



Implementing ESC in America

Ronald Medford

Senior Associate Administrator
of Vehicle Safety,

National Highway Traffic Safety Administration



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Target Population

- 34,680 police reported passenger vehicle fatal crashes → 36,110 fatalities
- 2.4 million serious non-fatal crashes → 1.5 million injuries
- Single-vehicle crashes are 54% of fatal crashes and 27% of tow-away, non-fatal crashes
- Rollovers account for 43% of single-vehicle crashes



Effectiveness

- ESC will reduce single-vehicle crashes by 34% for passenger cars and 59% for SUVs
- Specifically for rollovers, ESC effectiveness is 71% for passenger cars and 84% for SUVs
- ESC will save 5,300 to 9,600 lives annually and prevent 156,00 to 238,000 injuries once all light vehicles are equipped

Research for Test Procedure



Theory

- ID most common events
→ oversteer (spin-out)
- Effective ESC should not spin out → good lateral stability
- Good lateral stability not compromise driver's ability to steer → good responsiveness

Design

- Many maneuvers evaluated
- Collaborative testing
- Sine with Dwell chosen maneuver
- Measure
 - Yaw rate ratio (lateral stability)
 - Lateral displacement (responsiveness)

Standard Requirements



- Performance Test
 - Vehicle must execute a lane change maneuver at 50 mph without spin-out
 - Vehicle must steer back into the desired lane at a specified time in the maneuver
- Equipment Definition
 - Equipment ensures vehicles will not plow out in severe maneuvers
 - All current ESC systems meet this definition which is based on SAE practice
 - No current test by anyone to assess plow-out



Phase-In and Scope

Phase-In for ESC

<u>Model Year</u>	<u>Final Rule</u> Required % of Fleet with ESC
2009 (Sept. 2008 – Aug. 2009)	55%
2010 (Sept. 2009 – Aug. 2010)	75%
2011 (Sept. 2010 – Aug. 2011)	95%
2012 (Sept. 2011) and thereafter	ALL

- FMVSS No. 126 will require ESC on
 - Passenger cars
 - Multi-purpose passenger vehicles
 - Trucks
 - Buses
 - Under 10,000 pounds GVWR