WRI Characteristics

• Assessment of driver, carrier and vehicle compliance via secure wireless communications while the commercial motor vehicle (CMV) passes by fixed and portable sites.
  
  – System uses identifier information to query federal and state databases to identify potential OOS violations.
  
  – System assesses driver hours of service (HOS) information.
  
  – Envisioned to augment data available to the Safety Measurement System (SMS).
  
  – Field operational test is using Commercial Mobile Radio Services (CMRS) for communications.
WRI Background – Phase 3

- Field Operational Test (FOT) – Full end-to-end system testing on vehicles from fleets within a multi-state corridor (began July 2012).
  - Testing of fully-integrated network (vehicle/roadside/wireless inspection processing system)
  - Determine the viability and effectiveness of wireless CMV inspection using existing CMRS technologies
  - Receive and process safety data messages in real time
WRI Phase 3 – Field Operational Test

• Maximum of 1,000 vehicles
• Multiple fleets
• Testing in Commercial Motor Vehicle Roadside Technology Consortium (CMVRTC) (Georgia, Kentucky, Mississippi, North Carolina, and Tennessee)
  – 20 inspection sites identified for data collection
• Selection of CMRS vendor to support testing
• Development of Wireless Inspection Processing System (WIPS)
  – Will be developed by NDSU/UGPTI
WRI FOT Year-1 Activities

- Partnerships with State Agencies
  - Georgia Motor Carrier Compliance Division
  - Kentucky State Police
  - Mississippi Department of Transportation
  - North Carolina Highway Patrol
  - Tennessee Highway Patrol

Over 2,400 miles of interstate roadway
WRI Communication Path

1. Roadside Enforcement
   Creates Geofence Locations

2. Geofence Locations
   SDM sent to WIPS

3. Sends Geofence via CMRS
4. Data Collected
   Vehicle:
   - Crosses into Geofence
   - On-board data collected

5. Sends Vehicle Data via CMRS
6. Safety Data Message (SDM) - Message is compiled using vehicle-based and back-office data (if needed)
7. SDM sent to WIPS
8. Geofence Locations
9. WRI Inspection Results
10. Sends In-Cab Indicator via CMRS

Behavior Analysis and Safety Improvement Categories (BASICs):
- SMS
- Unsafe Driving
- HOS Compliance
- Crash Indicator
- HM Compliance
- Driver Fitness
- Controlled Substances/Alcohol
- Vehicle Maintenance

SDM is evaluated for safety issues
WRI – How the FOT Will Work for Driver

Enter Station and See Officer

Enter Station and Follow Signage

Okay to Bypass Site

Motor Carrier Ops Center

Sends In-Cab Indicator Light to driver

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WRI Operational Refinements

• In-Cab Indicators
  – Exact mechanism (light, tone, etc.) has not yet been defined. Defer to telematics industry for implementation.
  – For the purposes of this presentation, we will use lights.
  – They are:
WRI Operational Refinements

- **In-cab Indicator – “Green”**
  - Indicates no problem is perceived based on available information.
  
  - **Geotriggered Inspection** – Okay for vehicle/driver to bypass inspection station.
  
  - **Self-Test** – Okay for driver to proceed based on available information.
  
  - **Login** – Okay for driver to proceed based on available information.
  
  - **Officer Initiated Inspection** – No problems identified during WRI inspection.
WRI Operational Refinements

• In-cab Indicator – “Yellow”
  – Typically indicates the vehicle has been selected for pull-in.
  – Could indicate that there is a problem on the government side preventing analysis of data.
  – Driver should follow inspection station signage.

Follow Inspection Station Signage
WRI Operational Refinements

• In-cab Indicator – “Red”
  – Indicates there is a perceived problem based on available information.
    • Geotriggered Inspection – Enter inspection station and see officer.
    • Self-Test – Driver may investigate problem and correct if possible.
    • Login – Driver may investigate problem and correct if possible.
    • Officer Initiated Inspection – Enforcement officer will follow up with driver/carer.
WRI Operational Refinements

• In-cab Indicator – “No Light”
  – Could indicate carrier’s WRI account not active.
  – Could indicate there is a problem on the telematics/carrier side preventing the wireless inspection.
    • Driver should follow existing signage.
    • Data received by the government system will be retained for reporting.
    • “No light” situation is expected to be a very low occurrence.
WRI – Potential Benefits - CSA

Behavior Analysis and Safety Improvement Categories (BASICs)

Data acquired can have a potential effect on these segments.