the transit system ● Reduces the potential for bike theft

Innovation

Technical

Technical innovation has been a key component in TransLink's delivery of the Bike Parkade Program. Although the bike parkades themselves use several low-tech security features, such as fully glazed windows to facilitate 'eyes on the street' and high lighting levels, the most powerful safety features are decidedly high-tech: the use of camera recording and registered keycard entry. These features create records of who enters the bike parking facilities and of the activity that occurs inside.

Technical innovation has also played a role in the operations and marketing of the bike parkades. As a completely new feature in the local transportation network, there has been a need to communicate how to use the bike parkades. TransLink has addressed this by creating a video to show passengers and potential bike parkade users how the keycard entry system and pneumatic lift bike racks work. As of February 2016, this video has been viewed almost 6,000 times on YouTube.

TransLink ran a targeted online advertising and social media campaign to promote the Bike Parkade Program from July 2 to August 12, 2015. It used four online and social media tools: Google Paid Search, Google Display Network ad placement, Facebook and Twitter. Using keywords, search terms and profile information, these targeted online and social media campaigns enabled TransLink to reach out directly to cyclists in the Vancouver region, with a particular focus on cyclists within 12km of the bike parkades. The overall campaign produced 10,820 unique page views on the bike parkade page on TransLink's website, with 336 people moving on to the registration page.

Process

The implementation process was innovative in its early engagement of stakeholders drawn from parts of the TransLink organization as diverse as the Transit Police and Information Technology. This demonstrates that this new form of infrastructure for bike parking is held to the same standard of design and implementation as the transit system. For example, the Transit Police were consulted early on in the process in order to ensure that they could patrol these new areas within the stations and to develop protocols for responding to police call – outs. In addition, creating a new brand of service within TransLink involved corporate marketing to formulate wayfinding symbols and signage.

Financial

The use of electronic and computerized systems for membership management and payment were innovations for TransLink at the time of the Main Street - Science World Station Parkade's opening. TransLink worked closely with the local contractor to develop an online registration and payment system fully compliant with British Columbia's Freedom of Information and Protection of Privacy Act (FOIPPA) and financial software security requirements within a short time frame. As discussed above, the construction process reduced costs by integrating the parkade construction with other station construction/renovation processes and the use of double-decker pneumatic lift racks to reduce the floor space required for the facilities.

Transferability to other Canadian communities and organizations

Bike parkades are recognized as a best practice for the provision of secure bike parking at transit stations in Europe, but they are less common in Canada. Metro Vancouver joins the ranks of Montreal, Toronto, San Francisco, Portland and Boston, where bike parkades have

been demonstrated as an effective solution for encouraging bike-transit integration in a variety of climates, topographies, transit systems and contexts. In communities without large transit ridership, bike parkades can be constructed in central business districts, or at schools, universities or other major trip generators. In all contexts, bike parkades encourage cycling and reduce the clutter of bikes locked haphazardly due to insufficient or unattractive bike parking infrastructure.

TransLink's Bike Parkade Program has more facilities in operation than any other transit agency in Canada. It has used a programmatic approach to planning bike parkades and has emphasized high quality design in their implementation. TransLink has learned a number of lessons that are widely applicable to other transit agencies, municipalities or other organizations that may be considering implementing bike parkades.

Lessons learned

1. Bike parkades require stakeholder consultation and consensus building both internal and external to the organization to be successfully planned, launched to the public and operated. They are a new form of infrastructure that often engages parts of the organization as diverse as operations, IT and police.
2. The use of online registration and electronic keycard entry are key components of the customer perception of security. They also give the bike parkade operator the ability to charge by the day, which can be one of the most attractive features of bike parkades for the customer: unlike bike lockers, they only have to pay for bike parkades when they use them.
3. Targeted digital marketing is a highly effective way of communicating about bike parkades to the people most likely to use them. There are two obvious factors that are likely to contribute to an individual's likelihood of using a bike parkade: that they are already a cyclist and that they live near a transit facility with a bike parkade. Targeted digital marketing allows ads to be sent to just these people, making it very cost-effective and more likely to elicit behaviour change. Digital marketing is also an effective medium for targeting the demographic most likely to cycle in general.
4. A strategic and holistic approach to identifying priority locations for bike parkades is crucial. In assessing which transit facilities were the highest priorities for bike parkades, TransLink looked at the following five criteria and prioritized the stations and bus exchanges that met at least four:

- Construction opportunities (either station upgrades or nearby development)
 - Available land
 - Overall station/exchange usage
 - High stated demand for bike parking and/or high existing usage of bike parking and/or high numbers of bikes boarding at the station
 - Supportive surrounding land use and cycling infrastructure
5. Understand that the factors underlying use of bike parkades are complex and plan accordingly. After nearly a year of operation, in September 2015 Main Street - Science World Station's parkade had 135 user registrations, however daily usage has remained fairly low resulting in plenty of room for future growth in bike parking. After only six months of operation, King George Station has 42 registered users, 59% of whom used the parkade five or fewer times that month. The southern terminus of the SkyTrain system, King George Station had over eighty bike lockers prior to the construction of the bike parkades and still has sixty. It is expected that those bike lockers will be phased out over time and more cyclists will move to the bike parkade.
6. Plan bike parkades for the long term, and understand that infrastructure such as this has the potential to induce demand over the long term. Effective planning of bike parkades can reduce clutter and free up space for other uses at transit facilities. Investing in bike parkades attractively integrated into transit facility buildings can further enhance the customer experience of transit facilities for years to come.

Conclusion

The TransLink Bike Parkade Program has provided the infrastructure necessary to meet the immediate objectives of integrating cycling and transit service and minimizing the volume of bicycles carried onboard trains. It encourages sustainable transportation choice at multiple points across the region, targeting locations with increasing numbers of cycling trips. The innovative concept of a self-serve bike parkade is applicable in many contexts, such as schools, transit stations, park-and-ride lots and central business districts; anywhere there is high cycling demand and a desire to improve the aesthetic of urban public space.

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Figure 2: Main Street—Science World Station exterior

Note the integration of the parkade with the station building, and that bike racks are still provided outside



Figure 3: Main Street—Science World Station Bike Parkade Interior, including pneumatic lift racks



Figure 4: Still from TransLink's video on how to use the bike parkades

The full video can be found at <https://www.youtube.com/watch?v=rB3TuBie4N0>



Figure 5: A cyclist approaches the King George Bike Parkade



Figure 6: King George Station Bike Parkade





Figure 7: Entrance to King George Station Bike Parkade

Figure 8: King George Station Bike Parkade interior

