

# SAFE FLEET TRANSITION: NYC FLEET TECHNOLOGY CASE STUDIES

## 1) Backup Cameras

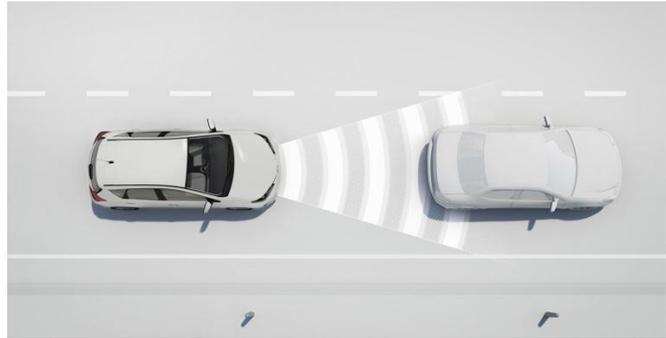


NHTSA announced a new regulation in 2014 to address the problem of vehicles striking pedestrians, other vehicles, or objects due to reduced visibility while moving in reverse. All new light-duty vehicles sold in the United States must have a backup camera by 2018. This law will apply to cars, SUVs, and vans under 10,000 lbs. GVW.

In a survey of over 10,000 City drivers, backup cameras are the most requested safety improvement of all, with over 60% of respondents asking for backup cameras to be installed on vehicles they operate. The backup camera law will address light duty vehicles, but NYC Fleet has begun through Vision Zero safety projects on larger vehicle types including DCAS box trucks for freight delivery and NYPD tow trucks. NYPD is conducting the largest truck retrofit so far on 120 tow trucks. These units must hitch other vehicles through moving in reverse during tows, often in tight spaces such as active roadways and tow pounds with moving and non-moving objects in the surrounding areas.

Operators of all vehicle types, from sedans and SUVs to box trucks or tow trucks have given fleet managers highly positive reviews of backup cameras which will be a key part of our Safe Fleet Transition Plan.

## 2) Automatic Braking Systems



For model year 2017, NYC Fleet has begun ordering its first new light duty vehicles with automatic braking functions pre-installed. Example vehicles include the Toyota RAV4 hybrid and Chevrolet Bolt all-electric. These vehicles use sensors to detect objects in front of the vehicle, calculate if the vehicle is in danger of striking the object at the current rate of speed, warn the driver on the display and with vibrations, and finally automatically apply the brakes if the operator does not do so. Automatic braking systems are voluntarily being installed by auto manufacturers on nearly all light duty vehicles by 2022.

According to collision statistics compiled by DCAS and NYC's 50 fleet agencies, rear end collisions have been the leading cause of traffic injuries for three years running. Sideswiping vehicles is second. Both types of collisions would be addressed by automatic braking technology. Automatic braking is a way to compensate for driver error or fast changing circumstances. Our Safe Fleet Transition Plan (SFTP) will require automatic braking where generally available. NYC Fleet will also pursue pilots to expand this technology to trucking.

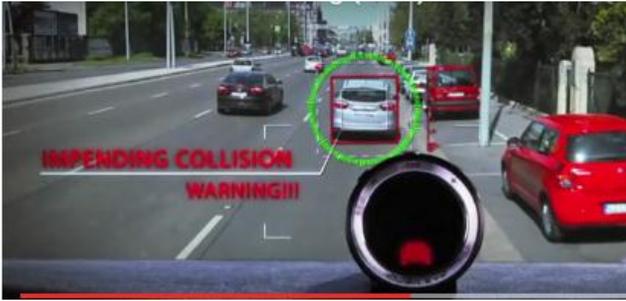
### 3) Dashboard Cameras



Several companies manufacture cameras that record video of the surroundings of a vehicle while in motion or stopped, including the dashboard mounted version to record what is happening in front of the vehicle, known as “dash cams.” Dash cams begin recording at various pre-set triggers, such as a certain speed, harsh braking, or when the operator chooses to turn on the recording. These recordings are especially useful to reconstruct collisions or dangerous conditions. Dash cams include a timestamp as well.

NYC Taxi & Limousine Commission (TLC) is piloting dash cams on its enforcement vehicle fleet, which monitors the activities of TLC regulated vehicles. In several instances where TLC vehicles have been in collisions, the agency has uploaded video of the events into the NYC CRASH collision management system that helped prove the circumstances of the events. Video evidence is acceptable for court cases and insurance claims involving City vehicles and drivers. Videos can also be used for driver safety training purposes.

#### 4) Driver Alert Systems



Driver alert systems aim to help the driver address traffic conditions as they happen. These units include Advanced Driver Assist Systems (ADAS), lane departure warning systems, pedestrian detection, or collision avoidance systems. One of the companies involved in this area is Mobileye. NYC Fleet introduced Mobileye units on 10 vehicles at five agencies to test the efficacy of the devices, which warn operators with vibrations or visual and sound cues if the vehicle is in danger of striking a vehicle, pedestrian, bicyclist, or other object in front of or to the side of the vehicle.

Mobileye uses camera recognition and image processing technology to determine whether objects outside the vehicle are a risk factor based on the vehicle's speed and other performance indicators. NYC Fleet has worked with US DOT Volpe to assess the effectiveness of this initial program.

## 5) Truck Side Guards

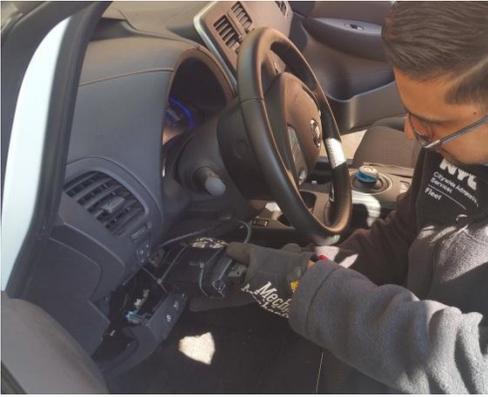


In May of 2014 DCAS partnered with the US DOT Volpe Center to study the potential benefits of using truck side guards on City vehicles. DCAS and Volpe published the report and technical specifications in December 2014 and the City announced an initial roll-out of 240 units or 5% of the City fleet in February 2015. On May 6, 2015 Mayor de Blasio signed a law mandating side guards on City trucks and commercial waste hauling units operating in NYC.

Since then, the fleet of trucks with side guards has steadily grown. As of March 2017, NYC Fleet has 727 trucks outfitted, including 63 new DSNY trucks that arrived in 2017 already outfitted. All new eligible trucks above 10,000 lbs. GVW will be received with side guards with specifications mandated through all City vehicle purchasing contracts. Meanwhile, the retrofit program will also continue, and we expect to have over 1,500 trucks outfitted by the end of 2017 between retrofits and new trucks. This is the largest side-guard program in North America.

Side guards can save the lives of pedestrians and bicyclists, while also making trucks more aerodynamic and fuel efficient. NYC Fleet has encouraged private fleets including Coca-Cola, FreshDirect, Action Carting, and others to install side guards on their fleet units. NYC DOT and BIC are also involved in a financial incentive program for private waste management fleets to adopt side guards.

## 6) Speed Tracking



A majority of on-road vehicles in the NYC Fleet are now equipped with fleet telematics. Telematics systems are used for monitoring vehicles from any location. By combining a GPS system with on-board diagnostics fleets can centrally record and map exactly where a vehicle went, where it stopped, and speed of travel. Telematics also record information on hard braking, hard acceleration, and seatbelt use. All of this data is captured over cellular networks and can be viewed from office computers or mobile devices. An example fleet telematics provider is Verizon NetworkFleet. NYC Fleet is currently using over 400 real time tracking devices with Verizon.

Indicators of unsafe driving behavior are important for agency fleet managers to share with drivers for guide training and improve safety. Additionally, research indicates that drivers make an effort to drive more safely when they are aware that their trips are being automatically recorded and communicated. Telematics also allows fleet managers to identify trends by department, agency, or citywide fleet levels to gauge driving performance and improvement.

NYC Fleet has combined telematics indicators with collision management system (CRASH) data and violations data from the Department of Finance into a monthly Safety Index Report (SIR) for every fleet owning agency. The SIR presents agency leadership with a breakdown of every vehicle and all of its reporting for review and follow-up.

## 7) **Bullet Resistant Windows and Doors**



NYPD Fleet Services is launching an innovative safety program to outfit patrol vehicles with bullet resistant glass windows and doors. Mayor de Blasio and Police Commissioner James P. O'Neill announced in January 2017 that bullet resistant windows and doors would be installed on all 3,800 patrol units to help protect officers citywide by 2018. NYPD Fleet Services has led the effort to evaluate available technologies and balance protection with cost, ease of installation, access, and other factors. The new bullet resistant glass can be installed in approximately 30 minutes, reused if vehicles are replaced, and maintains the ability of officers to see their surroundings and interact with the public while seated in the cars.

Ballistic testing to date has been promising, and the pilot of the doors on the street since 2016 has been successful. NYPD is the nation's largest municipal police force, and this safety innovation will be a national model.