Toward Zero Deaths
A National Strategy on Highway Safety

Stakeholder Webinar
SAFER VEHICLES

June 21, 2010

Welcome

- Webinar Hosts:
  - Ian Grossman, AAMVA
  - Barbara Harsha, GHSA
  - Steve Keppler, CVSA
  - Ron Knipling, Ph.D.

Housekeeping

- Webinar is closed captioned and being recorded
- Your phone line is on mute, to make a comment:

1. Press *1 on your phone
   - Record your name and who you represent
   - You will be placed in queue to speak
   - Make your comment after you are announced
   - Please limit your comment to 2 minutes or less
2. Use "Chat" to type in your comments

Purpose of Webinars

- Gather stakeholder input on specific topics
  - Current programs
  - Current challenges
  - Opportunities for overcoming challenges
  - Promising strategies
- Gather stakeholder ideas on implementation strategies
  - National strategy as a whole
  - Topic specific

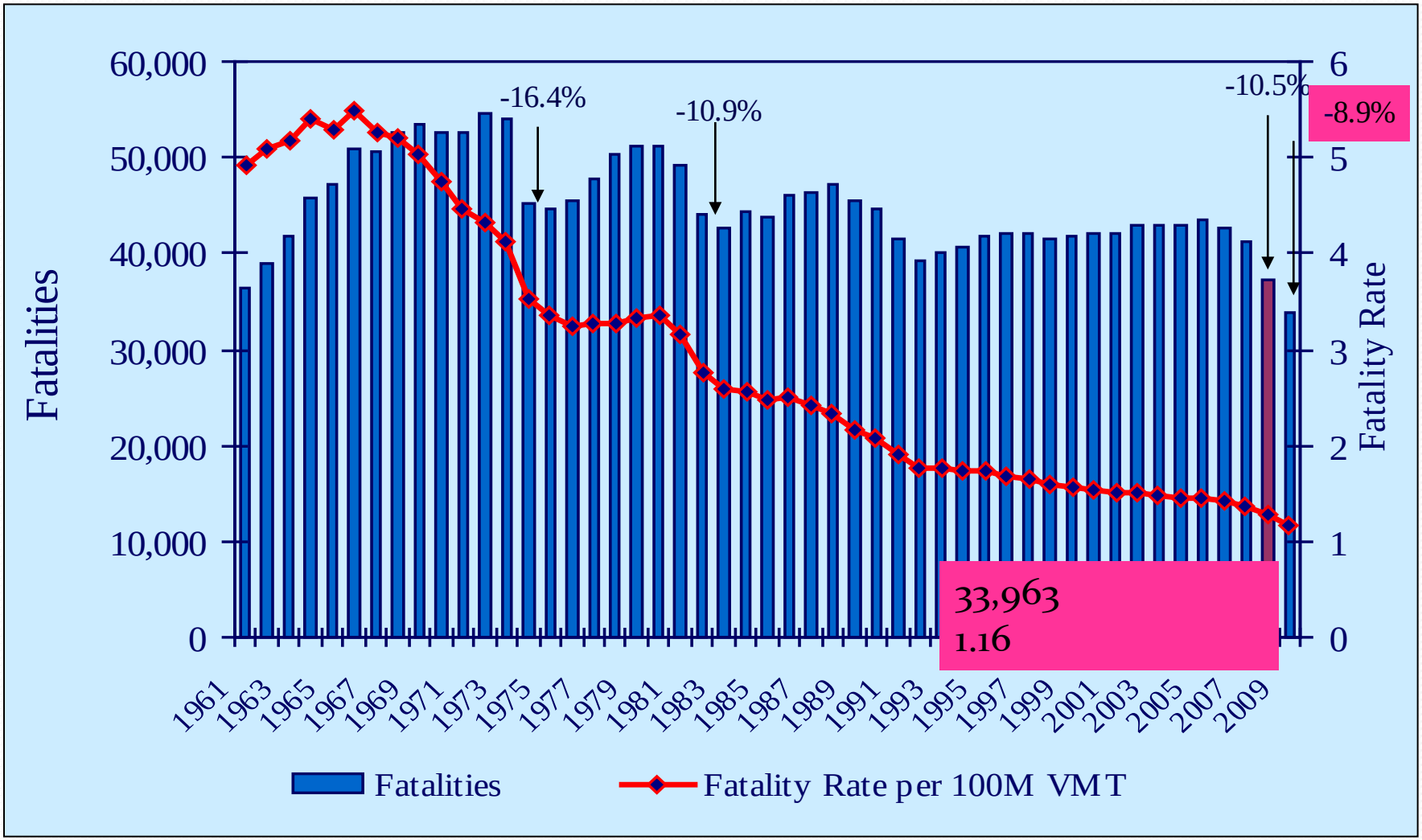
Overview of Today's Discussion

- Background on National Strategy
- Vehicle Issues
  - Current Challenges and Initiatives
- Open Discussion

Background

- Progress Has Been Made in Improving Highway Safety…
  - Lowest fatality levels in 50 years
  - Safety partnerships have been strengthened
  - Greater leadership focus on safety
- …But We Still Face Significant Challenges
  - 33,963 fatalities in 2009
  - Legislative and other barriers to implementing proven strategies

Fatalities and Fatality Rate, by Year



Why Now?

- New Political Leadership
- Reauthorization
- Uncertain Trend for the Future
- Better Use of Limited Resources
- Build on Our Success

National Strategy

- Build on Existing Foundation of Proven Strategies, Relationships, and Leadership
- Cultural Change: Change Americans' Attitudes Toward Highway Safety
- Involvement from Wide Variety of Highway Safety Stakeholders
- "Owned" by All Stakeholders

Two Key Products

- National Safety Plan and Outreach Program
  - A data-driven plan that includes key emphasis areas, projection of future needs, promising countermeasures, and expected improvements
  - Goal: adoption by safety stakeholder organizations in 2011
- Implementation Process
  - Strategies for developing strong leadership and champions
  - Support from and for organizations that directly impact highway safety
  - A program for changing highway safety culture in the United States

Key Areas

- Safer Drivers
- Safer Vehicles
- Safer Vulnerable Users
- Safer Infrastructure
- Emergency Medical Services
- Data Systems and Analysis Tools
- Safety Culture

Development Process

- Initial Outline and Work Plan
  - Initial stakeholder meeting (September 2009)
  - Assemble stakeholder group
  - Gather input from stakeholders
    - Webinars, conferences and meetings
  - Develop white papers
  - Develop outline and work plan
  - Stakeholder workshop - webcast
- Phase 2: Develop Strategy (Spring 2011)
- Phase 3: Adoption and Implementation by Multiple Organizations

Steering Committee

Members:

AASHTO	Tom Sorel, Chair (Tony Kane)
AAMVA	Neil Schuster
GHSA	Vern Betkey, Vice Chair (Barbara Harsha)
CVSA	Steve Keppler
IACP	Richard Ashton
NACE	Tony Giancola
NASEMSO	John Bixler

Ex-Officio Members:

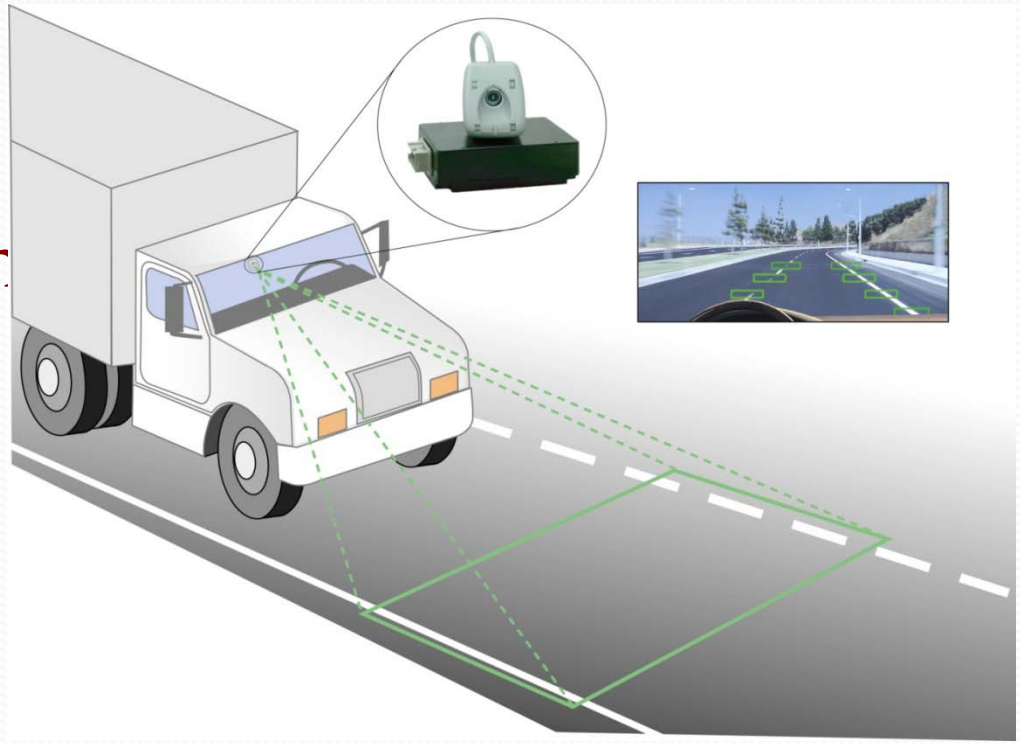
FHWA	Joseph Toole
NHTSA	Marlene Markison
FMCSA	William Quade

Safer Vehicles

- Background/Introduction
- Cross-Cutting Issues
  - Improving driver awareness
  - Modifying driver behavior
  - Conspicuity & visibility
  - Vehicle-to-vehicle & vehicle-to-infrastructure technologies
- Issues specific to passenger vehicles
- Issues specific to large trucks
- Obstacles, challenges, & strategies
- White paper authors:
  - Richard Retting,
    Sam Schwartz Engineering
  - Ron Knipling,
    safetyforthelonghaul.com

Improving Driver Awareness

- Forward Collision Warning Systems (with Adaptive Cruise Control
- Side Object Detection Systems (Lane Change/Merge Warnings)
- Lane Departure Warning Systems
- Backing Collision Warning Systems

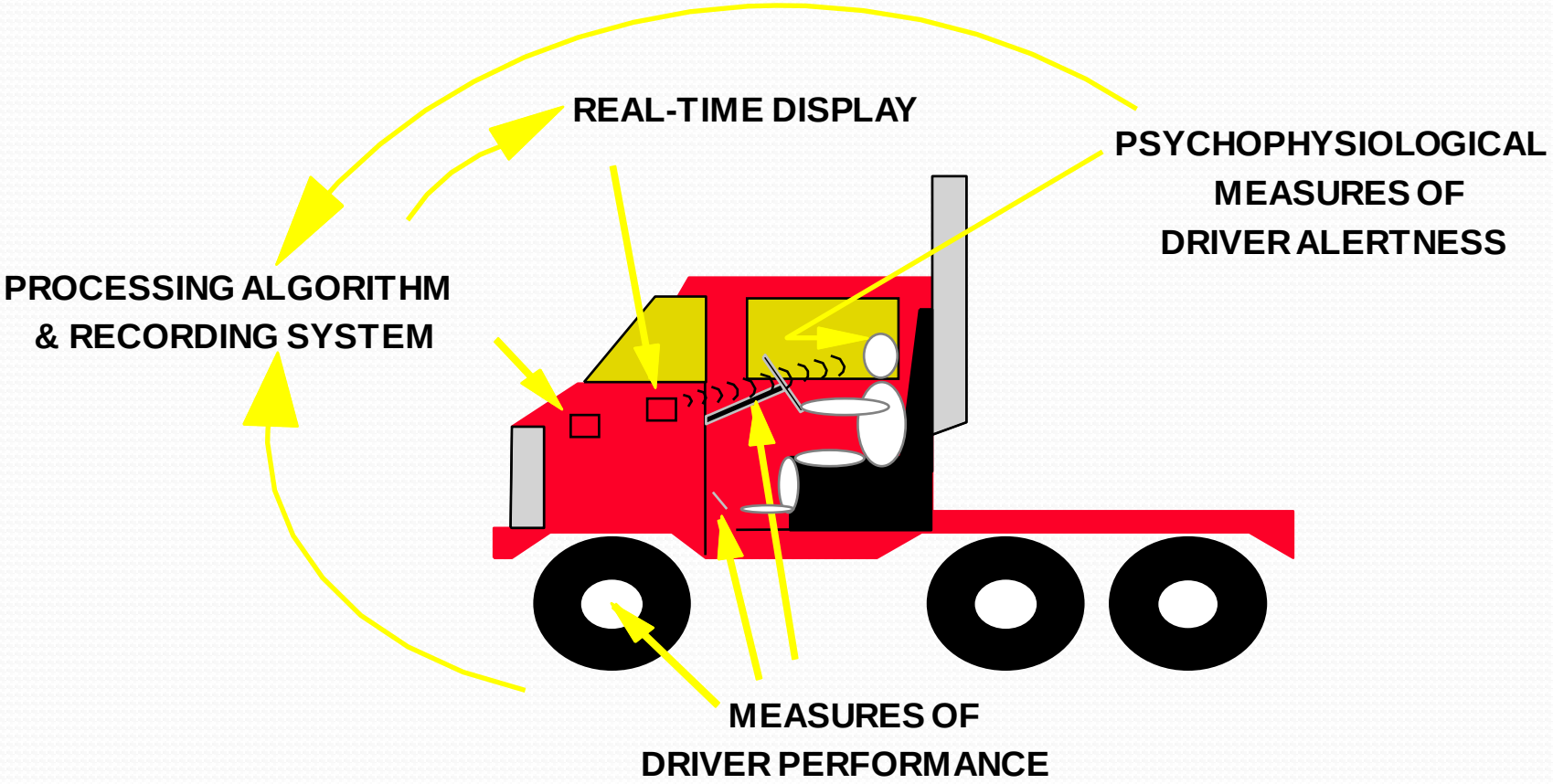


Courtesy Iteris, Inc.

Modifying Driver Behavior & Crash Risk

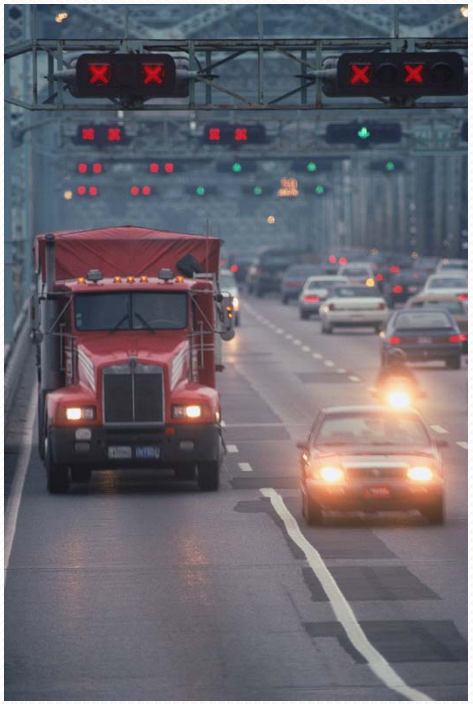
- Alcohol Detection & Interlock (for *all* vehicles?)
- Driver Alertness & Performance Monitoring
- Automatic Speed Control/ Speed Limiters (for *all* vehicles?)
- Electronic Stability Control
- Electronic Drivers License
- Reducing Driver Distraction

Driver Alertness & Performance Monitoring



Conspicuity & Lighting

- Intelligent Lighting Systems (e.g., automatic aiming & adjustment of headlight beams)
- Night Vision Enhancement (e.g., infrared display)
- Daytime Running Lights



Vehicle-to-Vehicle & Vehicle-to-Infrastructure Technologies

- Intersection Collision Warnings
- Left Turn Assistant
- Pedestrian Crossing Information
- Stop Sign & Signal Violation Warnings
- Road Condition Warnings
- Curve Speed Warnings
- Wrong Way Driver Warnings

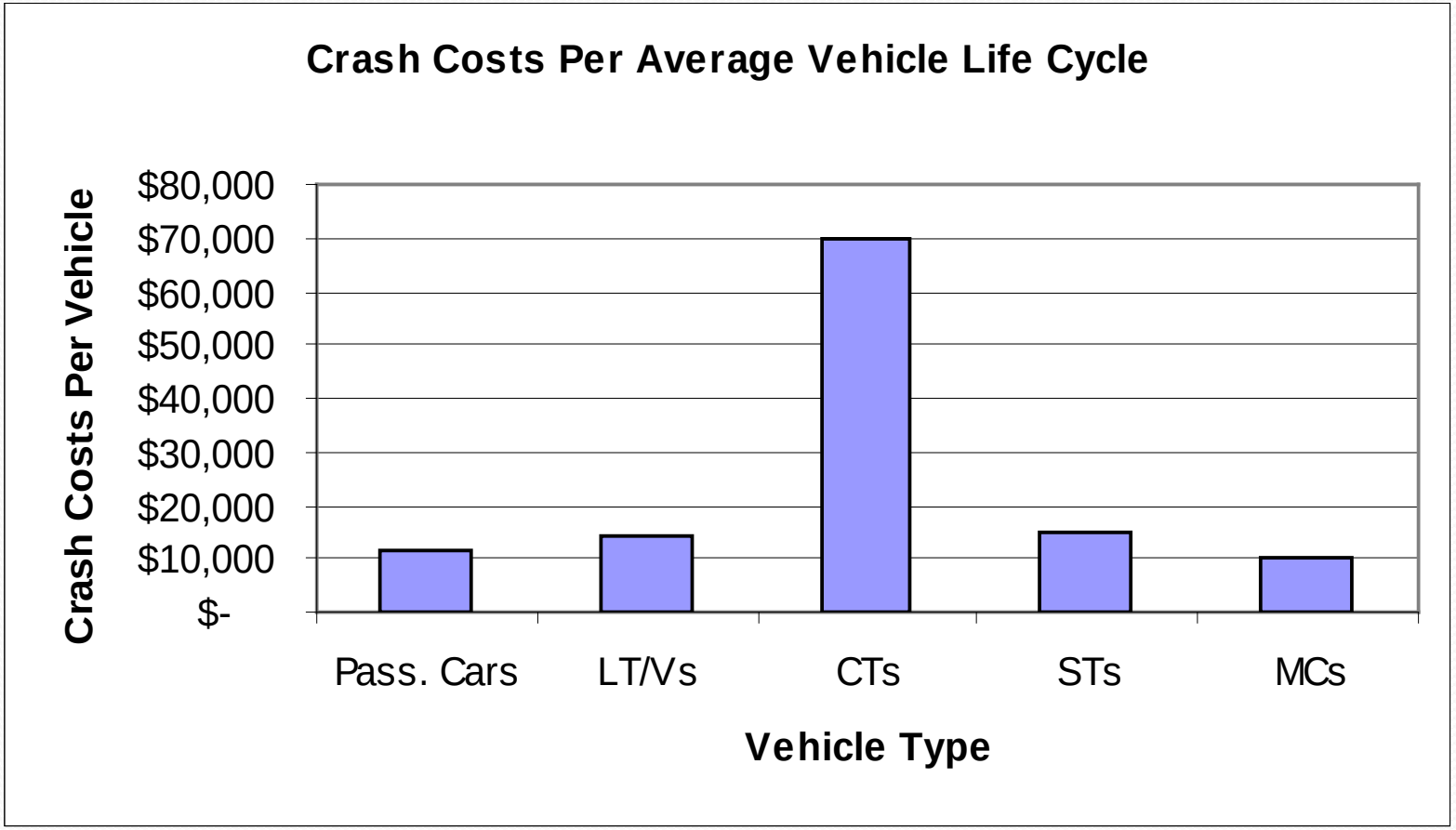
Principal Applicability of Vehicle-Based Countermeasures

Principally applicable to passenger vehicles:	Highly applicable to both:	Principally applicable to large trucks:
Alcohol Detection & Interlock	Forward Collision Warning Systems	Roll Stability Control & Roll Stability Advisor
Emergency Brake Assist	Lane Departure Warning Systems	Low Bridge Warnings
Crashworthiness Enhancements	Side Object Detection Systems	Onboard Safety Monitoring (OBSM)
	Backing Collision Warnings	Electronic Onboard Recorders (EOBRs)
	Automatic Speed Control	Vehicle Condition Monitoring (including remote sensing)
	Electronic Drivers License	Enhanced Trailer Conspicuity
	Intelligent Lighting Systems	Enhanced Trailer Rear Lighting
	Enhanced Forward Lighting	Video Side Mirrors
	Intersection Collision Avoidance Systems	Collision Aggressivity Reductions
	Road Condition Warning Systems	
	Electronic Stability Control	

Some Additional Systems of Importance for Passenger Vehicles

- Emergency Brake Assist (to apply full force)
- Improved Crashworthiness & Occupant Protection
  - Advanced Restraints
  - Improved Crashworthiness of Low-Speed Vehicles
  - Ejection Mitigation
  - Improved Side Impact Protection
  - Pop-Up Hoods for Pedestrian Impacts
  - Compatibility Between Vehicles & Roadside Guards
  - External Airbags

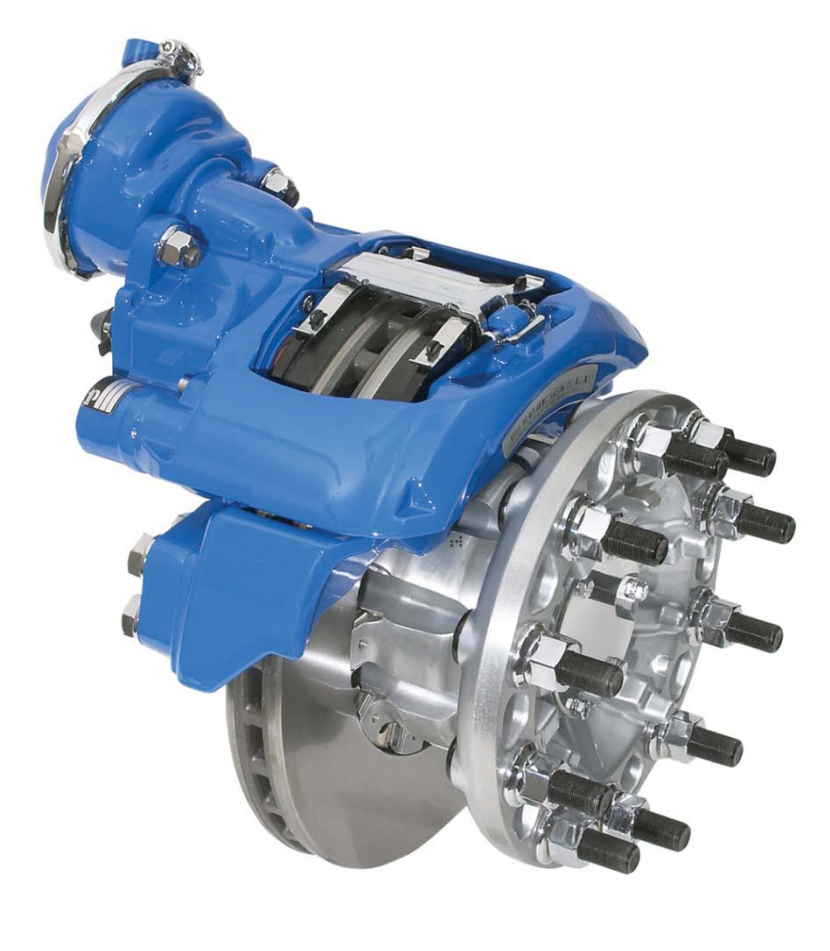
Large trucks are the *platform of choice* for early applications of many advanced safety technologies.



For many vehicle-based crash countermeasures, combination-unit trucks (CTs) have the greatest per-vehicle crash reduction benefits.

Truck Braking, Handling, & Stability

- *Improved Brakes*
  - *E.g., Air Disc Brakes*
  - *New NHTSA rule to reduce stopping distance by 30%*
  - *Other enhancements (e.g., ABS, brake stroke monitoring, etc.)*
- *Electronic stability control*
- *Rollover warnings & controls*



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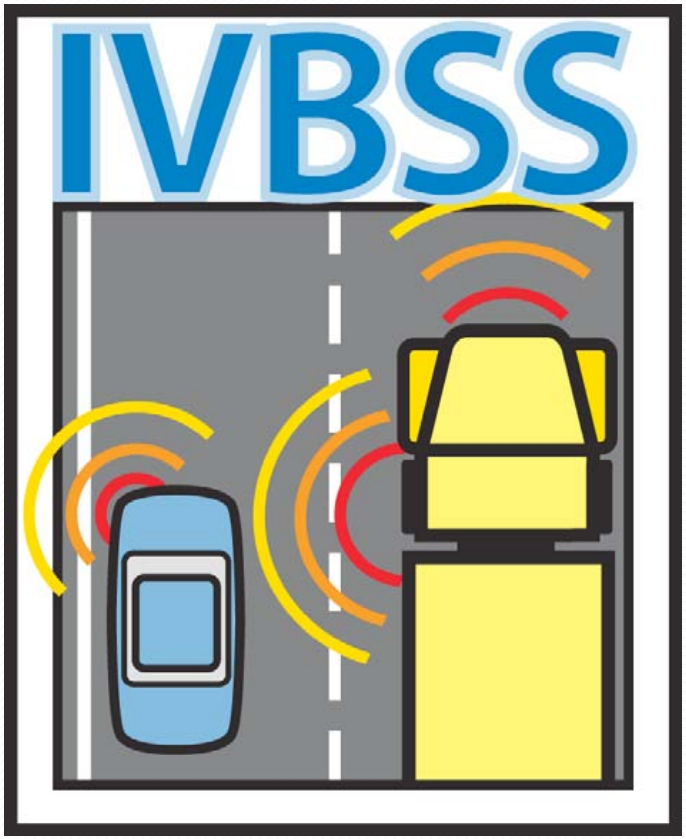
Rollover Warnings & Control

Vehicle Monitoring & Automated Functions

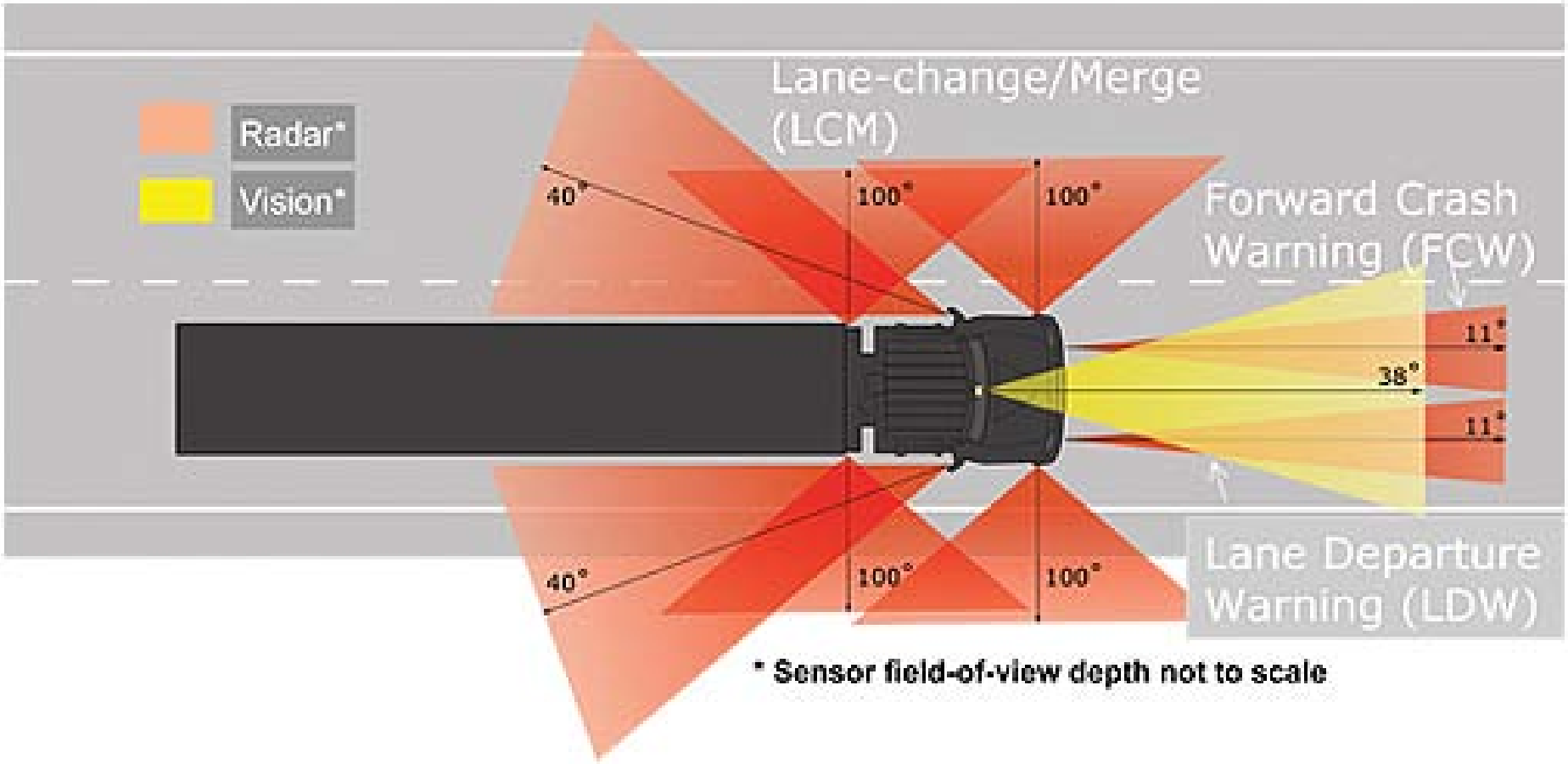
- Vehicle Condition Monitoring (& Remote Inspection)
- Onboard Weighing Systems
- Tire Pressure Monitors
- Speed Limiters (may become mandatory on trucks)
- Automatic/Automated Transmissions
- Electronic Data Recorders (e.g., for crash reconstruction)
- Electronic Onboard Recorders (EOBRs, for Hours-of-Service compliance monitoring)

Integrated Vehicle-Based Safety Systems

- Cross-system standardization & integration needed to reduce system conflicts & human error.
- Recent field tests with both cars and trucks
- Initial Systems:
  - Forward Collision Warning
  - Side Object Detection (for lane changes/merges)
  - Lane Departure Warning



Integrated Vehicle-Based Safety System (IVBSS) Truck System Configurations



Large Truck Safety Technologies: Estimated Benefit-Costs*

Vehicle-Based Crash Avoidance System	Median ROI per $1.00	Median Payback Period
Forward Collision Warning	$4.28	23 months
Lane Departure Warning	$3.96	23 months
Roll Stability Control	$5.51	18 months

* FMCSA Benefit-Cost Analysis of Onboard Safety Systems. Tech Brief No. FMCSA-RRT-09-023 based on ATRI research. February 2009.

Truck Driver Onboard Safety Monitoring

Same Sensors, Separate Behavioral Intervention

IIHS Fatal Crash Prevention Estimates

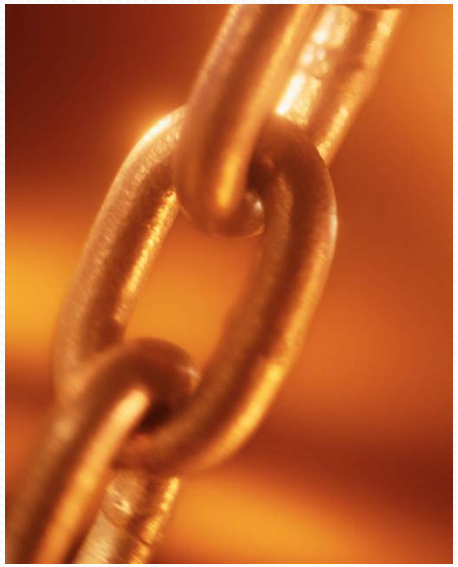
SYSTEM	Pass Vehicle FATAL CRASHES	TRUCK FATAL CRASHES
Forward Collision Warning	879	115
Lane Departure Warning	7,529	247
Side View Assist [Side Object Detection]	393	79
Adaptive Headlights	2,484	Not assessed
Electronic Stability Control	Not assessed	439
Total Unique Crashes	10,238	835

Source: Jermakian, Insurance Institute for Highway Safety, 2010

A Systems Approach to Vehicle Safety Technologies

An onboard safety technology must:

- Be truly **applicable** to the crash problem.
- Be **usable** by drivers and **acceptable** to them.
- Be **durable** & **reliable**.
- Be **maintainable**.
- Be **compatible** with legal, institutional, and cultural factors (e.g., do not create increased **liability**.)
- Actually result in:
  - Driving **behavior change**.
  - Crash **problem reduction** (number and/or severity).
- Be **affordable**.
- Be **marketable**.
- A system is a chain: ***all*** *links must be strong!*



Discussion Questions

- What did we not list in terms of key challenges?
- What are some ways to expand the use of proven countermeasures?
- What are the new opportunities for vehicle safety?
- How do we promote partnerships and increase coordination?
- How can current programs be adapted to better meet needs?

Summary of Key Points

How Can You Be Involved?

- Join the Stakeholder Group to Provide Additional Input and Feedback Throughout the Process:
  - Contact Kelly Hardy at khardy@aashto.org
- Additional Webinars
- Website to Be Developed

Webinars

- Safety Culture – June 1
  - https://admin.na3.acrobat.com/_a55098539/p14229897/
- Safer Infrastructure –Webinar June 10
  - http://fhwa.na3.acrobat.com/p22834947/
- **Safer Vehicles – Today's Webinar** **June 21**
- Road Users – Webinar June 30
  - Safer Drivers
  - Safer Vulnerable Users