

Division 9 Accident Reduction Efforts

**San Gabriel Valley Service Council Meeting
November 14, 2011**



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Bus Accidents

- Each year, Metro budgets millions of dollars to pay for the property damage, lost wages, and other costs associated with bus accidents
- Accidents are divided up into the two main categories:
 - Vehicle Collisions
 - Passenger Incidents
- Accidents are further divided up into sub-categories



Bus Accidents

- **When a bus accident occurs, the bus operator is required to report it immediately to the Bus Operations Control Center**
- **A supervisor, law enforcement, and/or medical assistance may be dispatched to the scene**
- **The bus operator is required to submit a written accident report at the end of their daily assignment**



Accident Investigation

- **Operating Division staff is required to investigate each accident and determine avoidability (not fault)**
- **All accidents are taken to an Accident Review Board (ARB) for a final determination**
- **The three-member ARB reviews the facts and can ask the bus operator questions pertaining to the accident**



Accident Investigation

- **Evidence to be considered can include:**
 - accident scene photographs
 - video
 - witness statements
 - police reports
 - operator's statement
- **ARB decisions can be appealed to a Second Level Hearing Officer**





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Bus Accident Detail and Trend Report for September 2011

Bus Accident Summary

Bus Operating Divisions	1	2	3	5	6	7	8	9	10	15	18	System
Traffic Accidents												
Traffic Accidents	10	30	20	20	5	42	27	14	31	23	32	254
Traffic Accidents per 100k Hub Miles	1.49	5.50	3.22	3.76	10.04	6.12	4.03	1.55	4.23	2.66	3.43	3.52
Passenger Accidents												
Passenger Accidents	14	10	5	14	0	9	16	17	24	25	17	151
Passenger Accidents per 100k Boardings	0.47	0.37	0.20	0.41	0.00	0.29	0.73	0.66	0.78	0.82	0.47	0.51



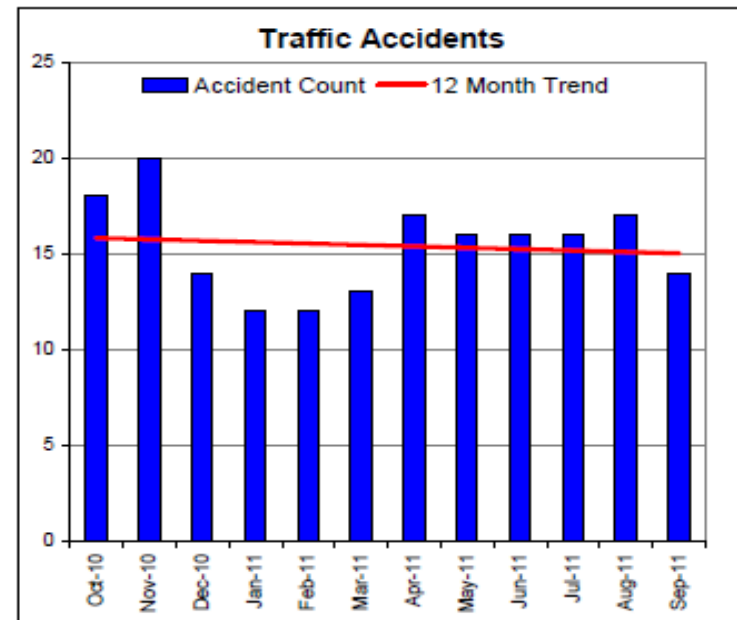
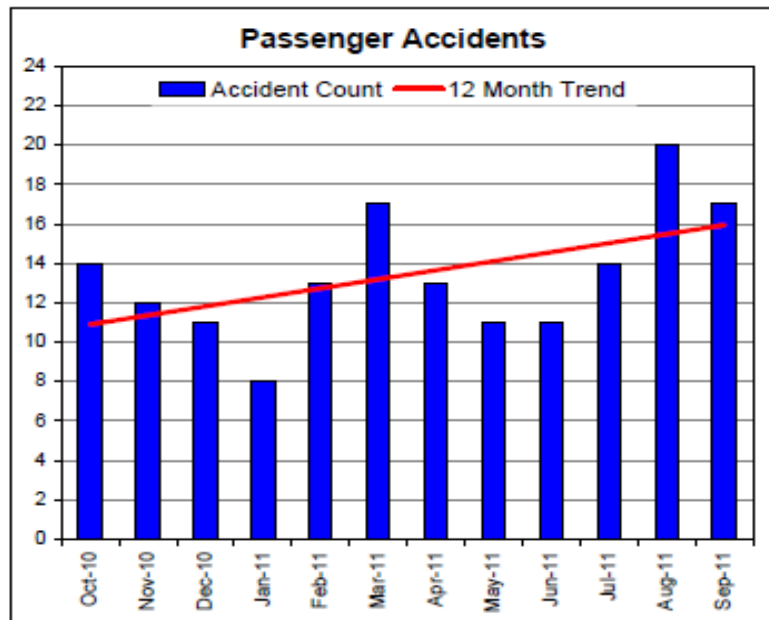
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Accident Trend at Division 9

Accident Count and Trend

Division 3209
Accident Count

Accident Type	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
Passenger	14	12	11	8	13	17	13	11	11	14	20	17
Traffic	18	20	14	12	12	13	17	16	16	16	17	14



Division 3209



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Common Accident Types

- **Top four accident types in last 12 months:**
 - **Passenger fell while boarding (53)**
 - **Miscellaneous on-board accidents (23)**
 - **Collision with fixed object (22)**
 - **Passenger fell while bus was stopping (21)**



Division 9 Accident Reduction Efforts

- **Training**
- **Accident Review Board**
- **Operator Feedback**
- **Smart Drive**
- **Special Projects**

Training

- **Minimum 8 hours training per year per operator**
- **Line Rides conducted by instructors after every avoidable accident; many other line rides done independent of accidents**
- **413 lines rides conducted in last 12 months**
- **Post Accident Training at OCI**



Accident Review Board

- **Meets weekly to look at all accidents, from serious to minor**
- **Members include Assistant Manager, Instructor, and Line Instructor (bus operator peer)**
- **All members have been trained on Accident Investigation**



Operator Feedback

- **Forms to report hazards and unsafe conditions (potholes, overhanging trees, dangerous intersections, etc.)**
- **Rap Sessions to discuss items of concern**
- **Safety TV to relay important messages to operators**
- **Suggestions to improve safety**



Smart Drive

The SmartRecorder System is an innovative event recording system, capturing comprehensive vehicle data from triggered events. The SmartRecorder is triggered by an advanced process including a multi-axis accelerometer that measures sudden movements such as swerving and sudden braking and a speed sensor that determines when a driver exceeds a safe speed. Captured data includes 15 seconds of video footage before the triggered event and 15 seconds after the trigger, both inside the cab and front-of-vehicle, as well as audio, location, speed and more.



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Smart Drive Usage

- **Video is wirelessly downloaded from buses daily**
- **Reviewed offsite by Smart Drive**
- **Only certain incidents are returned to Metro for use: electronic device usage, railroad crossing violations, accidents, and manual recordings**
- **Forward/rearward view, speed of bus, location, time, date**



Smart Drive Example

The screenshot displays the SmartDrive Event Explorer interface within a Windows Internet Explorer browser. The browser's address bar shows the URL <https://secure.smartdrive.net/BrowseEvents/CoachEvents>. The interface includes a navigation menu on the left with options like 'EVENT PROPERTIES', 'EVENT LIST', and 'REVIEW'. The main area features two video feeds: an external street view and an internal bus view. A status bar at the bottom of the video feeds shows 'SPEED: 6 mph (sourced from ECU)', 'FORWARD / BACKWARD: -0.01', and 'SIDE TO SIDE: 0.03'. A timeline at the bottom indicates the event occurred at 4:21:48.00 PM. The left sidebar also lists event details such as 'Captured Passenger Incident' and 'NO ACCIDENT REPORT ON FILE - HAP'.

Smart Drive Example

The screenshot displays the SmartDrive Event Explorer interface within a Windows Internet Explorer browser window. The browser's address bar shows the URL <https://secure.smartdrive.net/BrowseEvents/CoachEvents>. The interface features a top navigation bar with the SmartDrive logo, event details (EVENT: HNAH-6MYRH, Oct 17, 2011), driver information (DRIVER: [redacted]), and a status indicator (Coaching Completed). A left sidebar contains navigation options: EVENT PROPERTIES, EVENT LIST, REVIEW (highlighted), SEVERITY SCORE 0, and REVIEWED Oct 18, 2011. Below these are incident details: a 'Braking' event at 4:21:49.00 PM and a 'Captured Passenger Incident'.

The main content area is split into two video feeds. The left feed shows an external view of a bus at an intersection. The right feed shows an internal view of the bus cabin with passengers and the driver. Below the video feeds, a data bar displays 'SPEED: Low Speed (sourced from ECU)', 'FORWARD / BACKWARD: -0.05', and 'SIDE TO SIDE: 0.01'. A video player interface at the bottom includes a progress bar, a timestamp of 4:21:49.00 PM, and playback controls (play, stop, previous, next, volume).

Event Description: NO ACCIDENT REPORT ON FILE - HAP

Smart Drive Example

The screenshot displays the SmartDrive Event Explorer interface within a Windows Internet Explorer browser window. The browser's address bar shows the URL <https://secure.smartdrive.net/BrowseEvents/CoachEvents>. The interface includes a navigation menu on the left with options like 'EVENT PROPERTIES', 'EVENT LIST', and 'REVIEW'. The main content area features two video feeds: a front-facing view of a bus on a road and an interior view of the bus showing passengers and the driver. A 'Coaching Completed' status is visible in the top right. Below the videos, a speed indicator shows 'Low Speed (sourced from ECU)' and a timeline with a playhead at 4:21:49.50 PM. Playback controls and a volume slider are located at the bottom of the video player.

SMARTDRIVE EVENT HNAH-6MYRH Oct 17, 2011 DRIVER [REDACTED] Coaching Completed

EVENT PROPERTIES
EVENT LIST
REVIEW
SEVERITY SCORE 0
REVIEWED Oct 18, 2011
4:21:49.00 PM
Braking SmartDrive
Captured Passenger Incident SmartDrive

Event Description
NO ACCIDENT REPORT ON FILE - HAP

SPEED: Low Speed (sourced from ECU) FORWARD / BACKWARD: -0.09 SIDE TO SIDE: 0.02

4:21:49.50 PM

Smart Drive Example

The screenshot displays the SmartDrive Event Explorer interface within a Windows Internet Explorer browser. The browser's address bar shows the URL <https://secure.smartdrive.net/BrowseEvents/CoachEvents>. The interface features a top navigation bar with the SmartDrive logo, event details (EVENT: HNAH-6MYRH Oct 17, 2011), driver information (DRIVER: [redacted]), and a status indicator (Coaching Completed). A left sidebar contains navigation options: EVENT PROPERTIES, EVENT LIST, REVIEW (highlighted), SEVERITY SCORE 0, and REVIEWED Oct 18, 2011. Below these are incident details: 4:21:49.00 PM, Braking SmartDrive, and Captured Passenger Incident SmartDrive. The main area is a video player with two views: an external street view and an internal bus view. The bus view shows a driver and passengers. A progress bar at the bottom indicates the current time is 4:21:50.00 PM. Playback controls include a volume slider, a 1x speed button, and navigation arrows. The bottom status bar shows SPEED: Low Speed (sourced from ECU), FORWARD / BACKWARD: -0.26, and SIDE TO SIDE: 0.01.

Special Projects

- **Efforts to reduce on-board falls**
- **Effort to reduce rear-door incidents**
- **Focus on El Monte Station Construction**
- **Sunvisor project**

Project to Reduce On-board Falls



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Metro Bus Safety Check List

請將本清單貼在您的冰箱或報告板上。當您與家人討論或練習每一個安全行為時，請在圖圈內打勾。謝謝您時刻注意安全。

等候上巴士時

- 在行人路上等候時，至少要遠離路邊 3 尺。
- 不要在近巴士玩耍；互相推擠可能導致事故。
- 全心留意巴士。
- 不要行近巴士直至巴士停定時。
- 不要從後面或從旁追上巴士。
- 不要從路邊跳上巴士的梯級。
- 上車時請用扶手。
- 如用單車架時，請與車長聯絡。

在巴士上時

- 利用扶手行到座位上安然坐好。
- 當起立時，站在黃線之後，請勿站在樓梯上。
- 不要將身體放出巴士之外。

離開巴士時

- 當要落車時，請早些準備。
- 請在後梯級落車。
- 落車時，請用扶手。
- 不要由梯級跳落路邊。
- 在下雨和晚上時，要特別小心梯級濕滑。
- 落車後，要遠離巴士，不要立刻行過馬路。
- 如果掉了東西，等巴士開走之後再撿。

交通安全

- 在過馬路時，要先停下，看清楚，聽清楚才可。
- 在過馬路時，要用行人指定過馬路斑馬線或區域才可。
- 無論是行走還是騎車，都要遵守所有交通燈號，安全才可行過馬路。
- 騎單車時一定要帶頭盔，不要巴士旁邊在騎單車。
- 要小心附近來往車輛。



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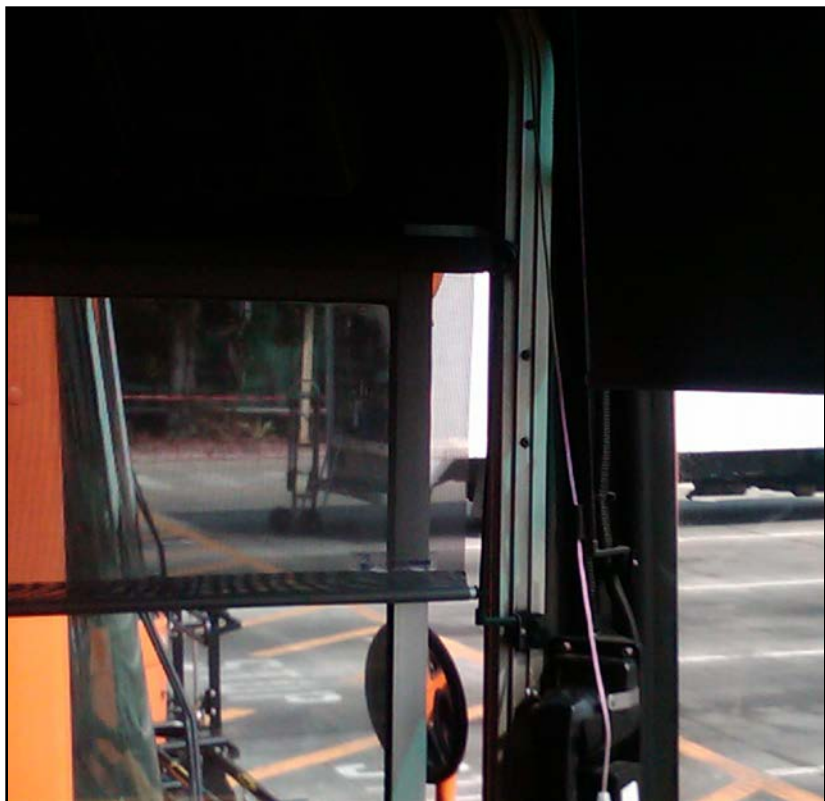
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Communications to Raise Pedestrian Awareness at El Monte Station During Construction



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Project to Reduce Sun Glare/Heat on Operators



Project to Reduce Rear Door Accidents

