Trucker Assisted Reporting and Multi-State Capability Levels

Jim McGee MPA
AASHTO SCOM/TRB
Winter Maintenance and Highway Safety and Reliability Working Group
Des Moines, Iowa
800 AM-930 AM
JULY 21, 2015

http://www.iowadot.gov/2015scom/
Transportation Agency Resilience Fundamental Capabilities.

Traffic Management Center PFS

- Information gathering
- Detection
- Access control
- Physical protection
- Risk management
- Supply chain security
- Vulnerability reduction
- Risk and disaster resilience and assessment
- Threat & hazard identification
- Operational communications
- Situational assessment
Almost 40 percent of the products produced in one state are purchased by customers in other states with most of this economic activity occurring beyond their neighboring states.

ARTBA analysis of U.S. Census Bureau “2012 Commodity Flow Survey.”
The TSI is a vital statistic measuring the flow of goods and passengers through the economy.

The Freight Transportation Services Index (TSI) measures freight shipments and is an excellent gauge of the economy. The Freight TSI is close to the November 2014 all-time high.

The TSI is up 23% since hitting a recession low in April 2009.
210 trucks per hour...

63% Trucks

Slightly more than three trucks per minute move east and west on remote Interstate-80 in the Nebraska Panhandle near the Wyoming border. High winds can knock-over high profile vehicles and snow closes highways. ATRI has identified roll-over “hot spots”.

Trucker Assisted Reporting & Multi-State Capabilities McGee
2015 ©
An off-normal event

On Nov. 16, 1996, the Nebraska Highway Patrol closed Highway 83 to traffic while a commercial wrecker righted the overturned 18-wheeler. As cattle watched, specialists swept the area for radiation leaks, and the bombs were gingerly transferred to another truck, which carried them the 250 miles back to Ellsworth Air Force Base.
A normal event, also in Western Nebraska. Some of Colorado’s economic activity spurs additional economic activity.

Jeff Koterba. Omaha World Herald
Applications

Pennsylvania
Information from turnpike drivers will be seen in the Turnpike’s Traffic Management Center.

Minnesota
Spotters will download the existing Minnesota 511 app and complete a short online training course.

Oregon
A partnership that is a two-way data share of publicly available traffic information, the Connected Citizens program promotes greater efficiency, deeper insights and safer roads.
A *Concept of Operations* attempts to answer the who, what, when, where, why, and how questions for new systems in general terms.

- Business processes
- Systems & technology
- Operations and Highway Safety
- Road Weather and travel information
- Institutional leadership and culture
- Institutional structure and staff development
- Public and private collaboration
80% of American communities are served only by truck.
Every truckload is an economic transaction. 11% of manufacturing jobs are in rural areas.

[Map of Iowa with percentages of hazardous material flows]
Wyoming’s ((ECAR)))

- Volunteers provide first-hand observations of the conditions they are encountering.

- Brief and concise training is provided to make volunteers familiar with WYDOT’s terminology.

- Volunteers are needed in some areas more where fewer observations are otherwise available than in others.

- ECAR participants are supplied with an illustrated handbook with written and visual definitions of the different types of pavement and weather conditions used by WYDOT.
How can truckers help?

A bridge collapse late Sunday afternoon forced the closure of Interstate 10. I-10 is the main roadway between Southern California and Phoenix. Hundreds of motorists were stranded and traffic backed up for miles.

Motorists traveling between California and Arizona will be forced to go hundreds of miles out of their way to Interstate 8 to the south or Interstate 40 to the north.
Looking back, what have we learned about capability gaps?

Capability gaps:

- No capability to communicate among multiple agencies
- No plan involving city, county, federal and state resources
- No coordination between agencies and across state lines
- No multi-state traffic plan
- No unified command, goals, objectives
- No common terminology
- No recovery plan
- No agreements
Capability Maturity Model

Six critical capability dimensions

SHRP-2

- Business processes
- Systems and technology
- Data collection and use
- Culture and leadership
- Organizational structure and staff development
- Public and private collaboration
Rules of Capability Maturity

SHRP-2

- A capability is the ability to perform required actions.
- The **lowest level** dimension is the main constraint.
- All dimensions are synergistic.
- Levels can’t be skipped.
- Dimensions at the lowest level are the toughest to address and are the most important.
The Maintenance Decision Support System Pooled Fund Study

MDSS
Level 0 No automation
Level 1 Driver assistance
Level 2 Partial automation
Level 3 Conditional automation
Level 4 High automation
Level 5 Full automation
SAE
Advanced vehicle-to-vehicle and vehicle-to-infrastructure safety messaging

- Emergency Communications
- Evacuation
- Incident Scene Staging Guidance for Emergency Responders
- Incident Scene & Work Zone Alerts for Drivers and Workers
- Mayday Relay
The number of large trucks registered to drive on U.S. roads increased from nearly 8.2 million in 2004 to almost 10.6 million in 2013.

Source: NHTSA
Low point was 2009
27% increase between 2009-2015 & projected to increase through 2040
Draft Primary Freight Network
Primary Freight Network Factors

- Origins and destinations of freight movement
- Total freight tonnage and value
- Percentage of annual average daily truck traffic
- Land and maritime ports of entry;
- Access to energy production areas
- Population centers
- Network connectivity
Most freight is local or regional.

Without trucks, retail shelves run bare in three days, fuel supplies are depleted, assembly lines shut down.

Less than 50 miles: 35.4%
50-99 miles: 10.1%
100-249 miles: 15.6%
250-499 miles: 12.8%
500-749 miles: 8.4%
750-999 miles: 5.7%
1000-1499 miles: 5.7%
1500-2000 miles: 3.5%
2000+ miles: 2.9%

Bureau of Transportation Statistics
Most Hazardous Materials shipment tonnage is two subsets of the nine hazardous materials classes.

Flammable-Combustible Liquids
- 78% of total tons
- 56% of total ton-miles
- Almost 81% of the total value.

Gases
- 11% of the tons
- 17% of the ton-miles
- 9% of the value.

The remaining seven hazmat classes
- 11% of total tons
- 27% of total ton-miles
- 10 percent of total shipment value.
There are 1 million miles of federal-aid highways.

220,000 miles or 22% are NHS. 780,000 miles are under the jurisdiction of local governments. County governments are responsible for approximately 230,000 bridges and 45 percent of our public roads.
Most state highways are served by volunteer firefighters and EMS.

Rural areas are 20% of the population but 60% of fatalities.
Fatal crashes involving large trucks

- 3964 fatal crashes
- 95000 injured
- 17% were truck occupants
- 17% occupants of other vehicles
- 11% non-occupants

2013 Fatal Accident Reporting System
CAPABILITIES
There might be a plan but not the capability...question alternate route assumptions.

- Lane width
- Curves
- Weight restrictions
- Height restrictions
- Turning radii
- School crossings
- Intersections without turn lanes
- Highway-rail intersections
- Routes & structures in adjoining states
- Safe havens
- Fuel
- Lodging
A capability is the ability to perform required actions uniformly across state lines.

- Intelligent Transportation Systems
- Real-time System Management
- Weather-responsive Traffic Management (WRTM)
- Emergency Transportation Operations
- Center-to-Center Communications
- Alternate Routes
- Safe, Quick Clearance
- CVISN
- RWIS
- ATIS
- Golden Hour Response
- Alerts
- ESF-1 and ESF3
- Evacuation
- Work Zones
- Hazardous Materials
- Highway-rail Intersections
SEC. 1116. Prioritization of Projects to Improve Freight Movement

✓ Operational improvements that will improve freight movement
✓ Intelligent Transportation Systems, Commercial Vehicle Information System Networks
✓ Efforts to reduce environment impacts of freight on the Primary Freight Network
✓ Real-time highway information
✓ Truck parking
✓ Highway Condition Reporting Systems
✓ Multi-modal information systems

Nevada-led I-80 Winter Operations Coalition
The National Transportation Safety Board says that differences among states on the various aspects of truck permitting could be a safety concern.

GAO
California
State agencies are ordered to work this year on corridor-level freight pilot projects within the State's primary trade corridors that integrate advanced technologies, alternative fuels, freight and fuel infrastructure, and local economic development opportunities.

Future investments to upgrade freight vehicles and infrastructure should enable greater transportation efficiency while reducing community and environmental impacts. Executive Order B-32-15
July 17, 2015

227 counties are designated as non-attainment areas for the current 75 ppb standard. That is expected to increase by up to 358 counties under a 70 ppb rule and up at 558 counties with a 65 ppb standard
What are the statutory, regulatory, technological, institutional, financial and other barriers to improved *multi-state* corridor performance? Are there opportunities to overcome the barriers?
Looking forward, what have we learned about capability gaps?

Capability gaps:

- No capability to communicate among multiple agencies
- No plan involving city, county, federal and state resources
- No coordination between agencies and across state lines
- No multi-state traffic plan
- No unified command, goals, objectives
- No common terminology
- No recovery plan
- No agreements
Connect Institutions First
& Vehicles Second

Corridors
- Road Weather Information
- Weather Responsive Traffic Management
- Motorist/Travel Information
- Traffic Incident Management Programs
- Alternate Routes
- Road Closures
- Materials
Thank you, AASHTO SCOM/TRB and the Iowa DOT!

Jim McGee MPA
5225 Jackson Street
Omaha, Nebraska 68106
402-660-6842
Jim.mcgee.ne@gmail.com