



Technical Memorandum 1:

Freight Task Force Work Plan

October 2014

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I. Introduction and Background

A number of new and continuing corridor trends have potential to shape the landscape of North/West Passage operations in the next several years. Some of these are specific to locations along the corridor (e.g. increased oil-field-related traffic, infrastructure capacity shortages, and resiliency to extreme weather events), while some are industry-wide trends, such as qualified truck-driver shortages, increased freight and passenger volumes, and shifting global supply patterns.

The purpose of this document is to review and assess previous projects the Freight Task Force's (FTF) has undertaken as well as to guide the FTF's vision for the next 1-5 years by identifying strategic components for work plan integration. As an example, recent advances in approaches to *safety* and *efficiency* should warrant further exploration by the corridor.

Safety

Nationally, the total number of highway crashes has remained stagnant around 5.5 million/year for the past five years despite gradually decreasing for the past two decades.¹ Further, recent statistics from the National Highway Traffic Safety Administration (NHTSA) indicate that 2,146 traffic fatalities occurred in NWP states in 2012, with 5 of the 8 states reporting an increase from 2011. Research indicates that the primary cause of crashes, particularly for large trucks, is driver-related. As a result, arming drivers with better technologies, information, and equipment has high potential for improving safety in the corridor. A couple of key focus areas are below:

- Vehicle-based approach: Propose a ZERO CVO Accidents standard in the corridor. Collect relevant truck crash data and identify possible technologies/strategies to reduce commercial vehicle involved fatalities in the corridor. Commercial vehicle equipment and technology are rapidly increasing, and improved data collection can lead to more effective and targeted crash countermeasures in the NWP.
- Operator-based approach: Truck parking information systems. Michigan has recently unveiled "Mi Drive", which offers real-time traveler information data (weather, traffic, accidents, etc.), as well as an inventory of parking facilities. While the system does not currently indicate parking availability, a similar strategy could be explored by the FTF with eventual capabilities for travelers to find parking facilities. From a private industry perspective, Truck Parking Services has initiated pilots focused on smaller geographic areas that offer real-time parking availability for truckers, by facility. (see www.michigan.gov/drive and www.trucksmartparkingservices.com)

¹ Bureau of Transportation Statistics, National Transportation Statistics, 2013

Efficiency

In many portions of the corridor, capacity is being stretched thin by increased traffic, particularly freight traffic. Typically, the most cost-effective capacity improvements are operational rather than physical. Operational improvements are often appealing for public agencies as well as private industries and offer potential for cooperative opportunities. Potential focus areas are shown below:

- Technology-based approach: Commercial vehicle platooning and autonomous commercial vehicles. Significant advances have been made in autonomous vehicle (“driverless” or driver assisted) technology, and demonstrations have even been conducted some states. Both of these technologies allow for vehicles to be operated much more efficiently than under normal circumstances, and in particular they can be used with closer distances between vehicles. So far, private industry, academia, and government agencies have collaborated to explore these options, and one step for the NWP could be to develop a framework to enable autonomous vehicle operations / CV platooning. Nevada and California have already passed Model Autonomous Vehicle Legislation, which could serve as a blueprint for the FTF. The FTF could also invite a vehicle platoon demonstration, an example can be seen at Peloton Technology (www.peloton-tech.com)
- Information-based approach: Travel patterns in the NWP have yet to be fully analyzed and explored at a highly-detailed level. As technology has evolved, so has precision of data. While this data is often proprietary in nature, many options exist for forming collaborative data-sharing agreements with operators, businesses, and agencies that use the corridor. The FTF should explore data collection opportunities such as GPS probe data, geo-fencing patterns, and shipment tracking information to determine specific commercial vehicle origins, destinations, and through-movements in the NWP.

II. Summary of Freight-Related Corridor Activities

Introduction

As part of the North/West Passage Corridor Freight Support project, previous coalition activities that address freight movements through the corridor will be assembled and summarized. A list of these projects and their summaries are below; full document products are attached at the end of this report.

List of Freight-Related Projects

Below is a list of the Freight-Related projects, separated by phase/work order. The North/West Passage has issued 8 Phases to date, beginning with Phase 1 which was approved in 2003.

Phase 3 (Approved 2007)

Project 3.4 – North/West Passage Traveler Information Website

Phase 4 (Approved 2008)

Project 4.4 – North/West Passage Regional Permitting – Phase 1

Project 4.5 – Traveler Information Dissemination to Commercial Vehicle Operators

Phase 5 (Approved 2010)

Project 5.5 – North/West Passage Regional Permitting – Phase 2

Phase 6 (Approved 2011)

Project 6.6 – North/West Passage Regional Permitting – Phase 3

Project 6.7 – Corridor-Wide Marketing and Outreach to CVOs

Phase 7 (Approved 2012)

Project 7.3 – Truck Parking Projects along the NWP Corridor and Evaluate Third Party Data for Truck Parking Availability

Project 7.4 – North/West Passage Regional Permitting – Phase 4

Project 7.5 – North/West Passage Freight Industry Workshop

Phase 8 (Approved 2013)

Project 8.3 – Freight Task Force (ongoing)

Project 8.7 – Corridor-wide Commercial Vehicle Portal Feasibility Study (ongoing)

Project Summaries

Phase 3

Project 3.4: North/West Passage Traveler Information Website

Project 3.4 focused on developing a corridor-wide traveler information website for travelers on the I-90/I-94 Corridor from Wisconsin to Washington. This website eliminated the need for travelers to consult three different websites to gather information. The site provides weather conditions, traffic camera images, and identifies rest areas. For commercial vehicle operators (CVOs), the site also provides truck stop information as well as links to each state's commercial vehicle restriction laws/regulations. The Traveler Information Website can be visited at <http://www.i90i94travelinfo.com/>.

Phase 4

Project 4.4: North/West Passage Regional Permitting – Phase 1

In Project 4.4, the states of the North/West Passage conducted a review of the available methods for a regional permitting process for oversize and overweight (OSOW) trucks with the hopes of improving the efficient movement of trucks throughout the corridor. Phase 1 of this effort included a literature review and analysis of the Western Association of State Highway and Transportation Officials (WASHTO), the Southeastern Association of State Highway and Transportation Officials (SASHTO), and the New England Transportation Consortium (NETC) to understand the workings of each compact and how they issue OSOW permits. Researchers also conducted an online survey of 14 states, focusing on the permitting process from an agency perspective, and contacted truckers or trucking associations in all of the states participating in the study. Truckers were asked questions designed to elicit a better understanding of their views of the permitting process, including what works well and where there are opportunities for improvement. Based on the information gathered, the project team identified and recommended feasible approaches to implementing a regional OSOW permitting process in the states of the North/West Passage Corridor Coalition. The conclusion of this project was that too much opposition existed from states along the corridor to make regional permitting process work. However, conversations with the industry suggested that harmonization of the rules governing permits might offer great benefits. The Final Report of this effort is included as an attachment to this document.

Project 4.5: Traveler Information Dissemination to Commercial Vehicle Operators

The original goal of Project 4.5 was to provide the information necessary for states to consider expanding short term truck parking availability in the locations where it is needed most along the corridor. In November 2008, the North/West Passage group decided to temporarily defer action on this goal as there were a number of other projects ongoing (by other groups) related to truck parking issues and challenges. The group did not want to duplicate any efforts and decided to wait and determine the exact needs of this project at a later date.

In 2009, the group agreed to broaden the focus of the project and place less emphasis on truck parking availability. The revised goal of the project was modified as follows: *“To work with North/West Passage member agencies to research and document experiences, challenges, and successes disseminating travel information to truckers, and to prepare guidelines for commercial vehicle travel information for the North/West Passage Corridor that could be used by individual member states, or considered for an eventual future phase of the Corridor-wide Traveler Information Website.”*

The Final Report of this effort is included as an attachment to this document.

Phase 5

Project 5.5: North/West Passage Regional Permitting – Phase 2

Project 5.5 continued the efforts completed during Phase 1 through monthly discussions of options and coordination for regional permitting throughout the North/West Passage Corridor. The project continued the discussion of North/West Passage non-WASHTO states joining WASHTO and concluded that those states would not join WASHTO at that time. Instead, next steps were identified to make the process of moving oversize or overweight truckloads over the corridor easier. In support of this effort, a side-by-side detailed comparison of state permit requirements was developed. The project also focused on harmonization rules and identified recommended standards for the corridor related to signing, escorts, warning lights, and hours of operation. The project also identified necessary information to be requested from each permit application to move toward consistency.

Additionally, XML/Virtual Permitting benefits and issues continued to be researched during Phase 2. The project found that stakeholders needed to agree on the functionality that is expected from each state's interface system and plan for the dedication of the appropriate resources. Phase 2 also performed surveys to understand the confusion of regulations and requirements between jurisdictions, producing a list of suggested improvements to web-based information. Phase 2 recommended the completion of a third phase to continue the conversation. The Final Report of this effort is included as an attachment to this document.

Phase 6

Project 6.6: North/West Passage Regional Permitting – Phase 3

Phase 3 continued the conversation among the states on issues like harmonization; attempted to establish a regional dialogue with the trucking industry; looked at weight rules and reasons for lack of harmony; and got more senior personnel involved in the processes. The recommendations from Phase 3 will be reviewed by the North/West Passage Freight Task Force (established in Work Plan 8, approved in 2013) for consideration. The Final Report of this effort is included as an attachment to this document.

Project 6.7: Corridor-Wide Marketing and Outreach to CVOs

The purpose of Project 6.7 was to determine what enhancements may be needed to the corridor-wide travel information website built in Project 3.4 (<http://www.i90i94travelinfo.com/>) by seeking input from trucking associations, trucking companies, and Department of Transportation staff along the corridor. Enhancements for commercial vehicle operators are planned for the website depending on available budget and the level of demand and feedback received from both recreational travelers and from commercial vehicle operators. In addition to identifying enhancements to the website, the project also identified what other communication channels exist in the commercial vehicle community. The Final Report of this effort is included as an attachment to this document.

Phase 7

Project 7.3: Truck Parking Projects along the NWP Corridor and Evaluate Third Party Data for Truck Parking Availability

The objectives of Project 7.3 were twofold. The first objective was to summarize the work of other projects that have identified the issues of truck parking in each North/West Passage state and nationwide. The second objective was to conduct preliminary research on the potential use of third party data to provide truck parking availability. Currently, truck drivers are required to stop and rest after 11 hours of driving. If there is no parking available for a trucker and they continue to drive, the driver may become fatigued. Driver fatigue is thought to be a contributing factor in a number of heavy truck accidents. Truck drivers may also park on freeway ramps in unsafe locations if truck parking is not available.

For better utilization of truck stops and to provide truck drivers with safe rest options, real-time notification about the availability of parking spots is one need that has frequently been cited as an issue. For example, the University of Minnesota designed an automated truck stop management system in 2013 that can compute occupancy rates at stops and notify drivers about the availability using a Dynamic Message Sign (DMS) located 30 to 40 miles before the stop. The Final Report of this effort is included as an attachment to this document.

Project 7.4: North/West Passage Regional Permitting – Phase 4

After the completion of Phases 1-3 of the North/West Passage Regional Permitting project, a Freight Task Force (Project 8.3) was approved to continue freight-related activities and projects. The Steering Committee recommended and approved that the funds from Project 7.4 would be used to fund Project 8.3. The recommendations from the three regional permitting efforts will be reviewed by the Freight Task Force for consideration to continue to move efforts from the project team forward.

Project 7.5: North/West Passage Freight Industry Webinar

The goal of Project 7.5 was to provide the opportunity to share existing traveler information sources provided by public agencies along the I-90/I-94 corridor and to learn about the freight industry needs related to traveler information. A webinar was held on May 8, 2013 with participants from the freight community and state DOTs. The webinar discussion included an introduction to North/West Passage, highlights of freight activities in each states and feedback from freight participants on their needs for traveling I-90/I-94. The webinar feedback will be further presented to the Freight Task Force (Work Plan 8, Project 8.3) for consideration as freight-related projects and outreach efforts continue along the I-90 and I-94 Corridor. A summary of the webinar proceedings is included as an attachment to this document.

Phase 8

Project 8.3: Freight Task Force (ongoing)

From the coalition: *“The freight community and DOT freight staff have been engaged in North/West Passage activities on a somewhat limited basis. As such, the steering committee has a somewhat limited understanding of commercial vehicle travelers' needs and operational challenges along I-90/I-94. Many of the North/West Passage member agencies have offices responsible for all freight movement - by rail, highway and waterway. The staff sought for this task force should be focused on movement by highway and may be involved in freight planning or permitting activities. The task force would provide more in-depth expertise on the states' individual freight issues and activities and on the approaches that North/West Passage could pursue to better understand and address freight needs in future projects. Toward the end of Winter 2015, the task force participants and steering committee members will be surveyed regarding their perceptions of the value of extending the task force, transitioning it to a more permanent role.”*

Project 8.7: Corridor-wide Commercial Vehicle Portal Feasibility Study (ongoing)

From the coalition: *“Wyoming DOT is developing a web portal that will provide road condition forecasts to support freight movement through Wyoming. The road impact forecasts will be tailored specifically for commercial vehicles and then written and updated daily by Wyoming DOT's on-site meteorologists. The technology for the web portal could be expanded to the other North/West Passage states. This project would focus primarily on working with the states to develop a concept of operations for how the CVO Portal could be expanded through the corridor.”*

III. Additional Literature Review

The following items and programs are briefly summarized to add value and background for related ITS activities in and around the North/West Passage as well as across the United States.

RITA Programs and Research²

The Short Term Intermodal ITS research programs at RITA, the Research and Innovative Technology Administration, a subsidiary of the U.S. Department of Transportation, focus on mode-specific research programs that aim to further USDOT's goal of leveraging technology to maximize safety, mobility and environmental performance. Some of the products (or ones similar to those) being studied and/or developed have been implemented in the North/West Passage; others can be studied for potential adoption throughout the corridor.

Active Traffic Management

Active Traffic Management technologies are market-ready technologies and innovative operational approaches for managing traffic congestion within the existing infrastructure. The vision for Active Traffic Management research is to allow transportation agencies to increase traffic flow, improve travel time reliability, and optimize available capacity throughout the transportation network. These technologies include dynamic messaging signs, HOV/carpool lanes and tolling systems, mobile traffic alerts, and more.

Smart Roadside

Smart Roadside is a program aimed at using technology embedded in roadside infrastructure for information sharing to assist commercial vehicle operations. The vision for this program is that of a transportation system in which all the stakeholders of commercial vehicle operations—operators like motor carriers, shippers and enforcement personnel as well as equipment and facilities like vehicles, highway facilities, toll facilities, intermodal facilities and others collect data for their own purposes but also share that data seamlessly with other relevant parties. Fully integrating the technologies under Smart Roadside would lead to increased motor carrier safety, security, operational efficiency and freight mobility. This requires communication and interoperability between vehicles, roadways, and facilities and their data collection systems. Technologies included in this initiative include virtual weigh stations and e-screening, container tracking systems, electronic tolling systems, road weather information systems, truck parking programs, border crossings, inventories tracking systems, and more.

² Research and Innovative Technology Administration, USDOT, 2014.
http://www.its.dot.gov/mode_specific.htm

Commercial Vehicle Information Systems and Networks (CVISN)

Commercial Vehicle Information Systems and Networks (CVISN) Core and Expanded Program is a collection of information systems and communications networks that are owned and operated by governments, motor carriers, and other stakeholders that support commercial vehicle operations (CVO). Core CVISN functions include a safety information exchange, targeted electronic screening, and electronic credentialing. Expanded CVISN functions include information sharing for drivers, enhanced safety information sharing, and expanded electronic credentialing. The goal of the full CVISN program is to reduce regulatory and administrative costs for all CVO stakeholders, public and private. CVISN itself is an architecture that assists in planning and deploying integrated data sharing systems. The Federal Motor Carrier Safety Administration (FMCSA) has been working to deploy CVISN technology and provide administrative assistance in support of the establishment of CVISN in all fifty states and the District of Columbia and their coordination.

International Border Program

The International Border Program conducts research in support of strategies to improve the safety and efficiency of international border crossings that both facilitates trade and reduces emissions without compromising the safety of American borders. This is a joint program led by the FMCSA and the Federal Highway Administration (FHWA) and includes local and regional stakeholders as well as representatives from Canada and Mexico. Split into Southern Border and Northern Border initiatives, the International Border Program focuses on International Border Crossing-Electronic Screening System (IBC E-Screening) for trucks and buses on both borders. This technology expedites the flow of known legal freight and passengers while targeting unsafe or unknown operations through an alert-based system that uses RFID tags to identify trucks and display their information in real time to inspectors. On the Southern Border, additional focus is placed on a bi-national tolling and payment system with dynamic (variable) pricing which strives to reduce congestion and concentrated emissions that are commonly associated with U.S.-Mexico border crossings. Demonstration projects at the Southern and Northern Borders will be utilized as pilots for these ITS technology applications.

Multi-Modal Integrated Payment Systems

As defined by USDOT, Multi-Modal Integrated Payment Systems (MMIPS) are integrated, interoperable electronic fare payment systems that can be utilized by all modes at all times. The purpose of this connected network of systems is to increase the convenience and ease of use for customers as well as streamline revenue collection, improve efficiency and lower overall transaction costs. FHWA and the Federal Transit Administration (FTA) are cooperating on this research. The end goal of the program is to determine if MMIPS are feasible, and if so, develop one or more business models and policy options for development. In theory, MMIPS could include transit fares, tolls, and parking reservations/payments, among others.

ITS Maritime Applications

ITS Maritime Applications are transportation technologies applied within intermodal freight transfers between port, marine highway, truck, and rail, with the goal of assisting with greater operational efficiencies throughout the maritime environment. These technologies include optimizing scheduling for waterborne freight arrival and transit, providing real-time weather information to vessels, and coordinating truck and container movement to reduce wasted trips/unnecessary container movements. Phase one of this effort will include extensive stakeholder outreach to identify opportunities and technologies, while phase two will focus on developing and implementing pilot projects. This program is collaboration between RITA and the Maritime Administration (MARAD).

Weather Responsive Traffic Management (WRTM)

Weather Responsive Traffic Management (WRTM) is aimed at reducing adverse weather's effect on traffic congestion and number of accidents. Through advisory, control and treatment strategies, WRTM offers opportunities for operators to improve how they respond and manage these adverse weather events. Research includes improving traffic analysis, modeling, and prediction of traffic flow under all types of weather conditions; integrating high-quality, timely, and relevant weather information with existing traffic information into the transportation management centers; developing guidelines for road weather information communication and presentation customized for different conditions and travel scenarios; and creating evaluation guidance for transportation agencies to assess the benefits and costs of implementing a particular strategy. These technologies are among the more mature in the ITS environment yet continue to provide new opportunities for increased safety and efficiency.

V. Proposed Freight Task Force Work Plan Projects

This proposed work plan describes a list of potential projects that the NWP Freight Task Force will prioritize across to timeframes. For each project the consultant has provided a background statement suggested approach, an estimated project budget, and project schedule.

Project Prioritization

After developing the initial list of projects based on industry trends, needs of the corridor, and feedback from NWP Freight Task Force members, FTF members were surveyed and asked to rank the nine projects by each project’s importance to the corridor and their respective state DOT. The survey results were averaged across all scores to come up with a consensus ranking of the nine projects. This prioritization exercise will help set the goals and path of the FTF for the next 1-5 years, but also inform future technical memoranda (i.e., matching projects to funding sources based on their priority). See Exhibit 1 for the prioritization results.

Exhibit 1: Project Prioritization Survey Results

Project	Average	Rank
Pilot Escort Certification and Reciprocity Universal Standard	3.125	1
Advanced Notice of Truck Parking Availability	3.125	2
Electronic Display of Oversize/Overweight Permits	4	3
Pursue a “Toward Zero Deaths” (TZD) Involving Commercial Vehicles Safety Campaign	4.25	4
NWP Virtual Weight Station Initiative	5	5
Oversize / Overweight Permitting Uniformity (Mid-long term)	5	6
Calibrate Downstream WIM Scales with Permanent Scale Data	5.75	7
Model Legislation for Autonomous Commercial Vehicle Operation	6.875	8
Multistate Commercial Vehicle Platoon Demonstration (Mid-long term)	7.875	9

Project Descriptions

1. Pilot Escort Certification and Reciprocity Universal Standard

Timeline: Short Term

Background: For oversize/overweight vehicles traveling throughout the North/West Passage, it can be cumbersome and/or difficult to obtain permits from each state, especially because each state has different requirements. In addition to obtaining permits, CVOs must ensure that their vehicle complies with escort car requirements. This takes time, effort and money on the part of the operator because states require escorts for different size vehicles—making them required at different vehicle lengths, widths, heights and other characteristics. Different numbers and types of escort vehicles are required as well. Also, state certification of escorts and pilot vehicles is

not uniform. See **Error! Reference source not found.** for an overview of the different escort vehicle requirements for oversize/overweight loads.

Exhibit 2: Current Escort/Pilot Car Requirements in the North/West Passage, by State

State	When is Escort Required?				Etc.
	Trigger Width (ft.)	Trigger Height (ft.)	Trigger Length (ft.)	Other Triggers	
Washington	11: 2 escorts on 2-lane roads; 14: 1 escort at rear on multilane hwy; 20: 2 escorts on multilane/undivided hwy	14' 6"	105: 1 rear escort on 2-lane hwy; 125: 1 escort at front of 2-lane hwy	rear overhang exceeds 20 ft; 1 rear escort on 2-lane hwy	Escorts required if driver cannot see 200 ft. behind them using mirrors
Idaho	If load obstructs driver's view to the rear or when traffic control is needed	16	100 (2-lane highways); 120 (interstates)	any 2-lane 'red routes'; Third escort if load requires holding opposing traffic at turnouts	Rear escort required if driver cannot see 200 ft. behind them
Montana	12' 6": front escort on non-interstates; 16' 6": rear escort on interstates, 2 escorts on non-interstates	n/a	110: rear escort on non-interstates; 120: rear escort on interstates	n/a	not required for a vehicle exceeding 12' 6" in width if hauling an implement of husbandry or construction/forestry equipment
Wyoming	14 ft. on primary/secondary hwy; 15 ft. on interstates and 4-lane hwy	per approving authority	110 ft. on primary/secondary highways	escort required if rear overhang exceeds 25 ft	two escorts required for agricultural movements exceeding 16 ft. in width
North Dakota	14' 6": front escort on 2-lane hwy; 16: 2 escorts; 18: as determined by District Ops Commander	18: front escort	120: rear escort	for vehicles between 14' 6" and 16', rotating and flashing amber light can be substituted for escort	rear escort for all self-propelled earthmoving equipment that exceeds legal axle weights if max speed is 20mph
South Dakota	Front escort on 2-lane hwy or rear escort on divided hwy. Interstates: 16 ft./ State highways: 20 ft	n/a	n/a	earth-moving equipment requires front escort on state highways and rear escort on interstates	Specific escort req'ts for Black Hills area
Minnesota	14' 6": rear escort on divided hwy or 2 escorts on non-divided 2-lane hwy w/ one officer; 16: rear escort on divided hwy or 2 escorts with lead peace officer on non-divided 2-lane hwy	n/a	95: 1 escort; 110: 2 escorts	n/a	n/a
Wisconsin	by permit	by permit	by permit	n/a	escorts required on certain highways

Source: J.J. Keller Vehicle Sizes & Weights Manual, 2014.

Project Purpose: Greatly reduce the amount of time, cost and difficulty experienced by CVOs transporting OS/OW loads requiring escorts in the corridor; reduce inquiries and certification uncertainty for state DOTs.

Project Approach: Collect each state's escort/pilot car requirements and certification requirements, any relevant research reports, and interview key personnel to develop and agree upon a set of uniform standards for escort vehicle requirements and their certification. A Phase

2 effort would push adoption of the standard through appropriate channels in each state's DOT, if necessary.

Project Schedule / Budget: 12 months; with an estimated cost range of approximately \$75,000.00 - \$100,000.00.

2. Advanced Notice of Truck Parking Availability

Timeline: Short Term

Background: The shortage of available (and convenient) truck parking in the U.S. has been an on-going issue for several decades that began with a study of Interstate truck parking availability in 1996. That study and several subsequent efforts have noted the lack of readily available truck parking in many states. Previous research has demonstrated that in-part the problem stems from a lack of real-time information about truck parking availability, especially parking facilities that maybe a short distance off primary highway facilities.

Between 2006 and 2010, the USDOT awarded approximately \$6 million per year for pilot studies to address truck parking shortages. Both Michigan and Minnesota received awards to research and develop advanced truck parking notification systems under this program. The systems under development in Minnesota and Michigan have a fundamentally different approach to identifying parking shortages. The Michigan system is an "In/Out" system that tracks the number of trucks entering and exiting a parking facility. The Minnesota system is a "presence" system that detects where a vehicle is occupying a parking space. In/Out systems are considered less reliable, but also less expensive.

Michigan Truck Parking Information and Management System (TPIMS) – This system is designed to be scalable and portable to any corridor. The initial application is being deployed by the Michigan DOT along I-94 in southwest Michigan. However, it is envisioned that such a system, especially when integrated with other information systems and services, would be valuable for enhancing multistate corridor operations. Interfaces are being implemented between the Michigan DOT Advanced Traffic Management System (ATMS) software and both the ParkingCarma and Kapsch systems to share data and disseminate the parking availability information.³ The system was activated September 3, 2014. MDOT is using a number of high-tech methods to share the parking availability information, including dynamic roadside truck parking signs, MDOT's Mi Drive traffic information website (www.michigan.gov/drive), Truck Smart Parking Services website and smartphone

³ Smart Park for Trucks website: <http://www.smartpark4trucks.com/other-truck-parking-initiatives/michigan-dot.html>

applications (www.trucksmaparking.com), and a fleet of pilot trucks equipped with on-board connected vehicle equipment.⁴

Minnesota Truck Parking Availability Study: This project targets the development of an automated truck stop management system that can determine the number of occupied parking spaces at MnDOT safety rest areas and commercial truck stops. The system uses a network of cameras to monitor parking availability at truck stops, automatically identifying available spaces in real time. In this project, the information will be used to notify drivers and carriers about parking availability via a website, in-cab messaging, and variable message displays a few miles ahead of the rest area on the highway. The system has been installed at three MnDOT safety rest areas and one private truck stop on I-94. Initial results of the demonstration sites are expected in Aug/Sept. 2014.⁵

Project Purpose: Evaluate the existing truck parking information systems and make a recommendation for implementing truck parking availability systems corridor-wide to provide real-time information to commercial vehicle drivers.

Project Approach: Collect the relevant research reports and interview key project personnel to develop information that can support a corridor wide decision regarding truck parking information.

Project Schedule/ Budget, Phase 1: 9 months (some relevant information will not be available until early 2015); with an estimated cost of approximately \$10,000.00. Implementation of the technology would follow in Phase 2.

3. Electronic Display of Oversize/Overweight Permits

Timeline: Short Term

Background: In July 2012, the Motor Carrier Division of the State Highway Administration of the Maryland Department of Transportation initiated its Electronic Permitting Program. This system allows permits and permit attachments to be displayed on a variety of electronic devices, including smartphones, iPads, laptops, and more. In Maryland, the Motor Carrier Division issues and manages approximately 160,000 oversized moves each year—amounting to approximately 600-800 permits a day. MSHA estimates this could eliminate the printing of nearly 50,000 pieces of paper each month.⁶ This program will conserve paper and ink as well as reduce costs for the DOT while making truckers' lives a little easier and the permitting process

⁴ Michigan Department of Transportation (MDOT) 2014, <http://www.michigan.gov/som/0,4669,7-192--336551--rss,00.html>

⁵ American Transportation Research Institute (ATRI) fact sheet: <http://atri-online.org/wp-content/uploads/2012/04/truckparkingonepager.pdf>. And discussions with the MnDOT project manager.

⁶ Maryland State Highway Administration, July 17 2012. <http://www.marylandroads.com/pages/release.aspx?newsId=1201>

for their oversize moves more efficient. While many states, including those in the North/West Passage, have electronic permitting systems—some even allow electronic display on a case by case basis-- carriers are still required to possess and display paper permits.

Project Purpose: Devise and agree upon a method and/or technology/technologies that could enable states to run electronic display of permits. Consider systems and technologies that could function corridor-wide for future information.

Project Approach: Assemble industry standards and available technologies. Perform interviews and demonstrations with case study candidates like Maryland. Evaluate the advantages and disadvantages and develop comparative information and an implementation plan adaptable to each state's needs.

Project Schedule / Budget: 6 months; with an estimated cost range of approximately \$25,000.00 - \$35,000.00. Going through the systems engineering process to prepare for implementation would be a Phase 2 effort, requiring an additional 4-6 months and \$25,000.00-\$35,000.00.

4. Pursue a “Toward Zero Deaths” (TZD) Involving Commercial Vehicles Safety Campaign

Timeline: Short Term

Background: In 2009 FHWA and AASHTO partnered to develop a national strategy to prevent fatalities. In June 2014, the AASHTO Board of Directors endorsed the Zero Death strategy as a national vision for highway safety. Currently 35 states have adopted a TZD vision or goal of zero highway fatalities.

Project Purpose: Reduce or eliminate fatalities resulting from commercial vehicle crashes in the NWP corridor.

Project Approach: Assemble the TZD strategies currently being pursued by states in the coalition, and conduct research on commercial vehicle fatalities occurring in the NWP states on I-90 and I-94. Based on the safety research and synthesis of existing strategies, develop supplemental strategies, marketing materials and actions to achieve zero deaths from commercial vehicles within the corridor.

Project Schedule / Budget: 12 months; with an estimated cost range of approximately \$75,000.00 - \$100,000.00.

5. NWP Virtual Weight Station Initiative

Timeline: Short Term

Background: Enforcement pre-clearance or “e-screening” technologies have existed for several decades around the US to reduce the time that compliant trucks spend at enforcement sites. Most trucks enrolled in a pre-clearance network have a transponder. As a truck with a transponder approaches an enforcement site, the transponder transmits data identifying the truck, while in-road and/or roadside sensors feed information such as vehicle weight and carrier credentials to a scale house or port of entry facility. Nearly all of the existing pre-clearance systems require motor carriers to be enrolled in the program, and purchase transponders for each truck in their fleet. Several states in the NWP Corridor current participate in transponder based enforcement pre-clearance programs. Currently Montana, Wisconsin and Wyoming employ pre-clearance services from Pre-Pass®, while Washington and Idaho are members of NORPASS.

Using this same concept, new character recognition and camera technologies have entered the market which allow for vehicle identification and identification of the carriers operating trucks to be identified in real time using license plates, USDOT or vehicle identification numbers. Using a suite of technologies that include weigh-in-motion (WIM) scales, cameras, screening software, and communication infrastructure, Virtual Weight Stations (VWS) allow enforcement officials to weigh vehicles, and in most instances check safety records and carrier credentials without a physical facility.

As a vehicle approaches a VWS, information is collected from upstream WIM scales, camera’s and character recognition software identify the truck and the information is transmitted to a roadside cabinet with the appropriate computer and communications hardware and software. The roadside computer instantly checks vehicle identifiers against credentialing data, typically via a Commercial Vehicle Information Exchange Window (CVIEW). A mobile enforcement unit equipped with a laptop, internet browser and a broadband communications technology is stationed downstream from the VWS that enables enforcement officers to make informed decisions about pulling offenders over and conducting a static weight check or more thorough inspection. The mobile enforcement unit would need to contain the equipment necessary to provide static weight of the vehicle and check for other credentials.

Project Purpose: Due to shale oil developments, agriculture, timber and other mining activity the corridor is subject to heavy truckloads. Using VWS could increase enforcement presence in the corridor during peak activity periods without the expense of brick and mortar installations. And, while several states in the NWP corridor have piloted and/or installed VWS technologies, coalition states could use the corridor as a test bed for sharing VWS deployment and testing results.

Project Approach: Assemble information about existing VWS implementation across NWP corridor states, and within the corridor itself. Research the state-of-the-practice and state-of-the-art in VWS technologies, and make recommendations for technology standards and

installation sites within the corridor. This phase 1 project would also establish protocols for sharing performance results from enforcement, as well as technology cost effectiveness.

Project Schedule / Budget: 6 months/ approximately \$50,000.00

6. Oversize / Overweight Permitting Uniformity

Timeline: Mid-Long Term

Background: To date, the NWP Corridor has undertaken three studies of oversize/over vehicle permitting uniformity, with little or no progress in making changes resulting in greater uniformity. Recent discussions with the Specialized Carriers and Riggers Association (SC&RA) suggested a project to demonstrate the costs bore by industry resulting from non-uniformity between states in the corridor.

Project Purpose: The project would seek to make the costs upon industry created by non-uniformity real to senior DOT managers and policy makers. The project would also highlight the highest-cost non-uniformity issues in the corridor and demonstrate how those costs impact the costs of doing business for some industries.

Project Approach: The project would be designed to complement national level studies and initiatives on OS/OW permit uniformity, but focusing on actual case studies of specialized carriers operating in the NWP Corridor. The results from 8-10 specific case studies would then be used to examine economic impacts across the corridor from non-uniformity in specific areas of permitting such as:

- Time of day and other holiday restrictions
- Type and Size of Escort Vehicles
- Escort Requirements
- Size and Weigh differences between jurisdictions
- Others

Project Schedule / Budget: 1 year; with an estimated cost of approximately \$150,000.00

7. Calibrate Downstream WIM Scales with Permanent Scale Data

Timeline: Short Term

Background: Weigh-in-motion scale technology has become an essential tool in helping states collect and report traffic volume and weight data that is a crucial input to highway and bridge design, performance management, and weight enforcement monitoring. States are also increasingly combining WIM with other advanced technologies to implement virtual weigh station facilities. While the accuracy and durability of WIM technology has continued to advance over the past several decades, maintenance and calibration remains a time and resource consuming activity.

In 2006 as part of the International Technology Scanning Program sponsored by FHWA, AASHTO and TRB, a group of U.S. truck size and weight enforcement experts conducted a scan of European countries to learn first-hand the best truck enforcement practices in France, Germany, the Netherlands, Slovenia, and Switzerland. The scanning report noted a system being employed by France:

Nationwide, France uses 170 WIM systems to collect weight data and provide statistical planning support through the SIREDO (Système Informatisé de REcueil de DONnées) Network. These systems rely largely on automatic self-calibration and a comparative review of static weight data (captured during enforcement activities) to meet data quality requirements. The combination of autocalibration and static weight data comparative procedures has eliminated the need for resource-intensive manual calibration conducted typically on an annual basis.

Since many trucks operating on I-90 and I-94 today are equipped with transponders, a technology test could be developed for using live load information from trucks that are weighed either by static scales or low-speed WIM scales at enforcement sites, and use the information gathered on transponder equipped trucks to calibrate high-speed WIM scales.

Project Purpose: Improve the accuracy and reduce the resources required to calibrate WIM scales on I-90, I-94 and major intersecting highways.

Project Approach: Evaluate existing use and calibration methods for WIM scales across the corridor. Meet with technology vendors and trucking industry representatives to discuss demonstration program participation.

Project Schedule / Budget, Phase 1 – Concept Demonstration: 12 months; with an estimated cost range of approximately \$75,000.00 - \$100,000.00. Implementation of the technology would follow in Phase 2.

8. Model Legislation for Autonomous Commercial Vehicle Operation

Timeline: Short Term

Background: Truck Platooning (TP) is a mass flow concept of maximizing the throughput of commercial vehicles on a highway asset using physical and/or electronic connections that allow the entire platoon to be controlled as a single unit. The concept offers the benefit of dramatically reducing fuel consumption, eliminating delays caused by congestion on mixed vehicle facilities, and potentially reducing the cost of labor inputs. Most truck platoon concepts being advanced include a dedicated road infrastructure separated from normal traffic, primarily due to current safety concerns of mixing the traffic. The benefits of truck platoons could occur at three levels:

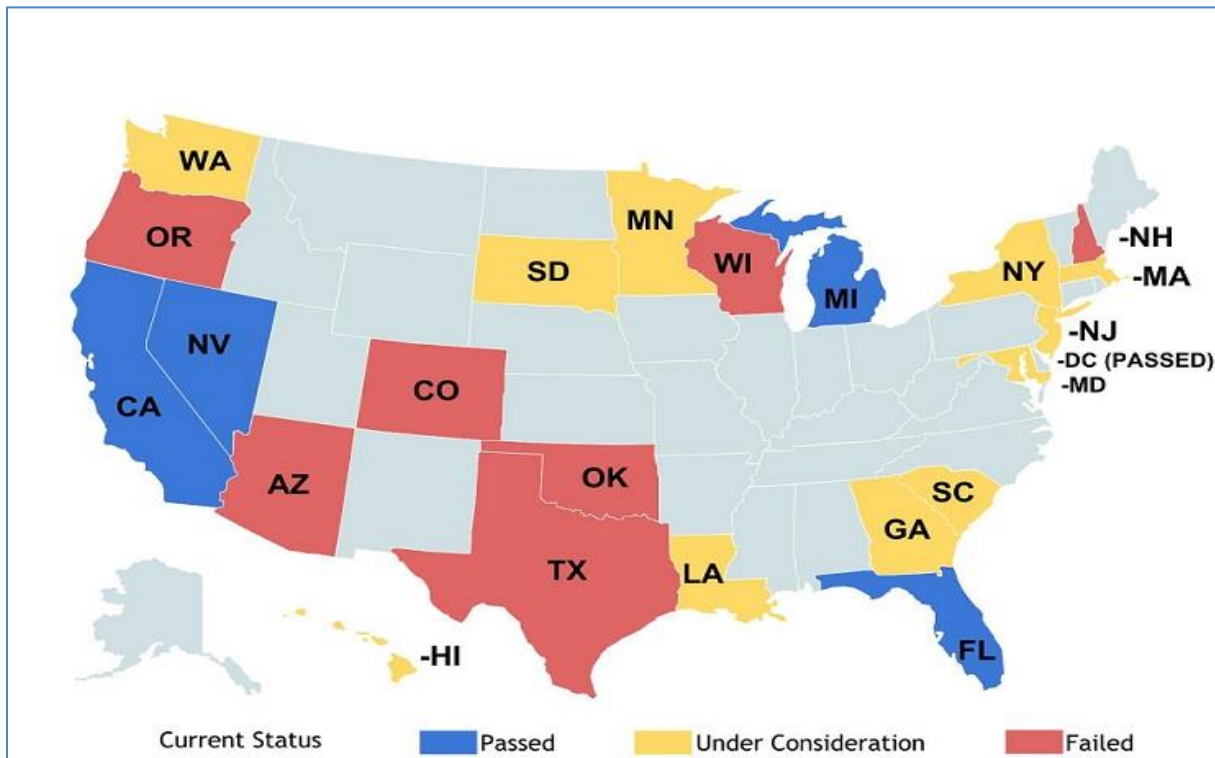
- Vehicle Operational Cost Savings – More than 50% of the fuel consumed by a typical five axle tractor-semi-trailer combination is the result of aerodynamic drag. Current research

estimates that truck platoon can result in fuel savings of 10-20 %. Additional research to verify estimates and better understand both energy saving and some potential off-setting costs associated with brake components is currently underway.

- **Driver Cost Savings** – In the long term, major cost savings could result from driverless trailing vehicles. This would require both significantly improved control technologies and major regulatory changes. In the short term, operational cost savings are possible if drivers in trailing units are placed in a “non-duty status” under hours of service regulations.
- **Infrastructure Savings** – In the short term, dedicated truck lane facilities could accommodate significantly higher capacity and greater time reliability using mass flow platoons. Limited truck platooning using existing mixed traffic lanes might also be feasible. Use during commuter off-peak periods could be used to offset restrictions in truck traffic during peak commuter timeslots.

Purpose: Enabling mass flow truck platoons is an area of Intelligent Transportation Systems (ITS) under the connected vehicle program at USDOT Joint Program Office. Currently USDOT is sponsoring several demonstration projects around the country. However one of the first steps for implementing an automated vehicle program is enabling legislation. Exhibit 3 on the following page shows the current status of states that have adopted legislation to allow automated driving.

Exhibit 3: Status of Automated Driving Statutes



Source: The Center for Internet and Society, Stanford University Website:
http://cyberlaw.stanford.edu/wiki/index.php/Automated_Driving:_Legislative_and_Regulatory_Action

To position the NWP Corridor for a possible multistate corridor demonstration, model legislation could be drafted for use by all the states to advance within the corridor.

Approach: California developed the first legislation to allow the operation of autonomous vehicles; several states have adopted legislation modeled after California. Similar legislation has also failed in a number of states around the country, and more states are currently exploring options for advancing legislation. The project would collect existing legislation and interview representatives where legislation has failed or is under consideration to determine best practices. Using the information gathered the consultant could develop model legislative language for potential adoption by states in the coalition.

Schedule and Budget: 6 to 9 months; estimated cost of approximately \$25,000.00.

9. Multistate Commercial Vehicle Platoon Demonstration

Timeline: Mid-Long Term

Background: Currently there are a number of commercial vehicle platooning demonstrations occurring around the world. Europe has completed demonstrations of five vehicle road trains that included both commercial vehicles and trucks under the Safe Road Trains for the Environment (SARTRE) project.

Two-vehicle commercial vehicle platoon demonstrations are currently underway in Nevada and California through a USDOT funded project to optimize tractor-trailer platooning in partnership with Auburn University, Peterbilt/PACCAR, Denso, Meritor-WABCO and ATRI.

Provided states in the corridor can get enabling legislation passed, the corridor could apply for demonstration grants to explore multi-state and/or mixed use vehicle platoons.

Project Purpose: Demonstrated the safety and environmental benefits of vehicle platoons in the NWP Corridor.

Project Approach: Dependent on Project #1

Project Schedule / Budget: 2 years; with an estimated cost of \$250,000.00

VI. National/Regional Freight Activities and Conferences

Below is a listing of national and regional freight-related activities and conferences that members of the North/West Passage Freight Task Force may find of interest in furthering work plan efforts. The events below are in chronological order.

WASHTO Annual Meeting 2014

Date: July 13-16, 2014

Location: Albuquerque, NM

Cost: \$650

Description: The purpose of the WASHTO annual meeting is to carry out the organization's mission to serve its member departments by contributing to national policies on transportation issues that are responsive to members' needs; promoting a closer relationship between its members; advocating legislation that supports efficient and effective transportation systems, economic competitiveness and the environmental integrity of member states; providing a forum for exchanging ideas, exploring and adapting techniques, and promoting quality and best practices for implementation.

Link: <http://www.washto2014.com/>

2015 Meeting: July 19-22, Boise, Idaho

AASHTO Standing Committee on Highways – Subcommittee on Highway Transport (SCOHT) – Annual Meeting

Date: July 14-17, 2014

Location: Philadelphia, PA

Cost: \$299 (before June 9, 2014)

Description: The Subcommittee on Highway Transport (SCOHT) is AASHTO's oldest subcommittee in continuous existence. SCOHT addresses all policy, regulatory, safety and enforcement issues impacting the ability of States to develop and maintain their interstate, national and state highway segments of an efficient national freight transportation network.

SCOHT serves as the Highway modal lead for the AASHTO [Freight Transportation Network](#) and [Special Committee on Intermodal Transportation and Economic Expansion](#). SCOHT members include all 52 AASHTO participating transportation departments as well as key Federal and international ex officio liaisons. For the past several years the SCOHT has been meeting jointly with the summer meeting of the TRB Truck Size and Weight Committee.

Link: <http://highwaytransport.transportation.org/Pages/default.aspx>

2015 Meeting: Mid-July, Location TBD

National Rural ITS Conference 2014

Date: August 24-27, 2014

Location: Branson, MO

Cost: \$250

Description: This conference will provide participants with an opportunity to network and share experiences within and across a wide variety of ITS disciplines. In addition to traditional ITS topics, this event will bring together both traditional and non-traditional ITS users to address such issues as rural safety, multi-agency coordination, and workforce development, as well as EMS and transit issues. The many different training and networking opportunities available through this event will provide participants with the tools necessary to effectively plan and deploy ITS technologies within their own jurisdictions.

Link: <http://www.nritsconference.org/>

2015 Meeting: August 9-12, 2015, Snowbird, Utah

2014 World Congress on Intelligent Transport Systems

Date: September 7-11, 2014

Location: Detroit, MI

Cost: \$1260 for early non-member registration, \$1145 for members

Description: ITS America, in partnership with ERTICO and ITS Asia-Pacific, is excited to welcome you America's Motor City, the perfect backdrop for the fantastic exhibitions hosted on our more than 300,000 sq. ft. of show floor at the Cobo Center, the interactive demonstrations of the groundbreaking innovations in our Technology Showcase, the more than 250 riveting programmatic panels, roundtables, and interactive town hall sessions, as well as numerous networking events with an expected 10,000 transportation and technology leaders from around the world.

Link: <http://www.cvent.com/events/2014-aashto-annual-meeting/event-summary-75af3cafee0e46248302830744c0193e.aspx>

2015 Meeting: October 5-9, Bordeaux, France (<http://www.itsworldcongress.com/bordeaux-2015>)

WASHTO Committee on Highway Transport (COHT)

Date: September 8-10, 2014

Location: Boise, ID

Cost: Not Available

Description: The Committee on Highway Transport shall identify and explore major motor carrier industry-related transportation issues within the WASHTO region and across the international boundaries contiguous to the WASHTO region, to define actions and solutions, improve coordination and communication, and to recommend policies, position statements and standards to the WASHTO Board of Directors. The mission of the WASHTO Committee on Highway Transport, in partnership with the motor carrier industry, is to promote uniform laws, regulations and practices among member jurisdictions and other jurisdictions for the efficient movement of goods and services while ensuring the safety of all highway users and preserving the highway infrastructure. The annual meeting provides an opportunity to report on progress, industry trends, and the impact on WASHTO states.

Link: <http://www.washto.org/coht/>

2015 Meeting: Spring Meeting: ~March, Location TBD; Fall: ~September, Location TBD

CVSA Annual Conference & Exhibition

Date: September 14-18, 2014

Location: Buffalo, NY

Cost: \$450 for members, \$625 for non-members (price goes up after September 5)

Description: The Commercial Vehicle Safety Alliance provides the opportunities and framework for its members to work together to advance its mission to achieve quality, uniformity and consistency in commercial motor vehicle safety and security all across North America, all year long. CVSA's premier annual event includes roll-up-your-sleeve meetings of elected leadership, technical working committees, program committees and task forces. The benefits of the face-to-face interaction are priceless—participants get down to business, discuss, examine, cooperate and make tremendous strides in furthering CVSA's mission. Together, we make a difference and save lives.

Link: http://www.cvsa.org/events/annual_conference/2014/index.php

2015 Meeting: September 14-17, Location TBD

MAASTO Subcommittee on Highway Transport (SCOHT)

Date: October 6-8, 2014

Location: Minneapolis, MN

Cost: \$175

Description: The mission of the Mid America Association of State Transportation Officials, Subcommittee on Highway Transport (formerly Mississippi Valley Committee on Highway Transport), is to be an advocate for oversize/overweight transportation issues by partnering with industry to promote uniformity of laws and regulations to allow for the efficient movement of goods while providing uninterrupted traffic flow and a safe transportation system among member states.

In 2011, the organization changed its name to the Mid America Association of Transportation Officials to better reflect the location of the member states. This conference is the fall version of the biannual gathering of members and will feature speakers, round table discussions, committee meetings, and social gatherings.

Link: <http://www.maastoscoht.com/Conference.htm/>

2015 Meeting: Spring Meeting: ~March, Location TBD

TRB Annual Meeting

Date: January 11-15, 2015

Location: Washington, DC

Cost: \$670 before November 30, 2014

Description: The TRB Annual Meeting program covers all transportation modes, with more than 4,500 presentations in nearly 800 sessions and workshops addressing topics of interest to all attendees—policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions. The program is expected to attract 12,000 transportation professionals from around the world. The spotlight theme for the 2015 TRB Annual Meeting is *Corridors to the Future: Transportation and Technology*.

Link: <http://www.trb.org/AnnualMeeting2015/AnnualMeeting2015.aspx>

ITS America Annual Meeting

Date: June 1-3, 2015

Location: Pittsburgh, PA

Cost: ~\$700

Description: More than 2,000 high-tech transportation and business leaders gather to showcase intelligent transportation systems and discuss innovative solutions to national and regional infrastructure challenges. The 2015 meeting will be ITS America's 25th annual conference. The meeting will feature keynote speeches and panel discussions with the intelligent transportation industry's premier thought leaders and rising stars, and provide attendees the opportunity to experience the latest transportation innovations through interactive technology demonstrations, a bustling exhibit hall, technical tours, and networking events.

Link: <http://www.itsa.org/> /
<http://intelligenttransportationsocietyofamerica.cmail2.com/t/ViewEmail/d/E5182CF3B0720FC4/8973C9432CE2AFEE>

MAFC Annual Meeting 2015

Date: TBD (likely Spring)

Location: TBD

Cost: ~\$100

Description: The Mid-America Freight Coalition is a regional organization that cooperates in the planning, operation, preservation, and improvement of transportation infrastructure in the Midwest. The ten states of the AASHTO Mid-America Association of State Transportation Officials (MAASTO) share key interstate corridors, inland waterways, and the Great Lakes. The annual meeting brings stakeholders together to discuss issues facing the region, plan for the year ahead, and network.

Link: <http://midamericafreight.org/>

APPENDIX A: North/West Passage Freight-Related Project Report Packet

Contents

- 1--Traveler Information Dissemination to Commercial Vehicle Operators (Project 4.5)
- 2--Corridor-Wide Marketing and Outreach to Commercial Vehicle Operators (Project 6.7)
- 3--Truck Parking along the North/West Passage Corridor and Third Party Data for Truck Parking Availability (Project 7.3)
- 4--North/West Passage Corridor-Wide Commercial Vehicle Permitting, Phase 1 (Project 4.4)
- 5--North/West Passage Corridor-Wide Commercial Vehicle Permitting, Phase 2 (Project 5.5)
- 6--North/West Passage Corridor-Wide Commercial Vehicle Permitting, Phase 3 (Project 6.6)
- 7--North/West Passage Freight Industry Webinar Summary May 8, 2013 (Project 7.5)