



Hamilton

# INFORMATION REPORT

<b>TO:</b>	Chair and Members Public Works Committee
<b>COMMITTEE DATE:</b>	July 12, 2018
<b>SUBJECT/REPORT NO:</b>	Autonomous(Self Driving) Buses (PW18062) (City Wide) (Outstanding Business List Item)
<b>WARD(S) AFFECTED:</b>	City Wide
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<b>SIGNATURE:</b>	

## Council Direction:

At the March 19, 2018 Public Works Committee meeting, staff were directed to investigate the feasibility of using driverless/autonomous buses in the City of Hamilton and report back to Public Works Committee.

## Information:

An autonomous vehicle by definition (also known as a driverless car, self-driving car, robotic car) is a vehicle that is capable of sensing its environment and navigating without human input.

The technology has been used in rail vehicles operating in dedicated rights of way for some time, the technology is in its infancy and there are still many unknowns for use on "road vehicles." Based on the level of interest and investment in autonomous road vehicle technology, numerous industry sources estimate that highly automated vehicles will be commercialized and available for purchase within a decade's time, thus triggering Council's request for this review.

Staff conducted research on the use of autonomous vehicles (AVs) in the transit industry and determined that at this time there are too many unknowns to prepare a business case or a strategic plan with regards to AVs.

While a key argument for AVs is that their ability to monitor their environment surpasses what a human can detect, their ability to understand complex situations is currently lacking. Most of the vehicles presently being tested simply come to a halt when an obstacle comes before them, but in the example of a piece of light plastic waste that has blown onto the road, abruptly stopping could be significantly less safe than colliding with

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the obstacle. This limitation encroaches on a key unknown of how AVs will weigh factors in cost benefit analysis when a collision with one thing or another is unescapable. A uniform challenge for AV manufacturers has been managing inclement weather, with snowy conditions being particularly disruptive to performance. Should this barrier not be addressed, it would significantly limit the viability of AVs in Canadian climates. In a similar capacity, bright lights and reflective surfaces have been proven to be capable of disorienting an AV system, as demonstrated with a highly publicized crash of a Tesla vehicle on auto pilot that failed to identify a white truck in its path.

AV technology to date is associated with electrically powered vehicles. In its current state of development if AV technology was to be deployed on buses this would require charging stations at transit terminals. Electric bus technology has yet to reach a point where a full day's worth of revenue service could be achieved with a single charge. This requirement for recharging may result in increased operational cost and also additional run time/buses would need to offset the time required for charging.

On October 13, 2015, the Government of Ontario filed Reg. 306/15 under the Highway Traffic Act, permitting testing of AVs on select Ontario highways, provided applicants adhere to all specifications and restrictions set out. This came into effect January 1, 2016, and the first large scale applicants were approved in November of the same year.

There are numerous challenges to the adoption of AV technology for our conventional bus service. AV technology is still in its infancy but could be realized on public roads in many different ways. To this end, a committee will be formed with key staff from the appropriate departments to ensure that the City of Hamilton is prepared once AV technology has a conventional transit application. This committee will be tasked to monitor testing that is occurring in other municipalities, trends in their respective disciplines in AV technology, as well as developing a strategic plan for implementation. Regular updates from this Committee will be provided to Council.

**Appendices and Schedules Attached**

None