



Report to: Development Services Committee

Meeting Date: March 19, 2018

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**SUBJECT:** Proposed Bike-Share Feasibility Study  
**PREPARED BY:** Loy Cheah, Senior Manager, Transportation, ext. 4838  
**REVIEWED BY:** Brian Lee, Director, Engineering, ext. 7507

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**RECOMMENDATION:**

- 1) That the report entitled “Proposed Bike-Share Feasibility Study”, be received;
- 2) That staff, in partnership with York Region, undertake a three-step feasibility study to understand the potential for a bike-share program and identify requirements needed to implement a successful pilot project;
- 3) That, upon completion of Step 2 of the feasibility study, staff be directed to report back on the findings and recommendations;
- 4) That York Region be requested to partner with the City to undertake the feasibility study; and
- 5) That staff be authorized and directed to do all things necessary to give effect to this resolution.

**PURPOSE:**

At the June 26, 2017 Development Services Committee meeting, staff was directed to provide an information report on bike sharing technology and opportunities for a bike-sharing service in the City of Markham. This report seeks to:

1. Provide an overview of the most commonly adopted bike-sharing technologies, including their operational characteristics and benefits.
2. Explore the opportunities and challenges of establishing a bike-sharing program in the City of Markham.
3. Obtain Council’s endorsement to partner with York Region in a bike-sharing feasibility study and report back for further direction at the implementation stage.

**BACKGROUND:**

Over the past year, the City has been approached and presented with “unsolicited” bike-share program proposals from at least three different vendors. On May 18, 2017, the Cycling & Pedestrian Advisory Committee (CPAC) received a presentation from one of the three vendors that approached the City. After the presentation, CPAC recommended that staff work with the vendor to investigate the feasibility of a 90-day pilot project.

At the June 26, 2017 Development Services Committee (DSC) meeting, in consideration of CPAC's recommendation, a deputation from CPAC and a presentation from the same vendor were made to introduce the bike-share proposal.

Following a discussion, staff was directed to provide an information report on bike-sharing technology, and opportunities for a bike-sharing service in the City of Markham. This resolution was adopted by City Council on June 27, 2017.

## **OPTIONS/ DISCUSSION:**

### **Benefits of a Bike-Sharing Program**

A bike-share program is a service where local residents or visitors are able to obtain a bicycle for a short-term rental at one location and return it at either the same or an alternate location. Bike-sharing programs are playing a larger role in addressing the transportation needs in major cities across Canada and around the world.

Benefits of a bike-share program include:

- Establishing a stand-alone transportation mode: A bike-share program can become an independent transportation system. It increases mobility options for all users and can reduce traffic congestion on roads through a shift in transportation mode from driving automobiles to cycling.
- Extending and promoting the existing public transit network: A bike-share program can provide a first or last "mile" linkage between transit stops and home/work/school, bridging the end-to-end gap of public transit.
- Providing an affordable transportation option: Bike-share programs are typically affordable with a low user fee, and is a competitive alternative to driving or owning a private vehicle for short trips. It also provides a transportation option to those who may not have access to a personal bicycle or a vehicle.
- Reducing greenhouse gas (GHG) emissions: The City is committed to be a leader in environmental sustainability. A bike-share program will support the City's GHG reduction goal by providing and encouraging alternatives to automobile use.
- Enhancing the tourism economy and attractiveness of the City as a place to visit and invest: A bike-share program provides tourists and visitors with another option to explore Markham conveniently and at a low cost.
- Improving the City's status as a cycling-friendly community: A bike-share program would help promote cycling and enhance Markham's current status as a "Bronze" cycling-friendly community.

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## **Types of Bike-share Systems**

There are several types of bike-sharing systems currently operating in cities around the world.

Station-based (with docking stations): This is the most commonly adopted bike-share system in use today. Users pick-up and return bicycles at designated stations or docks. This system is the most capital intensive due to the need to install, operate and maintain the physical stations or docks at a sufficient network size.

Station-less (without docking stations): A station-less (or dockless) system is a more recent form of bike-share. Without physical stations or docks, users pick-up and return bicycles virtually anywhere, where these locations can be numerous and many of which may not be the best locations to park bicycles. A mobile application allows users to make payment and to locate and unlock/lock bicycles. This system generally has lower capital and operating costs, but can negatively impact the public realm and add liability and risks to the City if poorly operated and managed.

Hybrid: This system can have a combination of station-based features and dockless technology. Similar to the dockless system, users can locate and unlock bicycles using a mobile application. However, instead of dropping off the bicycles anywhere, they have to be returned to bike stations or designated “zones” that are indicated by signage and pavement markings. These designated “zones” can also have hardware, such as public bike racks, where bicycles may be secured after use.

A more detailed review of these three types of bike-share systems can be found in Appendix 1.

## **Opportunities & Challenges of a Bike-sharing Program in Markham**

As previously described, a community bike share program could complement the City’s efforts to promote walking, cycling and transit use. However, it is crucial to consider some key challenges the City may face in delivering a successful bike-share program.

- Generally low volume of cycling trips: The number of commuter cyclists in Markham is very low compared to other modes of transportation such as driving and transit use. According to the 2011 Transportation Tomorrow Survey, about 5% of total trips made by Markham residents was carried out by either walking or cycling, and it only reached as high as 8% during morning commute. A similar finding was found in the “Greater Toronto Hamilton Area Bike Share Feasibility Study (2016)”, completed by the Toronto Parking Authority and Metrolinx. This study evaluates the cycling/bike share potential throughout the GTHA using 36 distinct indicators. Markham was given a low rating on its ridership potential (19 out of 100) and overall low (lowest) ranking on bike-share potential. However, with recent improvements and additions to the City cycling infrastructure, these results may no longer reflect current cyclist activity and need to be reassessed.

- Developing a well-connected active transportation network: There have been major improvements to Markham's cycling network in recent years. It is continuing to grow with the enhancement and construction of cycling infrastructure including bike lanes, multi-use pathways (MUP), cycle tracks and off-road trails (e.g. Highway 7 cycle-track, Rouge Valley Trail, MUP on Markham Road). In spite of these improvements, significant work remains to bridge the current cycling network gaps in order to implement a safe and well-connected active transportation network for all users.
- Dockless technology is still new: Dockless bike-share systems have only recently entered the European and US markets in 2017. A dockless bike-share system has only been recently implemented as pilot projects in a couple of Canadian cities (university campuses in the Cities of Kingston and Toronto). There are several concerns related to this new technology and its potential implications, such as: right-of-way obstruction, maintenance of bicycles, vandalism, and other operating technical issues. These issues and their prevalence have not been fully understood and documented in the Canadian context.
- Establishing a partnership with York Region: Many destinations in Markham where cycling is most conducive tend to be situated along York Region's arterial roads and major transit corridors. Therefore, a bike-sharing service in the City must necessarily include York Region as a major proponent and partner for it to be successful. There are advantages to developing a common and expandable platform for delivery of bike-share programs in Markham and across York Region including payment methods, user fees, safety standards, etc. There is also benefit to achieve uniformity across York Region to effectively brand and market a bike-share program.
- Concentrate Growth and Land Use Intensification: Bike share programs are most effective in central business districts where there is a high concentration of urban activities within a small geographic area. In recent years, Markham has identified and is directing growth to intensification areas such as Markham Centre and Cornell Centre. However, the large geography of the City and dispersed nature of employment, commercial and institutional opportunities in the City presents a significant challenge.

### **Proposed Bike-share Feasibility Study**

Increasing and enhancing cycling ridership is a key transportation policy in the City of Markham Official Plan. Introducing a bike-share program would assist in meeting this objective; however, an unsuccessful bike-share pilot program may have broader, negative implications in advancing a cycling culture in Markham. As such, it is critical that the City take the necessary steps to ensure that such a program is successful in achieving a desirable outcome.

Given the above discussion, staff has been in consultation with York Region to define an acceptable approach that would lead the City to a more successful outcome on bike-share.

Staff is recommending that the City partner with York Region to undertake a feasibility study to understand the potentials of a bike-share service in Markham. The proposed feasibility study includes the following three-step process:

Step 1: Provide a revised and refined estimate of the pattern of potential demand for bike-share ridership in Markham and across York Region. This would build upon the foundational work conducted by Metrolinx and Toronto Parking Authority in their recent study of a GTHA-wide bike-share demand analysis.

Step 2: Analyze the updated potential bike-share demand estimates produced in Step 1 to identify the most promising (or least risk) service areas. This step will also determine the best form and type of bike-share system that would best meet the needs of identified service areas across York Region and Markham, while providing a feasible and financially sustainable operation. Staff will report back to Council with the findings and recommendations.

Step 3: Pending the outcomes of Step 2 and Council's direction, develop a detailed implementation plan and proceed with a pilot bike-share program in Markham.

A project advisory committee (PAC) will be coordinated to oversee and provide guidance to this feasibility study. It will comprise of staff representatives from York Region, participating municipalities and other relevant agencies such as YRT, Metrolinx, Smart Commute.

Staff anticipates that Steps 1 and 2 can be completed in partnership with York Region in 2018 while Step 3 would be initiated by the City in early 2019 subject to budget approval. As such, the implementation plan with its budget, policy, operating & maintenance and financial implications will be brought to Council for approval in 2019.

### **FINANCIAL CONSIDERATIONS**

York Region staff has agreed to fund Steps 1 and 2 of the proposed bike-share feasibility study, with the City being responsible for Step 3.

As noted above, financial and other implications of Step 3 will be subject to Council approval of the 2019 Budget.

### **HUMAN RESOURCES CONSIDERATIONS**

Not Applicable

### **ALIGNMENT WITH STRATEGIC PRIORITIES:**

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**HUMAN RESOURCES CONSIDERATIONS**

Not Applicable

**ALIGNMENT WITH STRATEGIC PRIORITIES:**

The recommendations of this report align with the strategic focus for a Safe & Sustainable Community through the ongoing management of the City's transportation network and ensuring the reliability of City services. This recommendation is also consistent with the policies of the City Official Plan.

**BUSINESS UNITS CONSULTED AND AFFECTED:**

The Operations Department has reviewed this report.

**RECOMMENDED BY:**



Brian Lee, P.Eng.  
Director, Engineering



Biju Karumanchery  
Acting Commissioner, Development Services

**APPENDIX:**

1 – Types of Bike-Share System

# APPENDIX 1

## Types of Bike-Share System

	<b>Station-based (Docking) System</b>	<b>Station-less (Dockless) System</b>	<b>Hybrid System</b>
<b>Key elements</b>	<ul style="list-style-type: none"> <li>Physical stations located across the service area at about 300m spacing</li> <li>Users pick-up and return bikes at designated stations or docks</li> <li>Stations are usually located on public rights-of-way or public lands</li> </ul>	<ul style="list-style-type: none"> <li>Does not require physical stations</li> <li>Users pick-up and drop-off bikes anywhere on public or private properties as designated by the vendor</li> <li>A smart phone application is central to its use</li> </ul>	<ul style="list-style-type: none"> <li>Users pick-up and return bicycles at bike stations or designated “zones”</li> <li>Designated “zones” are usually signed or marked, located on public right-of-ways or public lands and consists of hardware (i.e. public bike racks) to secure bicycles</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>Users can check bicycle location and availability online or through a smart phone mobile application</li> <li>Payment at kiosk or through mobile application</li> <li>Bicycles can only lock/unlock at docking stations</li> </ul>	<ul style="list-style-type: none"> <li>Requires a smart phone application</li> <li>Users check bicycle availability and location using the mobile app</li> <li>Lock/unlock bicycle through an integrated bike lock feature</li> <li>Payment made via the smartphone app</li> </ul>	<ul style="list-style-type: none"> <li>Requires a smart phone application</li> <li>Users check bicycle availability and location using the mobile app</li> <li>Lock/unlock bicycle through an integrated bike lock feature</li> <li>Payment made via the smartphone app</li> </ul>
<b>Pros</b>	<ul style="list-style-type: none"> <li>Usually owned and operated by local government</li> <li>Operated within rules set by the local government</li> <li>Visibility of docking stations and bicycles help market the program</li> </ul>	<ul style="list-style-type: none"> <li>Operated by private sector, or through public-private partnership</li> <li>Private company to operate and administer the program</li> <li>Public subsidy generally not required to operate or maintain the program</li> <li>Requires minimal capital investment to start-up and generally lower user fees</li> </ul>	<ul style="list-style-type: none"> <li>Operated by private sector, or through public-private partnership</li> <li>Private company to operate and administer the program</li> <li>Public subsidy generally not required to operate or maintain the program</li> <li>Higher flexibility to expand program in the future</li> </ul>
<b>Cons</b>	<ul style="list-style-type: none"> <li>Higher capital and operating costs related to the needs for stations</li> <li>Usually requires some level of subsidy from the local government;</li> <li>Limits private sector competition</li> </ul>	<ul style="list-style-type: none"> <li>Misplacement of bicycle may cause obstruction of City’s right-of-way or public areas</li> <li>Public safety and public realm concerns with abandoned and damaged bikes</li> <li>May create negative impressions and perceptions of cycling safety and benefits</li> </ul>	<ul style="list-style-type: none"> <li>Requires minor public administration at start-up and operating cost to maintain these designated zones</li> </ul>
<b>Examples in practice</b>	<ul style="list-style-type: none"> <li>BikeShare Toronto - Toronto</li> <li>BIXI - Montreal</li> <li>Mobi - Vancouver</li> </ul>	<ul style="list-style-type: none"> <li>LimeBike – Seattle, Washington</li> <li>Spin – San Francisco, Washington</li> <li>Mobike – London, UK</li> <li>Ofo – UK, Singapore, Australia</li> </ul>	<ul style="list-style-type: none"> <li>DropBike – Kingston, Toronto</li> <li>Sobi - Hamilton</li> <li>Zagster (PACE technology) – Florida (to be launched in April 2018)</li> </ul>

### Station-based (Docked) System



Bikeshare – Toronto, Ontario



BIXI – Montreal, Quebec

### Station-less (Dockless) System



LimeBike – Seattle, USA



MoBike – London, England

### Hybrid System



DropBike – Kingston, Ontario



SoBi - Hamilton