

TORONTO STAFF REPORT

September 1, 2005

To: Works Committee

From: Gary Welsh, General Manager, Transportation Services

Subject: Audible Pedestrian Signals - Noise Mitigation Efforts
(All Wards)

Purpose:

To respond to the Works Committee's request to report on the advantages, disadvantages and cost implications related to the implementation of alternative technologies to minimize or eliminate noise at Audible Pedestrian Signals (APS).

Financial Implications and Impact Statement:

The funds associated with the installation of APS are contained in the Transportation Services Division's Capital Works Program under Account CTP705-06, Audible Pedestrian Signals. In 2005, the approved budget was \$540,000.00.

Recommendation:

It is recommended that this report be received for information.

Background:

At its meeting on June 29, 2005, the Works Committee, in considering a May 24, 2005 communication from Councillor Howard Moscoe, requested the Acting General Manager, Transportation Services to report to the September 14, 2005, meeting of the Works Committee on:

- a) alternative technologies that may be applicable for Audible Pedestrian Signals (APS) that minimize or eliminate any "public noise"; and
- b) advantages and disadvantages of adopting these technologies in Toronto, including Capital and Operating cost implications.

Comments:

A. Audible Pedestrian Signals Program

There are approximately 105,000 clients registered with the Canadian National Institute for the Blind (CNIB) of which 11,000 are in the Toronto area. APS provide a service to blind and visually impaired persons who find it difficult to cross the roads at signalized intersections. APS provide users with information on when they have the right-of-way to cross the streets and in which directions they may cross the intersections. In Toronto, the APS tones are consistent with the Transportation Association of Canada's recommended practice. The tones emulate two different bird sounds: a "cuckoo" sound for the north-south walk direction and a "chirp-chirp" sound for the east-west walk direction.

The former Metropolitan Toronto Council, at its meeting on July 2 and 3, 1997, adopted an annual APS installation program which continues to this day.

The City of Toronto currently has 92 signalized intersections equipped with APS. City staff is working towards installing APS at approximately 10 additional signalized intersections this year. There is a backlog of 65 requests.

Requests for APS installations are prioritized by the City's APS Advisory Group comprising of City staff and representatives from the blind community (Canadian National Institute for the Blind (CNIB), National Federation of the Blind, access and advocacy groups, and mobility instructors).

The priority system is based on the following criteria:

- a) the number of blind or visually impaired pedestrians who cross at the signalized intersection;
- b) an evaluation of the relative importance of the location;
- c) an evaluation by local community groups, where relevant;
- d) an evaluation of the intersection geometry, traffic conditions, proximity of residences/businesses and signal phasing; and
- e) the date the request was submitted.

The City of Toronto is responsible for the testing, procurement, operational assessment, design, installation, activation and maintenance of APS.

B. Audible Pedestrian Signal Technologies

At some signalized intersections, the APS operates automatically. At actuated APS intersections, a pushbutton must be held for at least three seconds to activate the APS. If the pushbutton is not held down for at least three seconds, the APS tones will not be activated even though the walking person display appears.

There are three types of APS technologies available for providing information to the blind and visually impaired community:

- 1) Pedestrian Head-Mounted;
- 2) Pushbutton-Integrated; and
- 3) Transmitter and Receiver-based.

The City of Toronto currently utilizes Types 1 and 2. Both of these technologies are being used extensively in North America and internationally. The use of the Transmitter and Receiver-based system for intersection crossing is not being used in Canada. The main users of this system are in the United States (mainly San Francisco, California) and in Japan.

B.1. Pedestrian Head-Mounted and Pushbutton-Integrated Systems

The Pedestrian Head-Mounted system provides directional guidance to users by broadcasting the APS tones across the crosswalk. A speaker is mounted onto the pedestrian signal head display and emits a corresponding APS tone when the walking person display appears. The tones automatically adjust to ambient sound levels. The pushbutton must be held for at least three seconds to activate the APS at actuated APS locations.

The Pushbutton-integrated system also provides guidance to users by emitting APS tones at the pushbutton level. These APS devices also include a “locator tone” for assisting users in locating the pushbutton to activate the APS. Both the APS and locator tones automatically adjust to ambient sound levels. Like the Type 1 technology, the pushbutton must be held for at least three seconds to activate the APS at actuated APS locations.

Both of these systems require pushbuttons to be installed on poles positioned close to the crossing for actuated APS operations.

B.2. Transmitter and Receiver-based Systems

Transmitter and Receiver-based systems require users to carry a hand-held receiver to decode recorded messages transmitted by an infrared light beam. The infrared transmitter is usually mounted above or near the pedestrian signal head. This system requires the user to scan the intersection with a receiver to locate the transmitter. The transmitter will then provide information to the user through a speaker on the receiver.

The advantage of this system is that noise concerns generally associated with APS are essentially eliminated since only the user with a receiver obtains the information. This system also eliminates the need for pushbuttons to actuate the APS which can be costly when pedestrian poles are required to be installed. With APS pedestrian poles no longer required, there will be fewer obstacles at the intersection.

The disadvantage of this type of system is that it only benefits users carrying the receivers. It requires a user to obtain, carry, use and possibly maintain the receivers. This raises issues of distribution and maintenance, as well as concerns relating to availability to non-residents.

The City of Toronto has discussed this system with CNIB. The CNIB has concerns with the use of this technology and would like it to be used as a supplement to our existing APS systems rather than as an alternative.

C. Noise Mitigation Efforts

The City currently addresses noise concerns relating to APS by:

- 1) installing pushbutton actuated APS;
- 2) installing APS equipment with automatic volume adjustments; and
- 3) evaluating APS sounds levels at all existing APS locations, on installation and also in response to public concerns.

C.1. Actuated APS

In order for blind, visually impaired or deaf-blind pedestrians to find the pushbutton, a continuous tone, called a “locator tone”, is emitted from the pushbutton-integrated APS devices. Some municipalities in North America restrict the use of the “locator tone” and/or deactivate the use of APS at specific times (e.g. evening to overnight period) to mitigate noise complaints. The CNIB’s recommended operating conditions states that the APS should be available whenever the visual pedestrian signals are in operation. Therefore, the City of Toronto does not deactivate APS at specific times except for construction, emergency or maintenance situations.

To minimize noise pollution when the APS is not required, the APS sounds are only provided when a pedestrian holds onto the pushbutton for at least three seconds. When the APS device is actuated, the pushbutton may vibrate and a “cuckoo” or “chirp-chirp” sound is emitted from the pedestrian head-mounted speaker or pushbutton-integrated APS device to advise pedestrians that they have the right-of-way to cross.

For locations with high pedestrian activity, it is not ideal to have pedestrians who are blind or visually impaired to locate a pushbutton to actuate the APS. Therefore, there are locations in the downtown core where APS comes on automatically during all times of the day.

C.2. Automatic Volume Adjustment Feature

The APS and locator tones automatically adjust to the ambient sound levels. Therefore, during peak traffic conditions, they may sound louder; overnight they drop to their lowest volume level. Occasionally, a pushbutton may become “stuck” which may cause the “cuckoo” and/or “chirp-chirp” sounds to come on every cycle. The City of Toronto currently monitors and repairs “stuck” pushbuttons. The repair of these buttons is considered a high priority and must be attended to by the City’s maintenance contractor within 90 minutes.

C.3. Volume Evaluation at Existing APS Locations

The City of Toronto is currently evaluating all existing APS installations to determine if adjustments to the APS and locator tone levels are necessary. Where appropriate, the City is converting existing non-actuated APS locations to actuated APS operations. In response to noise concerns at specific APS locations, City staff visits the intersections to investigate and determine whether adjustments to the sound levels are appropriate.

Conclusions:

The City continues to work with equipment suppliers and local organizations which represent the blind and visually impaired community to find better products that can serve the needs of the blind and visually impaired without impacting others unreasonably.

Concerns about noise levels are being addressed by installing actuated APS operations, using APS equipment that automatically adjusts to ambient sound levels and evaluating sound levels at existing APS locations.

In consultation with the CNIB, the City will determine the feasibility of a pilot project for implementing a Transmitter and Receiver-based APS system. CNIB currently sees the use of this type of system as a supplement to our existing system, rather than as an alternative. The City will report on the costs and logistics of this pilot project at a later date.

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