CITY OF HAMILTON

PUBLIC WORKS DEPARTMENT
Transportation, Energy & Facilities Division

TO: Chair and Members
Public Works Committee

WARD(S) AFFECTED: CITY WIDE

COMMITTEE DATE: June 6, 2011

SUBJECT/REPORT NO:
Articulated Buses Rear Door Safety Concerns (PW11044) - (City Wide)

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SIGNATURE:

RECOMMENDATION

(a) That the General Manager of Public Works be authorized to purchase a rear door camera system, and a contact-less acoustic sensing door system for the front and rear doors of the twenty-five 60-foot Articulated Buses in the Transit fleet at a capital cost not to exceed $200,000 to be funded from Provincial Gas Tax;

(b) That the General Manager of Public Works be authorized to Single Source purchase both the camera and door systems from:

Vapor Bus International (CLASS Door System) - $140,000
Dican Digital Instruments (Rear Door Camera System) - $60,000

EXECUTIVE SUMMARY

In mid-2010, a safety concern was brought forward from Operators regarding the inability of an Operator to have a clear line of sight when passengers were exiting the rear doors from a 60-foot articulated bus. This concern prompted a complete review. It was found to be possible that an Operator could accidentally close the doors on passengers while they were exiting the bus, and a further concern identified was the possibility of passengers not being clear of the rear of the bus and the Operator pulling away from the stop.
Upon completion of this review it was felt the most effective way to address this safety concern would be to install a rear door camera, and a contact-less acoustic sensing door system. The addition of these two systems were viewed to be the most effective way to allow the Operator to see passengers alighting from the bus, and to prevent the premature closing of the doors and potentially catching a customer between them before the sensitive edge system can re-open the doors.

As proof of concept, a 60-foot articulated bus was outfitted with these two systems in a pilot test. The findings were viewed by both Operation’s staff and members of the joint Health and Safety Committee. All concerned agreed that the installation of these two systems is a positive resolve to their concerns.

Alternatives for Consideration - See Page 4

**FINANCIAL / STAFFING / LEGAL IMPLICATIONS**

**Financial:**

The purchase and installation of these two systems has an estimated cost of $200,000. If Council gives direction, this cost could be funded from approved, but un-allocated Provincial Gas Tax. Provincial Gas Tax revenue has been fully allocated to the Operating budget, however, a portion has not yet been implemented. This funding can be re-directed on a "one-time" basis without impacting the approved operating program.

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<th>Provincial Gas Tax Reserve Summary (000's)</th>
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**Note:** Minimum balance required to fund operating commitments = $10,983,730

**Staffing:** There are no staffing implications.

**Legal:** There are no legal implications.

**HISTORICAL BACKGROUND**

There are several bus stops where it is difficult to pull the articulated bus completely parallel to the curb due to parked cars, street design, or other obstructions. This prevents the Operator from being able to see the rear most doors due to the angle of the rear portion of the bus. In this instance, the Operator cannot see passengers exiting...
the bus, or if a passenger who has exited the bus, is safely on the curb. There is the potential for the Operator to close the doors on a passenger exiting the bus.

If a passenger was to fall between the bus and the curb, there is the potential for the passenger to be run over by the rear wheels of the bus.

Also, when the bus is at capacity, it is difficult for the Operator to clearly see passengers exiting from the rear most doors, creating the potential for the Operator to close the doors on an exiting passenger.

In both of the above instances, there is risk of injury to a passenger.

**POLICY IMPLICATIONS**

Purchasing Negotiation Policy 11

The CLASS door system is only produced by Vapor Bus International and covered by multiple patents. All HSR buses are equipped with doors manufactured by Vapor Bus International making the integration of the CLASS system the safest and most cost effective way to ensure that passengers are not injured by having the doors close on them.

The Dican Digital Instruments rear door camera system is being recommended due to the time sensitive nature of this installation, and the potential risk for accident and injury to a passenger. Other camera systems researched are integrated with a DVR system, which in this application is not required and would add an unnecessary expense to this project.

**RELEVANT CONSULTATION**

Staff has had consultation with Transit’s Operations Section, the Operations Section’s Health and Safety Committee and ATU Local 107 Executive.

**ANALYSIS / RATIONALE FOR RECOMMENDATION**

This up-fit is a combination of two systems, a rear door camera and a contact-less acoustic sensing door system for the mid and rear doors.

The rear door camera system will have an external camera mounted above the rear doors inside and outside of the bus, and utilize a 7” LCD viewing screen in the driver's compartment. The use of this system will allow the Operator to have a clear view of the rear door area, as well as a view to, and beyond the curb. These cameras have a viewing range of between 30-50 feet, and a field of vision between 90 and 150 degrees and are equipped with infra red low light LED's for night use. This system will be configured to be on only when the rear doors are opened.

The contact-less acoustic sensing door system activates the door opening by having the passenger touch a strip of normal, lettered tape that is adhered to the doors, after the Operator has authorized the doors. The tape is placed on the doors to act as a target for
customers to touch. When a passenger touches the tape, they intersect a beam that is being generated by three devices located above the door, in the door header area. When the beam is intersected, the doors open. This is significant in the fact that the doors will not close on a passenger even if they are motionless in the doorway awaiting a friend or a child to disembark with, even if the Operator were to move the door handle to the closed position.

Staff is confident that installing these two systems will mitigate Operation’s staff health and safety concerns and further help to reduce our risk management claims costs.

Staff is recommending the installation of these two systems to alleviate Operation’s Health and Safety concerns. Staff is also confident this initiative will add to greater passenger safety, and believe the installation of these two systems will help in future cost avoidance of risk management settlements.

**ALTERNATIVES FOR CONSIDERATION**

Staff could be directed to leave these twenty-five articulated buses in operation, as designed.

In order to properly accommodate articulated bus operations on eight routes (#1, 10, 20, 25, 26, 27, 35 and 51), approximately 53% of the bus stops on these routes will require changes. The changes at a particular stop would consist of one or more of the following:

- at stops featuring boulevards of varying widths, extension of concrete landing pad by approximately five metres,
- where on-street parking is provided, removing from one to three parking meters,
- adjusting parking regulations to provide increased "no stopping anytime" distances upstream and/or downstream of the bus stop marker,
- minor shifting of bus stop marker positions to ensure centre and rear doors align with clear portions of boulevard/sidewalk,
- shifting of street furniture (transit shelters, benches, litter containers, vending boxes, mailboxes, bike posts, etc.) to ensure centre and rear doors align with clear portions of boulevard/sidewalk,
- when necessary, relocation of bus stop (i.e. from a nearside location to a far side location) to provide proper clearances at front, centre and rear doors.

The staff recommendation is that the camera and door system are the most cost and time effective alternative to provide a higher level of safety for passengers, and alleviate concerns of both the Joint Occupational Health and Safety Committee and Bus Operators.
**CORPORATE STRATEGIC PLAN**


**Skilled, Innovative & Respectful Organization**

- A skilled, adaptive and diverse workforce, i.e. more flexible staff
- More innovation, greater teamwork, better client focus
- An enabling work environment - respectful culture, well-being and safety, effective communication

**APPENDICES / SCHEDULES**

None