

About the Pilot

Administration is collaborating with the University of Alberta, Alberta Transportation, Fairmont Hotels and the City of Edmonton to explore the testing of automated vehicle technology in Alberta. The University of Alberta will run the pilot and the City of Calgary will play a supporting role.

The University of Alberta (U of A) is looking to develop an autonomous vehicle test track at their campus and acquire one or more low speed autonomous shuttles. After testing has taken place at the U of A in Edmonton, the low speed autonomous vehicles are planned to be tested at different locations throughout Alberta including Calgary. Testing the vehicle in different locations will provide information on the suitability of the vehicles for different applications – for example: Fairmont Hotels is looking to see how the vehicle can be used to transport guests and staff around their resorts.

The Calgary component will involve a short term pilot of the low speed autonomous shuttle service between the Zoo LRT Station and TELUS Spark Science Centre to provide a “last mile” connection between the Zoo LRT station and the Science Centre. The Calgary portion of the trial is projected to occur in 2018, but the timing and duration of the Calgary pilot is ultimately dependent on the U of A’s schedule. The pilot is expected to last 2-4 weeks.

Reasons for participating in the low speed autonomous vehicle trial

- It provides an opportunity to try the technology hands-on to learn if it is suitable for future public transit projects for a low cost.
- It allows The City to understand how the technology functions in Calgary’s climate.
- It permits the public an opportunity to experience the technology and provide feedback. This feedback will help inform future planning for autonomous vehicles in Calgary.
- It has the potential to place Alberta as a leader in Canadian Autonomous Vehicle activities, which could generate future economic benefits.
- Other municipalities pilot projects have yielded positive results, with some cities choosing to install permanent systems.
- Working with both the Federal, Provincial governments, academic institutions and other municipalities on the pilot allows for collaborative research opportunities and shared project funding.
- The technology is already being used in some locations globally but the trial would be the first of its kind in Canada.

What is a Low Speed Autonomous Shuttle?

The Low Speed Autonomous Shuttle is a small driverless passenger vehicle that can fit around 10 people. The maximum speed of these vehicles is generally around 20 km/h, though most vehicles operate at around 12 km/h. An operator can be on board and stop the vehicle in case of an emergency. The vehicles generally travel along a pre-programmed route and are able to detect surrounding conditions in order to guide travel and avoid obstacles.



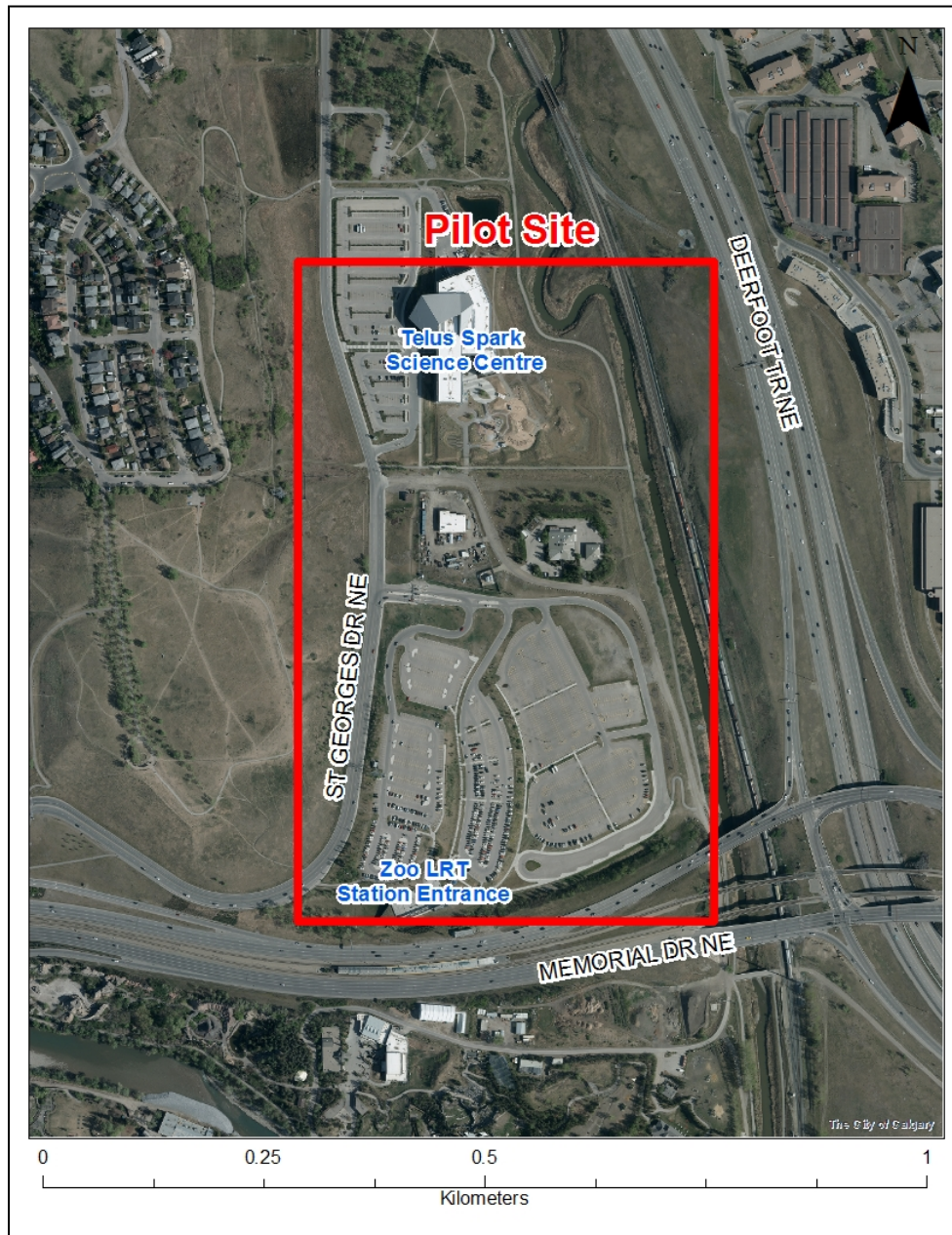
Examples of different models of autonomous shuttles: IBM powered Olli (top-left), EasyMile shuttles have been in use to the public in Singapore since 2015 (top-right), Navia shuttle in Switzerland (bottom left) and the EasyMile shuttle Paris, France (bottom-right).

Low speed autonomous vehicles have been trialed in municipalities across the United States, Australia, New Zealand, United Kingdom, Finland, Sweden, Germany, Russia, Japan, Italy, France, Greece, Norway, Switzerland, France, China, Saudi Arabia, Netherlands and Singapore. Canada has not yet conducted a low speed autonomous vehicle trial. This pilot would be the first test of a fully autonomous passenger vehicle in Canada on public roads.

Calgary Pilot – Zoo LRT Station / Telus Spark Science Centre

Following testing of the low speed autonomous vehicles at the University of Alberta, and if deemed safe, the vehicles would be brought to Calgary to test at the Zoo LRT / TELUS Spark Science Centre site. The concept for this project is to bring vehicles to this location to provide the public with a linkage between the Zoo LRT and TELUS Spark science centre, a distance of approximately 1 km one way.

The vehicle(s) will have a number of different routing options and will have to have physical separation from vehicles and pedestrians.



Reasons for running the trial on the Calgary Zoo LRT / Telus Spark Site

- The current 1 km walk from the Zoo LRT to the Science Centre involves walking through a parking lot, or walking along the sidewalk on St. Georges Drive; the autonomous shuttle will potentially provide a more attractive alternative to/from the Zoo LRT station. The low speed shuttle can provide a 'last mile' option that could provide an incentive for visitors to take transit to the Telus Spark Science Centre. The shuttle could also provide assistance for Calgary Zoo patrons who park a long distance away from the Zoo entrance.
- The Calgary Zoo and Telus Spark Science Centre are supportive of the trial.
- Driverless vehicles fit within the Science based theme of the Telus Spark Science Centre.
- The land is owned by The City.
- The added attraction provides a potential to boost visitations for The City's Civic Partners (The Calgary Zoo and Telus Spark Science Centre)
- It helps encourage transit use at Calgary's lowest ridership LRT Station.
- Little additional infrastructure is needed at the site and there are various routing options.
- The proposed service is supplemental, so if the technology is not found to be successful (and therefore not functioning well) it will not critically impact transportation in this area.

The City of Calgary's role in the Calgary Zoo LRT / Telus Spark Science Centre Site trial:

The U of A will be leading the pilot project and will obtain the vehicles for testing. Calgary is one of the locations where the U of A is hoping to test the low speed autonomous vehicle. Preliminary information suggests that The City should be able to cover the costs associated with the pilot within existing budgets.

The City of Calgary could be responsible for:

- Traffic Controls e.g. signage, cones, etc.
- Minor infrastructure requirements e.g. additional paving, barriers, etc.
- Legal and liability agreements.
- Policing (if deemed necessary).
- Vehicle costs – in relation to the duration of usage.

Low-Speed Autonomous Shuttle Project Summary

- Staffing e.g. staff to install traffic controls and minor infrastructure requirements, staff at the loading and unloading points.

Legal Status of Low Speed AVs in Calgary

City of Calgary Administration has been working with the Provincial and Federal governments to understand what is required to run an autonomous vehicle trial on public roadways. The City of Calgary Law Department recommends that the test location should be on a defined section of asphalt, separated by physical dividers so that other vehicle traffic and pedestrians are not crossing paths with the test vehicles.

The City would also have to apply for a permit under section 62 of the Traffic Safety Act. This would allow the vehicle to operate on public roadway – however, the vehicle would still have to be physically separated from other traffic and pedestrians.



Low speed autonomous vehicle trial on the Las Vegas Strip. The City of Calgary Law Department has connected with Risk Managers and Attorney's in California and Nevada to learn about their experience with licensing and insuring autonomous vehicles.

About the University of Alberta team leading the pilot:

The U of A's ACTIVE-AURORA group will be leading the pilot. The ACTIVE-AURORA group is run out of the U of A's Department of Civil Engineering's Centre for Smart Transportation and has successfully established a connected vehicle test bed in Edmonton. The ACTIVE –AURORA connected vehicle program was funded by the Federal, Provincial and Municipal Government (The City of Edmonton donated a bus to be retrofitted with connected vehicle technology). Marc Garneau, Canada's Minister of Transport, and Brian Mason, Alberta's Minister of Infrastructure and Transportation, have been outspoken supporters of ACTIVE –AURORA.

The U of A has endorsed the development of an autonomous test track for the ACTIVE-AURORA group at the U of A campus in Edmonton.



The ACTIVE-AURORA team established Canada's first connected vehicle testing site in Edmonton.

City of Edmonton:

City of Edmonton Administration presented the proposed low speed AV trial to their City Council on March 15th 2017. Edmonton City Council was supportive of the idea and directed "That Administration return to the June 7, 2017, Urban Planning Committee meeting with details of additional City of Edmonton resourcing required to support the Automated Vehicle Test Track and Pilot".

The City of Edmonton will likely have a more active role in the pilot as the University of Alberta test track is located in Edmonton.