

# IE6.8 Attachment 3

## Attachment 3 – Solid Waste Management Review of Large Vehicle Safety Technologies

This attachment provides a summary of various technologies applicable to large vehicles. These features are intended to improve road safety, particular for vulnerable road users, by taking preventative actions to mitigate incidents and eliminate fatalities and serious injuries.

### 1. Truck Side Guards

Truck side guards are designed to keep pedestrians, cyclists, and motorcyclists from being swept under a large vehicle's rear wheels and run over in a side-impact incident, thereby mitigating the impact and severity of underride incidents. The mechanism, typically made of steel or fiberglass panels, is attached to the bottom sides of vehicles in order to enclose the area.

The European Union, Japan and other jurisdictions worldwide have mandated the installation of side guards on heavy vehicles as early as the 1980's. According to the John A. Volpe National Transportation Systems Center (Volpe Center), established by The U.S. Department of Transportation (U.S. DOT), studies conducted in the United Kingdom, Australia, Sweden, and the Netherlands, show side guards are an effective technology for reducing the number of vulnerable road user fatalities and the severity of injuries, especially for cyclists. The Volpe Center has developed a generally accepted "Volpe Standard" for side guard panels, adopted by most North American Cities as part of their respective Vision Zero Plans. Solid Waste Management Services intends to follow the example of cities such as Chicago and New York City, and equip its fleet with the appropriate form of side guards, where possible.

### 2. Video-Based Telematics

Video telematics is an umbrella term that describes various video-based and data safety enhancements. This includes, vehicle location systems, cameras aimed outwards for easier driver maneuverability, and driving based data, such as speeding or hard breaking incidents. In general, telematics systems have the ability to gather data and transmit this data to cloud-based software platforms. This data can then be used to improve operational procedures by keeping drivers and road users safe, lead to targeted coaching training opportunities, and enable the Division to manage resources more effectively.

Solid Waste Management Services already employs a certain degree of telematics that include Global Positioning Systems (GPS) and vehicle Electronic Control Module (ECM) to provide information on vehicle location and utilization, such as speed, harsh braking, and distance travelled. The Division is looking to expand video-based telematics to its entire fleet by implementing external 360-degree camera systems, uploading and storing all data in the cloud, and the development of driver history profiles for better coaching and training. Each of the upgraded telematics solutions are described below.

#### a. 360-Degree Camera Systems

It is estimated that human error is a contributing factor in approximately 90 percent of traffic-related collisions. Collection vehicle drivers in particular, face a tough task of navigating extremely large and heavy vehicles in high traffic areas, with numerous blind spots, limited visibility and tight residential streets. Using external video-based telematics, drivers will be better able to maneuver their vehicles by eliminating blind spots and in general providing greater visibility around the vehicle.

In addition, 360-degree camera systems provide the opportunity to record video before and after an incident has occurred. When a triggered event occurs, such as a hard-breaking procedure, or the recognition of an accident, video-based telematics can store the seconds leading up to the incident and those thereafter to help identify whether the event in question occurred due to a sudden road obstruction, an emergency maneuver or potentially from the result of distracted driving. This provides an objective representation of an incident, or near incident, by providing a view/recording of the area surrounding the vehicle. The collected data can be used to make informed decisions to increase the safety of drivers and other road users, and to improve service delivery and accountability. These systems have also been used to reduce or eliminate fraudulent claims by providing video-based evidence of proper driving behaviour.

#### **b. Cloud-Based Storage of Data**

Currently, Solid Waste vehicles that include external video recording capability, have video recordings stored on a hard drive (SD Card) that is located in the vehicle. This presents a challenge for the Division as SD cards have limited capacities, can be tampered with and do not provide notifications if there is a recording/hardware failure. As such, using SD cards for video recordings are not reliable. Implementing a cloud-based solution will give the Division a level of agility to ensure remote access to data, scalability to implement the solution across all fleet vehicles, and increased security and the protection of recordings.

### **5. Incident History, Preventative Safety In-Cab Coaching and Training**

The data being collected by the telematics solution will also be used as an in-cab coaching and training tool to further develop safer driving habits. In an effort to reduce incidents and eliminate fatalities and serious injuries, preventative safety in-cab coaching and training will be developed from vehicle operations based upon a driver incident. This allows for the Division to focus on fostering safer driving habits of each driver, by tailoring programs and customizing in-cab coaching and training tools. Anomalies in behaviours can be addressed in a timelier manner because the system allows for the detection of unsafe practices of each driver in real-time.