



NATIONAL CAPITAL REGION

TRANSPORTATION PLANNING BOARD

Meeting Summary

TPB FREIGHT SUBCOMMITTEE – FREIGHT TECHNOLOGY

DATE: October 2, 2014

TIME: 1:00 P.M. to 3:00 P.M.

PLACE: MWCOG Room 1

CHAIR: Eulois Cleckley, Manager of Statewide and Regional Planning/Freight Planning, District Department of Transportation

ATTENDANCE:

Debbie Bowden, Maryland Department of Transportation
Eulois Cleckley, District Department of Transportation
Rick Crawford, Norfolk Southern
Wayne Davis, Virginia Department of Motor Vehicles
Richard Easley, E-Squared Engineering
Sharon Easley, E-Squared Engineering
Ezra Finkin, Diesel Technology Forum
Diana Herriman, URS Corp
Sandra Jackson, Federal Highway Administration
Dominic Jordon, UPS
Chris Lamm, Cambridge Systematics
Chip Millard, Federal Highway Administration
Michael Onder, CDM Smith
Manoj Pansare, Maryland State Highway Administration
Duane Pearce, Maryland State Highway Administration
Laura Richards, District Department of Transportation
John Thomas, Montgomery County Department of Transportation
Jacqueline Thorne, Maryland Department of Transportation
Coral Torres, Federal Highway Administration
Rahul Trivedi, Virginia Department of Transportation

MWCOG STAFF ATTENDANCE:

Andrew Meese, MWCOG-DTP
Erin Morrow, MWCOG-DTP
Wenjing Pu, MWCOG-DTP
Richard Roisman, MWCOG-DTP
Jon Schermann, MWCOG-DTP
Patrick Zilliacus, MWCOG-DTP

Eulois Cleckley, Freight Subcommittee Chairman

Mr. Cleckley opened the meeting. After a round of introductions, Mr. Cleckley turned the meeting over to Ezra Finkin of the Diesel Technology Forum.

Ezra Finkin, Diesel Technology Forum, Clean Diesel Moves the National Capital Region

Mr. Finkin spoke to a PowerPoint presentation on recent research on the penetration of heavy-duty vehicles (by state) that meet EPA's 2007 and 2010 clean diesel emission standards and the resulting fuel savings and emissions benefits.

Diesel Technology and the US Economy: Diesel technology is a significant contributor to the economy of the United States generating \$275 billion in economic activity per year – about the same as both the utility and information technology sectors. The diesel technology sector employs 1.25 million people in the US and generates \$46 billion in annual exports. Over 90 percent of the heavy-duty truck fleet is manufactured domestically and US companies export \$24 billion in trucks, equipment, and engines to the rest of the world each year.

Diesel Is Important to Freight Transportation: Diesel fuel is more energy dense than gasoline, propane, liquefied natural gas, ethanol, methanol, liquid hydrogen, compressed natural gas, compressed hydrogen, or nickel-metal-hydride batteries. This means that more freight can be moved per unit of diesel fuel than can be moved with any other fuel.

Diesel Is Part of a Sustainable Transportation Future: Because biodiesel fuel is made from renewable resources and because clean diesel technology features near-zero emissions of category pollutants, investing in diesel technology is a sustainable energy strategy. A clean diesel system consists of three interrelated elements:

- **Ultra-low sulfur diesel fuel** that produces lower emissions and enables the use of advanced emissions treatment systems;
- **Particulate filters and catalysts** that trap and eliminate fine particles and reduce emissions of ozone-forming compounds; and
- **Advanced engine electronic combustion control systems, fuel injection systems, and turbochargers** that optimize performance and reduce emissions.

Clean Diesel Technology Reduces Emissions: Diesel emissions reductions from heavy-duty trucks, locomotives and marine engines, and off-road equipment have been driven by the following regulatory actions:

- **Fuel:** ultra-low sulfur diesel (2006);
- **Trucks:** clean diesel standards (2007 & 2010);
- **Off-road equipment:** Tier 4 final (2014);
- **Locomotive and marine:** Tier 4 (2015).

New clean diesel truck engines have NO_x and PM emissions that are more than 95 percent lower than engines manufactured 25 years ago.

Adoption of the Latest Clean Diesel Technology: The share of the heavy-duty truck fleet deployed with model year 2007+ engines is rising steadily and reached a national average of about 33 percent in 2013. Fleet deployment in Maryland is above the national average (about 38% in 2013), while that of Virginia and the District of Columbia lags the national average (about 28 percent and 22 percent respectively). The fleet turnover rate to model year 2007+ engines is around 4 percent per year. In addition to reduced emissions, clean diesel vehicles provide fuel economy benefits that result in lower CO₂ emissions.

Ports of Los Angeles and Long Beach Case Study: The Ports of Los Angeles and Long Beach Clean Air Action Plan required all trucks calling on the Port complex to meet or exceed the US EPA 2007 model

year emission standards by 2010. This has resulted in substantial air quality benefits for the Los Angeles region.

Future Improvements in Diesel Technology: Phase 1 heavy-duty fuel economy and greenhouse gas (GHG) rules for model years 2014-2018 will require greater fuel savings and are estimated to save 530 million barrels of crude oil and result in \$50 billion in savings for vehicle owners. These fuel economy and GHG improvements will be realized through a combination of improvements in engine technology, transmission technology, tire and wheel technology, vehicle aerodynamics, and hybrid technology. Phase 2 rulemaking proposals expected by March of 2015 will result in further improvements.

Manoj Pansare and Duane Pearce, Maryland State Highway Administration – Motor Carrier Division, Maryland Virtual Weigh Station Program Update

Mr. Pansare and Mr. Pearce spoke to a PowerPoint presentation on Maryland’s Virtual Weigh Station Program.

Introduction: The Maryland Virtual Weight Station program has been active since 2009 when the first location was deployed. Based on the success of that initial site, additional deployments were made. The initial rationale for deploying virtual weigh stations in Maryland was to:

- reduce over size and overweight load activity on bypass roads;
- reduce road damage due to grossly overweight loads;
- reduce damage to structures such as bridges and tunnels;
- reduce load permit fraud;
- limit “unpredictable routing” by carriers in response to enforcement activity;
- respond to community interest in reducing local heavy vehicle traffic;
- better manage traffic on state, county, and other road arteries;
- improve safety;
- improve efficiency of enforcement personnel; and
- reduce the cost of weight enforcement.

Deployment: There are currently seven virtual weigh stations deployed in Maryland.

- I-83 northbound at the Maryland-Pennsylvania line;
- MD-213 southbound in Galena to cover trucks entering Maryland from Delaware;
- US-50 eastbound on the Bay Bridge;
- US-50 westbound on the Bay Bridge;
- MD-32 southbound (pilot site) for trucks trying to bypass I-70;
- US-301 northbound to cover trucks entering from Virginia; and
- I-95 northbound at Caton Avenue.

The identification of these sites was guided by a set of selection criteria which were developed and applied through a study conducted in partnership with the Maryland State Police and the Maryland Transportation Authority Police. The selection criteria used were:

- truck volumes, enforcement need, and public outreach;
- road surface conditions and planned resurfacing schedules;
- availability of power and cellular service;
- ability to locate all equipment within state right-of-way;
- availability of local enforcement personnel and vehicles;
- presence of safe pull-off areas for inspections, citations, and Out-Of-Service (OOS) orders;
- the potential for remote and local diagnostics within 4 hours.

The deployment at a given location is straightforward. There is a loop detector to sense the presence of a vehicle, two sensor pairs in a staggered configuration to measure the speed and weight of the vehicle, a

camera with infrared illumination to light up the trucks at night, an over height detector, a processing unit to perform the necessary calculations, and a cabinet to protect the electronic components.

How Virtual Weigh Stations Are Used in Maryland: Virtual weigh stations are screening tools that identify vehicles for law enforcement to pull over and inspect. Enforcement officers receive information about violations from the virtual weigh station via phone or laptop and can then pull over the vehicle – sometimes a considerable distance (up to several counties) away from the site. The driver may have no idea how he or she was selected for enforcement. However, the virtual weigh station sites are fully disclosed to the public and the information they generate provides opportunities for outreach and training to carriers.

Analysis Opportunities: Initially, each virtual weigh station site was independent and had to be logged into separately. Since September 2012 data streams from each virtual weigh station site are processed through the Regional Integrated Transportation Information System (RITIS). RITIS integrates the multiple virtual weigh station data feeds into a central repository that allows for multiple concurrent logins. This enables the use of multiple platforms (PC/web, smart phones, tablets, etc.) and provides enhanced reporting and analytics capabilities as well as unlimited archiving of virtual weigh station data.

The RITIS platform allows a broad range of analytics including:

- vehicle count by date and hour;
- vehicle count by speed;
- vehicle count by class;
- vehicle count by date;
- vehicle count by day of week; and
- vehicle count by hour of day among others.

The results of these RITIS analytics can be easily dumped into other analysis tools, such as Microsoft Excel, for further processing. Law enforcement personnel analyze these data to determine when and where to employ their limited resources for the most impact.

Plans for the Future: Virtual weigh station deployments are planned for eleven sites on key bridges and at high speed toll locations along Maryland Transportation Authority facilities and for four State Highway Administration locations between now and the end of 2017.

Discussion: Mr. Zilliaccus asked whether SHA uses infrared sensing technology to look for brakes that are overheated or cold because they are inoperative. Mr. Pansare answered that SHA has tested such technology but that it did not meet the State's expectations. There are currently no plans to include such brake-enforcement technology as part of the virtual weigh station program in Maryland, but as technology improves it may be considered again in the future.

Mr. Easley noted that ensuring a high degree of reliability and accuracy of the information provided by the virtual weigh stations is critical for its continued success and that data unreliability would result in the Maryland State Police and the Maryland Transportation Authority Police discontinuing use of the system. Mr. Pearce and Mr. Pansare agreed.

Mr. Cleckley asked if all the sites use piezos and whether Cardinal is the vendor for all the sites. Mr. Panoj stated that SHA uses Kistler sensors, Cardinal is the sales vendor and Xerox is the system integrator. Mr. Cleckley also asked about the number of states that are using RITIS. Mr. Meese noted that over a dozen states are using some aspect of RITIS and Mr. Pansare stated that Maryland is the only state using RITIS to aggregate, analyze, and distribute virtual weigh station data.

Ms. Jackson asked about how the virtual weigh station installations were funded. Mr. Pansare indicated that the first four sites were deployed using CVISN funding (50 percent federal match). The next set of virtual weigh stations were deployed using 100 percent state funds.

Mr. Cleckley asked how much a typical virtual weigh station deployment costs. Mr. Pansare responded that a turnkey, dual-lane installation including a one-year warranty costs about \$600,000.

Wayne Davis, Virginia Department of Motor Vehicles – VA-DMV Motor Carrier Operations

Mr. Davis spoke to a PowerPoint presentation on Virginia’s Motor Carrier Operations.

Overview: The Virginia Department of Motor Vehicles operates 13 permanent weigh stations, has 12 full-time mobile crews, and three permanent “turn-outs”¹. In FY 2013 over 17.9 million trucks were weighed resulting in 37,851 weight violations and 66,999 loads that were allowed to shift. 88,713 oversize/overweight permits were also issued. The term “weigh station” has been changed recently to “motor carrier service center” to better reflect the purpose of these facilities.

Technology: The technology used within motor carrier service centers includes:

- Prepass (weigh-in-motion and transponders);
- Drivewyze (sorts via mobile app. - used at all service centers and permanent turn outs);
- License Plate Readers (C-VIEW provides 360 degree view of carrier – the DMV has 8 permanent installations and 2 mobile units); and
- IRIS (Infrared Inspection Stations) – began operation in 2001, able to detect brakes that are inoperable or out of adjustment, leaky exhaust systems, bad tires, and axles that have just been dropped.

Mobile Operations: In the past a paper-based system was used in the mobile units. Today each mobile unit features internet access for electronic submittal of citations, printers for driver citations and weight reports, and scanners. The DMV is currently testing bar code readers that increase accuracy and eliminate the time previously needed to key in relevant information. Virginia also has one Nomad Unit that travels to different sites around the Commonwealth. This unit and its crew install portable piezo strips (8 portable weigh-in-motion stations) at key locations for two week periods. Reports that quantify the number and type of trucks, their weights, time of day and speed are generated from these portable weigh-in-motion stations. These reports highlight areas where mobile units can be deployed for special checks.

Duane Pearce noted that Maryland SHA successfully used data provided by Virginia’s Nomad Unit to set up a virtual weigh station on US-13 just north of the Virginia state line to catch out-of-compliance trucks.

Oversize/Overweight Permitting: Virginia, like many other states, has focused on generating oversize/overweight permits automatically and has been doing so since 2010. Through C-VIEW and Xerox, law enforcement officers in the Commonwealth can key in the permit number and determine very quickly whether the permit is valid or fraudulent.

Jon Schermann, Metropolitan Washington Council of Governments – Draft Regional Network of Routes Significant to Freight, Issues for the Regional Freight Plan, and Review of Freight Plan Draft

Mr. Schermann reminded the Subcommittee that MWCOG is in the process of developing a new National Capital Region Freight Plan. During the previous Subcommittee meeting a list of potential freight issues affecting our region was reviewed and discussed. Several additional issues were brought forward both during the meeting and in various communications in the weeks following the meeting. All of these inputs have been consolidated and summarized in the handout provided.

¹ Turn outs are locations with permanent scales in the asphalt that are generally unmanned. At various times, the VA DMV will perform special checks and hook up to the technology embedded in the turn outs.

Also during the previous Subcommittee meeting a concept was presented for a Regional Freight Network that was based on existing federal and state materials combined with knowledge of various MWCOG staff. Since then MWCOG staff has further developed the draft network and documented the reasoning behind the selection of routes for the network. Due to the limited time available today to review these materials, they will be emailed to the Freight Subcommittee participant list for considered review.

Mr. Schermann also noted that the primary purpose of establishing a regional freight network is to enable freight performance measurement. For example, congestion could be measured on the freight network and compared to overall regional congestion measures.

Discussion: Ms. Torres asked about the criteria used for identifying the routes included in the regional freight network. Mr. Schermann responded that most of the routes are already part of the draft USDOT Primary Freight Network or have been identified as truck routes in Maryland, Virginia, or the District of Columbia. The other routes were selected based on the knowledge of key MWCOG staff. Mr. Zilliacus highlighted the example of Leeland Road in Prince George's County by noting that while it is a very minor road for most of its length, the short section immediately west of US-301 is the only connection between a very large Safeway distribution center and the National Highway System. Therefore, that short section of Leeland Road is rightfully part of the proposed regional freight network.

Mr. Millard recommended that, except for cases where a road is providing a connection to a freight generator, including roads that "dead end" as part of the network should be avoided. Mr. Schermann and Mr. Zilliacus agreed that this is a good point to consider as the network is fine-tuned. Mr. Meese added that for the purposes of measuring congestion, we are looking for something that is representative of freight and the conditions that freight movement is facing. Therefore, while we encourage a thorough review of the network and while we want this Subcommittee to be comfortable with it, we also want to avoid spending too much time trying to decide whether any particular link should or should not be included. In fact, we sometimes think of this network as analogous to the Dow Jones Industrial Average – a kind of sampling that provides insight into how the entire system is working.

Richard Roisman, Metropolitan Washington Council of Governments – Summary of Regional Airports Forum

Mr. Roisman provided a brief update on the Regional Airports Forum held at MWCOG on September 26, 2014.

About 25 people from the airports, the economic development community, and others were in attendance. Representatives from BWI and from the Metropolitan Washington Airports Authority spoke about trends and issues affecting their respective airports. The focus of this Forum was on passenger travel instead of freight. One of the key issues discussed was the growing imbalance in the regional airport system as evidenced by the over utilization of Washington National while BWI and Dulles are underutilized.

Roundtable Update

DDOT: Mr. Cleckley stated that the District will kick off its commercial loading zone program in November. This is a big push for the District and will include educating the industry and distributing information.

Next Meeting: December 4, COG Room 1
Topic: Air Freight