Collision Warning Systems

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Collision Warning Systems (CWS)

- Radar based
- Track other vehicles and stationary objects
- Prevent rear-end collisions
- Provide light and sound warnings
- Moving versus stationary objects
Stationary Object Detection
Perception/Reaction Times and CWS

- At 70 mph:
  - 350 feet warning = 3.4 seconds
  - 220 feet warning = 2.1 seconds
- Average driver reaction time is around 1.5 seconds
- Time for brake pedal application and full brake system pressurization (0.5 seconds)
  - At 70 mph, 2.0 seconds = 205 feet
- Ideal brakes, longest warning time
  - Impact speed = 48.5 mph
- Existing brakes, 220 feet warning time
  - Impact speed = 68.8 mph
Active Braking CWS

- Acura RL
- Adaptive cruise control (ACC)
- Active braking collision warning systems controls vehicle automatically
- Benefits may be huge:
  - Ideal brakes, longest warning time
    - Impact speed = 0 mph
Vehicle Stability and CWS

• Collision warning systems
  – Severe evasive maneuvers

• Vehicle instability
  – Hard braking on slippery surface
  – Rapid steer maneuver

• Stability control system
  – Roll and directional control
Summary

• Collision warning systems
  – Potential to enhance commercial vehicle safety
  – Reduced effectiveness at highway speeds with stopped vehicles
• Active braking collision warning systems
• Electronic stability control (ESC)