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FINAL

Freight Task Force, Year 2

Task 3 – Freight Funding Opportunities

Prepared for:

North/West Passage Pooled Fund

Prepared by:

CPCS Transcom Inc.

Solutions for growing economies

CPCS Ref: 16270
May 25, 2017

MnDOT North/West Passage – Project 10.4: Freight Task Force, Year 2

The objective of Year 2 activities of the North/West Passage (NWP) Freight Task Force is to continue the momentum of the Year 1 work. Specifically, to 1) support the active engagement of NWP Members, 2) conduct best practice (and practical) research on project funding opportunities, and 3) to help refine the truck parking concept so that it best fits NWP needs. Each of these activities is aimed at getting the coalition closer to project implementation.

Working Paper

This Working Paper represents the Task 3 deliverable. The aim of Task 3 is to provide insight into available funding and partnerships the NWP Freight Task Force should consider for project implementation.

Acknowledgments

The CPCS Team acknowledges and is thankful for the input of those consulted in the development of this Working Paper, as well as the guidance and input of representatives from NWP Freight Task Force.

Opinions

Unless otherwise indicated, the opinions herein are those of the authors and do not necessarily reflect the views of the NWP Freight Task Force.

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Cover image source: CPCS

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Acronyms / Abbreviations

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
AID	ACCELERATED INNOVATION DEPLOYMENT
ATCMTD	ADVANCED TRANSPORTATION AND CONGESTION MANAGEMENT TECHNOLOGIES DEPLOYMENT PROGRAM
CMAQ	CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT PROGRAM
CMV	COMMERCIAL MOTOR VEHICLE
CV	CONNECTED VEHICLES
CVSP	COMMERCIAL VEHICLE SAFETY PLAN
FAST	FIXING AMERICA'S SURFACE TRANSPORTATION
FASTLANE	FOSTERING ADVANCEMENTS IN SHIPPING AND TRANSPORTATION FOR THE LONG-TERM ACHIEVEMENT OF NATIONAL EFFICIENCIES
FHWA	THE FEDERAL HIGHWAY ADMINISTRATION
FMCSA	FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION
HRD	HIGHWAY RESEARCH AND DEVELOPMENT
HSIP	HIGHWAY SAFETY IMPROVEMENT PROGRAM
ITD	INNOVATIVE TECHNOLOGY DEPLOYMENT
ITS	INTELLIGENT TRANSPORTATION SYSTEMS
ITSP	INTELLIGENT TRANSPORTATION SYSTEMS PROGRAM
MAASTO	MID-AMERICA ASSOCIATION OF STATE TRANSPORTATION OFFICIALS
MAP-21	MOVING AHEAD FOR PROGRESS IN THE 21ST CENTURY
MCSAP	MOTOR CARRIER SAFETY ASSISTANCE PROGRAM
NHFN	NATIONAL HIGHWAY FREIGHT NETWORK
NHFP	NATIONAL HIGHWAY FREIGHT PROGRAM
NHPP	NATIONAL HIGHWAY PERFORMANCE PROGRAM
NHS	NATIONAL HIGHWAY SYSTEM
NWP	NORTH/WEST PASSAGE
OSOW	OVERSIZE/OVERWEIGHT
STBG	SURFACE TRANSPORTATION BLOCK GRANT PROGRAM
STSFA	SURFACE TRANSPORTATION SYSTEM FUNDING ALTERNATIVES
TIDP	TECHNOLOGY AND INNOVATION DEPLOYMENT PROGRAM
TIGER	TRANSPORTATION INVESTMENT GENERATING ECONOMIC RECOVERY
TPIMS	TRUCK PARKING INFORMATION MANAGEMENT SYSTEM
TZD	TOWARD ZERO DEATHS
V2I	VEHICLE-TO-INFRASTRUCTURE
VWS	VIRTUAL WEIGH STATIONS
WASHTO	WESTERN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
WIM	WEIGH IN MOTION

Executive Summary

In 2014, the NWP Freight Task Force undertook an effort to identify and prioritize projects that could improve the safety and efficiency of the North/West Passage corridor. Now, three years later, technological and economic trends have begun to re-shape how the U.S. transportation system works, making it necessary to re-evaluate the need for, state's interest in, and the implementation status of that slate of NWP priority projects.

The 2014 ranked projects are shown in Figure ES-1. The top three priority projects in 2014 were: 1) Pilot Escort Certification and Reciprocity Universal Standard; 2) Advanced Notice of Truck Parking Availability – Phase 2; and 3) Electronic Display of Oversize/Overweight Permits.

Figure ES-1: 2014 Project Prioritization Survey Results

Project	Average Score	Rank	Estimated Cost
Pilot Escort Certification and Reciprocity Universal Standard	3.125	1	$75-100K
Advanced Notice of Truck Parking Availability – Phase 2	3.125	2	N/A
Electronic Display of Oversize/Overweight Permits	4	3	$50-70K
Pursue a "Toward Zero Deaths" Commercial Vehicles Safety Campaign	4.25	4	$75-100K
NWP Virtual Weigh Station Initiative	5	5	$50K
Oversize/Overweight Permitting Uniformity (Mid-long term)	5	6	$150K
Calibrate Downstream WIM Scales with Permanent Scale Data	5.75	7	$75-100K
Model Legislation for Autonomous Commercial Vehicle Operation	6.875	8	$25K
Multistate Commercial Vehicle Platoon Demonstration (Mid-long term)	7.875	9	$250K

Source: Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014

A survey conducted in early 2017 asked NWP member states to update their preferences related to these priority projects. The results, shown in Figure ES-2, indicate if a NWP member state has an active, planned (and will be funded and underway within next five years), has interest (but no current funding), or has no interest (or funding) in the priority projects. Noteworthy are the number of states that are actively implementing priority projects, but are not necessarily coordinating with other NWP states, for example related to the Toward Zero Deaths Campaign.

And, while a different approach was used to examine these projects in 2017 (not a ranking approach, as was done in 2014), the survey showed that projects previously ranked as high priorities, have lower interest among stakeholders today. For example, Oversize/Overweight Permitting Uniformity which ranked sixth in 2014, is arguably a project with greatest interest due to the number of active, planned (and will be funded and underway within next five years), and has interest (but no current funding) responses.

Figure ES-2: Level of Activity and Interest in Each Project

Project	Active	Planned	Interested	Not Interested
Oversize/Overweight Permitting Uniformity	4	1	1	0
Electronic Display of Oversize/Overweight Permits	3	0	1	1
Pursue a "Toward Zero Deaths" Campaign	4	0	1	1
Pilot Escort Certification and Reciprocity Universal Standard	2	0	2	2
Calibrate Downstream WIM Scales with Permanent Scale Data	2	0	2	2
NWP Virtual Weigh Station Initiative	1	0	4	1
Model Legislation for Autonomous Commercial Vehicle Operation	1	0	3	2
Advanced Notice of Truck Parking Availability – Phase 2	1	0	5	0
Multistate Commercial Vehicle Platoon Demonstration	0	0	4	2

Source: CPCS Survey of NWP States. Note: South Dakota did not respond to the survey, and Idaho did not respond to "Electronic Display of Oversize/Overweight Permits." As additional responses are received, these results will be updated.

While each of these projects continues to have some level of interest by one or more NWP member state, they don't all require or warrant the same level of involvement by the Freight Task Force. In some cases, states are implementing projects on their own and should have the ability to guide their own funded work. In other cases, regional or National organizations are taking a lead role, making any efforts by the NWP redundant or counterproductive.

Based on their intended objectives, these projects are well suited for a variety of state and Federal funding sources, however as they are currently defined they may be too cost prohibitive for states to tackle on their own. At the same time, these projects may not qualify for grant programs such as FASTLANE and TIGER, on the basis of their comparatively low project cost in relation to the grant minimums (in some cases $5 million, $25 million, or more). However, there are a few examples of "sweet spots" where the level of interest and current state of implementation makes sense for NWP Freight Task Force to take an active role in advancing research or implementation, including:

- **Pursue Toward Zero Deaths Commercial Vehicle Campaign** – The Toward Zero Deaths Commercial Vehicle Campaign project is estimated to take 12 months, with projected costs between $50,000 and $100,000. General research on lessons learned in the implementation of Toward Zero Deaths and the development of specific strategies and marketing materials are best funded through the NWP pooled fund. Subsequent outputs or corridor wide initiatives using technology or other means could be eligible for federally allocated funding and grants. On a state-by-state basis, Toward Zero Deaths activities could be funded through the Highway Safety Improvement Program. The Highway Safety Improvement Program projects or strategies must be included in the state's Strategic Highway Safety Plan, requires additional lead time to add lessons learned and initiatives to those documents.
- **North/West Passage Virtual Weigh Station Initiative** – The expected cost of the Virtual Weigh Station project ranges from $20,000 to $50,000. The research focus of the Virtual Weigh Station project makes it most likely to be funded by the NWP pooled

fund, but state or federal research programs could also fund the project. Subsequent phases of this research focused on implementation of could be funded by Federal surface transportation programs depending on the need and intended purpose of the project. Additionally, Federal Motor Carrier Safety Administration funding sources such as the Motor Carrier Safety Assistance Program and the Innovative Technology Deployment Program may present opportunities for funding subsequent steps on the VWS Initiative.

- **Calibrate Downstream WIM Scales** – Phase I of the project is expected to take 12-18 months with costs ranging from $75,000 to $250,000, depending on research tasks. Given the research focus of the WIM project, Phase 1 is best funded through the NWP pooled fund, though admittedly this may stretch the resources of the fund.

Note, the NWP is currently conducting research on three projects, 1) The Model Legislation for Autonomous Commercial Vehicle Operations; 2) Advanced Notice of Truck Parking Availability – Phase 2; and 3) Multistate Commercial Vehicle Platoon Demonstration. As the results of those efforts are finalized, the future role of the NWP may be expanded to also include these topics.

The findings presented in this Working Paper have revealed several next steps the NWP should consider as it works to implement projects that enhance the safety and efficiency of corridor wide operations. Noteworthy is the advent of new Federal dollars aligned to freight system needs, providing the NWP an opportunity to re-evaluate their list of priority projects and examine ways to redefine and combine project concepts to increase their size and scope to become eligible for Federal programs, similar to the MAASTO coalition where eight Midwest states joined forces, secured a $25 million grant and are now advancing a truck parking availability system in partnership with each other. Suggested next steps for the NWP include:

- **Update or Remove Irrelevant Projects** – Projects in the 2014 priority listing may not be relevant anymore or may need to be updated based on research underway or already completed.
- **Identify New Projects** – Incorporating the current state of the practice, NWP member states should generate new research projects to ensure the list of project options presents the state of the art applications of technology that address current and emerging needs and issues.
- **Align Projects with Funding** – Using the information provided in this report, specifically on grant programs such as TIGER and FASTLANE, the NWP should work to identify corridor wide project proposals that link multiple projects together, that today are disconnected. Proactive planning could better positioning the NWP to compete in future grant application cycles for larger, more impactful projects.
- **Transition to Implementation** – The NWP should continue developing research, but should place greater emphasis on transitioning that research to implementation (with a deliberate focus on the potential for competitive grant funding noted above). The Freight Task Force could serve as the venue to discuss where implementation will provide the greatest benefit as a guide to where the shift to implementation should be focused.

1 Introduction

1.1 Background

The North/West Passage (NWP) is a multi-state operations-focused partnership between the states of Idaho, Minnesota, Montana, North Dakota, South Dakota, Washington, and Wyoming initiated with the leadership of Minnesota DOT in 2002. These states share similar challenges with Interstates 90 and 94 serving as major passenger and commercial vehicle highway corridors, and both subject to operational challenges due in part to extreme weather conditions. Many of the operational issues are exacerbated for commercial vehicles and are related to truck parking management, traveler information, truck permitting and other operational issues.

The Freight Task Force (Task Force) was established in 2014 to help realize the NWP Corridor's vision of…

…developing effective methods for sharing, coordinating, and integrating traveler information and operational activities across state and provincial borders.

1.2 Objectives

Year 2 activities of the Task Force are being pursued to continue the momentum of the Year 1 work. Specifically the activities are designed to

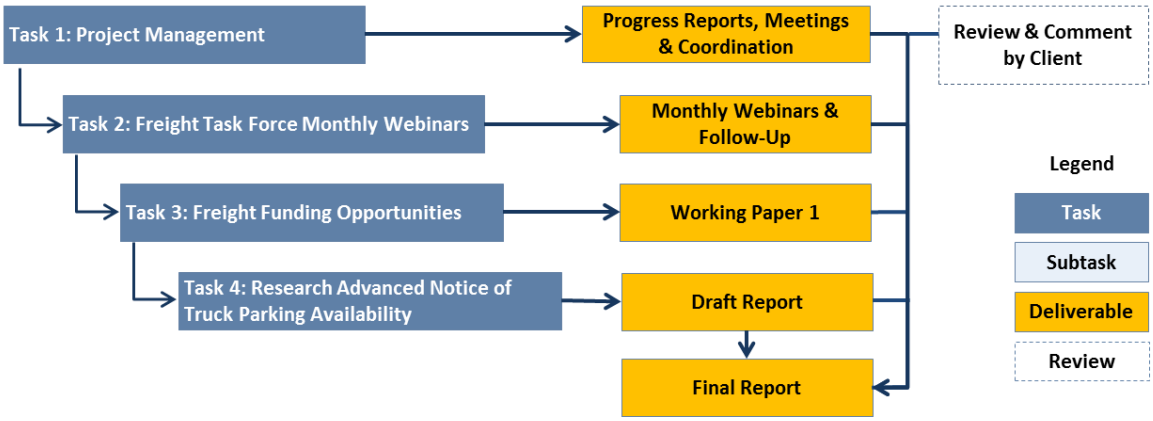
- Support the active engagement of Task Force members,
- Conduct best practice (and practical) research on project funding opportunities, and
- Help refine the truck parking concept so that it best fits NWP needs.

Each of these activities is aimed at getting the coalition closer to implementation of those projects that are most important to the seven NWP member states.

1.3 Project Structure

The project was conducted in four phases, as set out in Figure 1-1. The present working paper is the output of Task 3.

Figure 1-1: Project Management Task Organization



1.4 Purpose of this Working Paper

The aim of Task 3 is to provide insight into available funding and partnerships available to the Task Force for project implementation. Specifically, Task 3:

- Provides an update on freight projects that were identified as priorities during Year 1 Task Force activities,
- Indicates what projects should be continue to be considered as priorities the Freight Task Force,
- Identifies for what projects the Task Force may have a future coordination or facilitation role, and
- Aligns potential funding mechanisms to advance priority projects in the short term.

Revisions to this Working Paper will be reflected in the Draft Final Report.

1.5 Methodology

This Working Paper was prepared using three types of input: 1) review of Year 1 activities which included identification of nine priority projects; 2) a broad survey distributed to NWP Freight Task Force members; and 3) one-on-one follow-up consultations with NWP member states on their progress and interest in advancing these projects.

1.6 Limitations

Some of the findings in this report are based on the analysis of third party data. While CPCS makes efforts to validate data, CPCS cannot warrant the accuracy of third party data.

2 Project Descriptions

Key Chapter Takeaway

In 2014, the NWP Freight Task Force undertook an effort to identify and prioritize projects that could improve the safety and efficiency of the NWP corridor. Now, three years later, technological and economic trends have begun to re-shape how the U.S. transportation system works, making it necessary to re-evaluate the need for, states' interest in, and implementation status of that slate of NWP priority projects.

A survey conducted in early 2017 revealed that many states were actively implementing the priority projects, but are not necessarily coordinating with other NWP states. While a slightly different evaluation approach was used in 2017, the survey also showed that projects previously ranked as high priorities may have become lower priorities.

While each of these projects continues to have some interest by one or more NWP member states, they don't all require or warrant the same level of involvement by the Freight Task Force. In some cases, states are implementing projects on their own and should have the ability to guide their own funded work. In other cases other regional or National organizations are taking a lead role, where any aggressive efforts by the NWP might be redundant or counterproductive.

2.1 Introduction

In October 2014, the NWP Freight Task Force released a work plan that identified nine potential freight-related projects for further development:

1. Pilot Escort Certification and Reciprocity Universal Standard
2. Advanced Notice of Truck Parking Availability – Phase 2
3. Electronic Display of Oversize/Overweight (OSOW) Permits
4. Pursue a "Toward Zero Deaths" (TZD) Involving Commercial Vehicles Safety Campaign
5. NWP Virtual Weigh Station (VWS) Initiative
6. OSOW Permitting Uniformity
7. Calibrate Downstream Weigh In Motion (WIM) Scales with Permanent Scale Data
8. Model Legislation for Autonomous Commercial Vehicle Operation
9. Multistate Commercial Vehicle Platoon Demonstration

These nine projects were meant to help NWP states adapt to new and continued freight movement trends. Each project was ranked by the state DOTs in the NWP, a description of each

project's purpose and work was written, and costs were estimated. This list of nine projects formed the basis for the next three years of NWP Freight Task Force collaboration.

The purpose of this chapter is to review these nine projects, update state rankings of their importance, provide an overview of individual states' active work on these projects, and to highlight social, technical, and economic changes that may affect the relevance of the projects.

2.2 About the Projects

The 2014 *Freight Task Force Work Plan* identified safety and efficiency as two topics the Task Force should explore. Safety and efficiency were broken into focus areas and used to guide selection of the nine projects. The following focus areas were identified for safety and efficiency:

Safety Focus Areas

- Vehicle-based safety approaches such as collecting truck crash data and developing crash countermeasures
- Operator-based safety approaches such as providing more travel information to truckers

Efficiency Focus Areas

- Technology-based approaches such as the application of autonomous and connected vehicles (CVs)
- Information-based approaches such as collection of GPS probe data and shipment data to identify freight movements in the NWP[1]

Nine specific projects were identified to reflect economic trends, corridor needs, and NWP member feedback.[2] NWP members were then asked to rank each project in two ways: 1) importance to their individual state, and 2) importance to the corridor as a whole. Ranking results were averaged across all states and both categories (state and regional importance) to produce a final ranking. This 2014 rank is shown in Figure 2-1.

[1] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014
[2] Ibid.

Figure 2-1: 2014 Project Prioritization Survey Results

Project	Average Score	Rank	Estimated Cost
Pilot Escort Certification and Reciprocity Universal Standard	3.125	1	$75-100K
Advanced Notice of Truck Parking Availability – Phase 2	3.125	2	N/A
Electronic Display of Oversize/Overweight Permits	4	3	$50-70K
Pursue a "Toward Zero Deaths" Commercial Vehicles Safety Campaign	4.25	4	$75-100K
NWP Virtual Weigh Station Initiative	5	5	$50K
Oversize/Overweight Permitting Uniformity (Mid-long term)	5	6	$150K
Calibrate Downstream WIM Scales with Permanent Scale Data	5.75	7	$75-100K
Model Legislation for Autonomous Commercial Vehicle Operation	6.875	8	$25K
Multistate Commercial Vehicle Platoon Demonstration (Mid-long term)	7.875	9	$250K

Source: Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014

In the three years since the projects were identified, technological and economic trends have begun to re-shape how the U.S. transportation system works, and these trends make it necessary to re-evaluate NWP members' rankings. In early 2017, NWP member states were sent a new survey, asking them to respond to the following question:

What, if any, of the following NWP Freight Task Force Year 1 priority projects are underway in your state?

Figure 2-2 provides the responses in terms of whether in the NWP member state has active work on the topic, planned (and will be funded and underway within next five years), has interest (but no current funding), or has no interest (or funding) in the project. These responses reflect emerging transportation trends and states' ongoing work.

Figure 2-2: Level of Activity and Interest in Each Project

Project	Active	Planned	Interested	Not Interested
Oversize/Overweight Permitting Uniformity	4	1	1	0
Electronic Display of Oversize/Overweight Permits	3	0	1	1
Pursue a "Toward Zero Deaths" Campaign	4	0	1	1
Pilot Escort Certification and Reciprocity Universal Standard	2	0	2	2
Calibrate Downstream WIM Scales with Permanent Scale Data	2	0	2	2
NWP Virtual Weigh Station Initiative	1	0	4	1
Model Legislation for Autonomous Commercial Vehicle Operation	1	0	3	2
Advanced Notice of Truck Parking Availability – Phase 2	1	0	5	0
Multistate Commercial Vehicle Platoon Demonstration	0	0	4	2

Source: CPCS Survey of NWP states. Note: South Dakota did not respond to the survey, and Idaho did not respond to "Electronic Display of Oversize/Overweight Permits." As additional responses are received, these results will be updated.

Some items of note in the figure:

- South Dakota did not respond to the survey, and Idaho did not respond to "Electronic Display of Oversize/Overweight Permits." As additional responses are received, these results will be updated.
- No projects stood out as irrelevant to the NWP; the maximum number of states that indicated "not interested" to any particular project was two.
- This list of projects was created in 2013, and no new project ideas have been added since; there may be other active projects or ones that NWP state are interested in that are not listed here.

In the 2017 questionnaire, states were asked to identify any projects they were actively working on. Figure 2-3 identifies what projects are underway by each state. A brief discussion of some of these activities underway are included with each project's description in the following section.

Figure 2-3: Active North/West Passage Projects and States

Project	Active Responses	Active States
Pursue a "Toward Zero Deaths" Commercial Vehicles Safety Campaign	4	Idaho, Montana, North Dakota, Washington
Oversize/Overweight Permitting Uniformity	4	Minnesota, Montana, North Dakota, Washington
Electronic Display of Oversize/Overweight Permits	3	Washington, North Dakota, Minnesota
Pilot Escort Certification and Reciprocity Universal Standard	2	Minnesota, Washington
Calibrate Downstream WIM Scales with Permanent Scale Data	2	Minnesota, North Dakota
NWP Virtual Weigh Station Initiative	1	Montana
Model Legislation for Autonomous Commercial Vehicle Operations	1	North Dakota
Advanced Notice of Truck Parking Availability – Phase 2	1	Minnesota

Source: CPCS Survey of NWP States; Note: South Dakota did not respond to the survey, and Idaho did not respond to "Electronic Display of Oversize/Overweight Permits." As additional responses are received, these results will be updated.

2.3 Project Descriptions and Current Status

The projects described in this section are organized to align with the number of states actively advancing each project (in a manner similar to Figure 2-3).

2.3.1 Pursue a "Toward Zero Deaths" Involving Commercial Motor Vehicles Campaign

The Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO) have developed national TZD strategies to improve

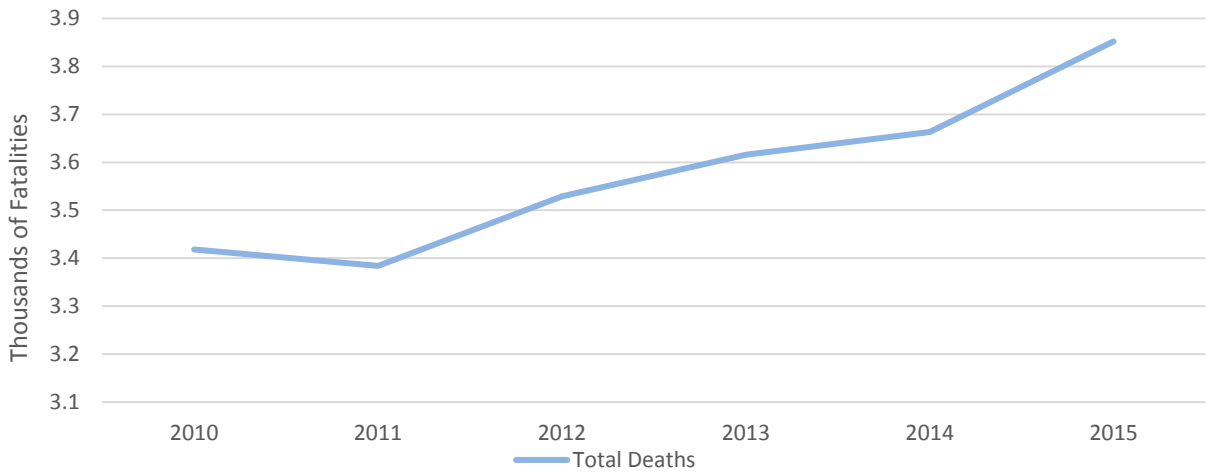
highway safety. This project seeks to reduce commercial vehicle accidents and fatalities by using TZD strategies and marketing to raise awareness and engage commercial operators in the NWP.[3]

Potential tasks in this project include a review of TZD strategies currently used by NWP states, and research and analysis of Commercial Motor Vehicle (CMV) related accidents and fatalities on I-90 and I-94 in the NWP. A second step would be development of specific strategies and marketing materials for a corridor-wide TZD policy, based upon results of accident analysis.[4]

The NWP presents a unique opportunity to create and execute a corridor-based TZD campaign. For example, safety issues could be examined and solved from a corridor-level, rather than state-level. Another benefit of the NWP's organization is that it could act as a forum for states to share their experiences with successful and unsuccessful TZD projects.

Figure 2-4 shows the total number of fatalities in crashes involving large trucks have increased by 6.5 percent between 2013 and 2015. Given the continued rise in fatalities from an all-time low in 2009, pursuit of a TZD campaign for trucks is more relevant now than ever.

Figure 2-4: Fatalities in Crashes Involving Large Trucks



Source: Large Truck and Bus Crash Facts. Federal Motor Carrier Safety Association

This project is estimated to take 12 months, with projected costs between $50,000 and $100,000. Figure 2-5 shows which states are currently engaged in truck-specific TZD work.

[3] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014
[4] Ibid.

Figure 2-5: State Interest in TZD Campaign

State	Status
Idaho	Active
Minnesota	Not interested, not planned
Montana	Active
North Dakota	Active
South Dakota	Not Answered
Washington	Active
Wyoming	Interest in the topic, but not currently funded

Source: CPCS Survey of NWP States

Four states, Idaho, Montana, North Dakota, and Washington indicated that they had ongoing work on TZD. Washington monitors heavy truck involved crashes as part of its "Target Zero" suite of performance measures, and employs targeted strategies, such as providing CMV training to local law enforcement, installation of warning signage, providing safety consultations with carriers, and establishing truck checkpoints in high crash areas.[5] Montana has a general TZD campaign named "Vision Zero," which provides truck-related safety tips for both truckers and the general public.[6] North Dakota indicated that it was actively working on TZD, but did not provide examples.

A CMV safety campaign could be a good option for NWP cooperation because four states are already working on this topic, and another is interested. Since safety outreach is already common and well-understood, this is a "quick start" option and has the potential to address safety issues from a uniquely regional perspective.

2.3.2 Oversize/Overweight Permitting Uniformity

Shippers of OSOW loads on I-90 and I-94 must comply with a varied set of permit requirements for each NWP state. Applications for each permit takes time and money, and different permit requirements increase the costs associated with moving OSOW loads across state borders in the region. Variations between states include time of day restrictions, escort vehicle requirements, and size and weight differences, among others.[7]

This OSOW permitting uniformity project seeks to document the costs to industry generated by a "patchwork" of OSOW requirements, and identify the highest-cost issues in the region. Identifying overall costs, and particularly high cost issues will help illustrate the need for

[5] North/West Passage Web Meeting #6 – Toward Zero Deaths, January 26, 2017
[6] "Vision Zero," Montana DOT, www.mdt.mt.gov/visionzero/people/trucks.shtml
[7] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014

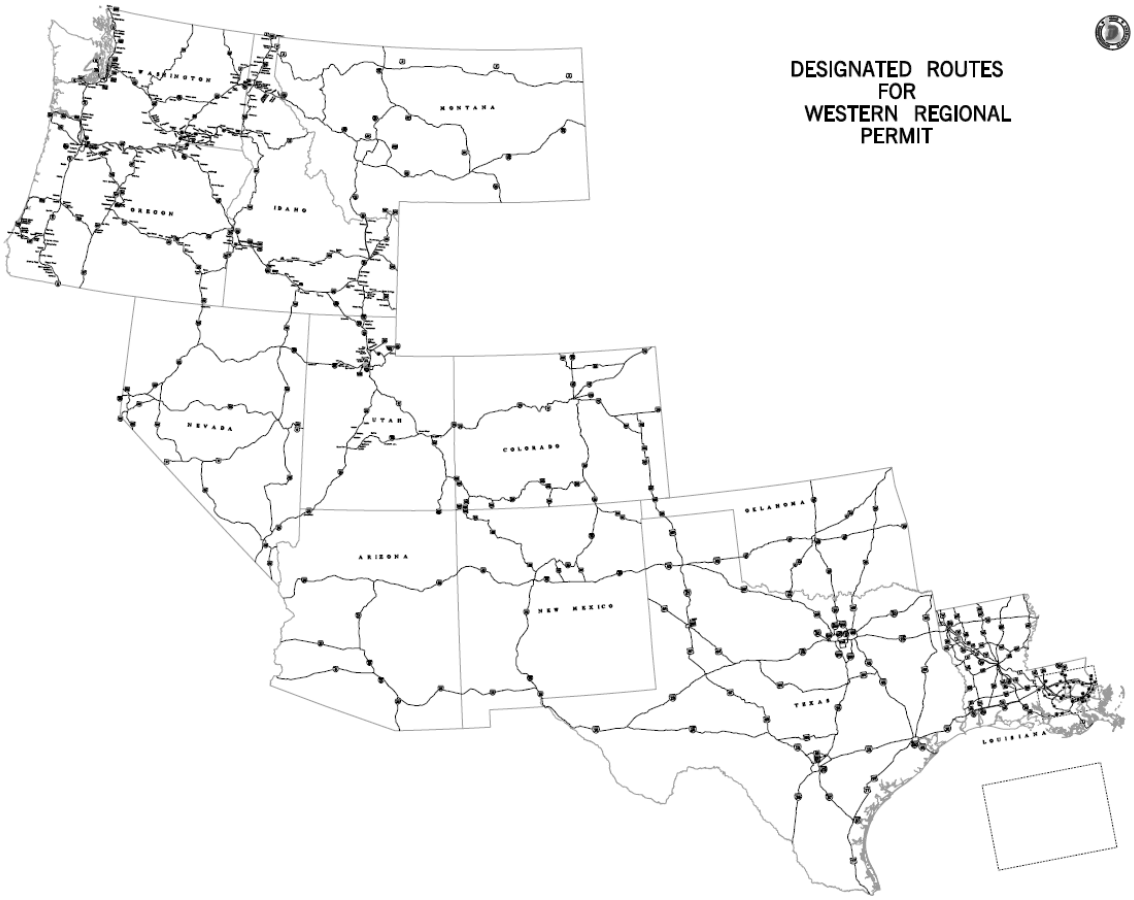
harmonization of OSOW policies across the region, and make the issue more relevant for policymakers.[8]

Previous research on regional permitting by the NWP Freight Task Force (Regional Permitting – Phase I) concluded that NWP member state opposition to permit harmonization was too great to make harmonization possible.[9] However, since this project was initially proposed, the AASHTO Subcommittee on Highway Transport has continued work on developing a standard set of permit harmonization recommendations. Phase I of the project began in 2012 established standardized recommendations for escorts, warning lights, flags, and signs, and days and hours of operation. Phase II of the project was initiated in 2013, and will recommend standardized escort requirements, holiday restrictions, permit amendments, and the number of valid days allowed on single-trip permits.[10] Additionally, the Transportation Research Board published a study in 2016 covering OSOW harmonization and approaches for coordination.[11]

In addition to this national work, members of the Western Association of State Highway and Transportation Officials (WASHTO) have a Regional Western Permit, which allows shippers to purchase one permit for travel in 12 states.[12] However, the permits cover a limited number of routes and range of load sizes. Figure 2-6 shows the states and routes where a Western Regional Permit is accepted. Continued work on AASHTO harmonization and WASHTO regional permitting could serve as the basis for future permit cooperation across the NWP region. While it may be difficult to bring all OSOW standards into harmony, these projects show that focusing on select topics, select routes, and limited types of loads may be a feasible method to facilitate some harmonization.

[8] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014
[9] Ibid.
[10] "Oversize/Overweight Permit Harmonization," AASHTO Subcommittee on Highway Transport, highwaytransport.transportation.org/Pages/Harmonization.aspx
[11] Finding and Using Data to Identify and Evaluate Corridors for Transporting Multi-state, Multi-modal Oversize/Overweight Freight, Transportation Research Board, 2016
[12] "Western Regional Permit," Washington State DOT, www.wsdot.wa.gov/CommercialVehicle/westernregional.htm

Figure 2-6: Western Regional Permit States and Designated Routes



Source: Designated Routes for Regional Permits, Washington State DOT

When this project was first proposed in 2013, it was expected to take one year, at a cost of $150,000.

Figure 2-7: State Interest in OSOW Permit Uniformity

State	Status
Idaho	Will be funded and underway within next five years
Minnesota	Active
Montana	Active
North Dakota	Active
South Dakota	Not Answered
Washington	Active
Wyoming	Interest in the topic, but not currently funded

Source: CPCS Survey of NWP States

Minnesota is participating in AASHTO's permit uniformity work, while Montana, North Dakota, and Washington are working to improve their permitting uniformity through the WASHTO Committee on Highway Transport. North Dakota is approaching a similar standard as the WASHTO Regional Permit. North Dakota meets all of the changes negotiated thus far except for

permit duration; a North Dakota permit is only good for three days, while most states have five-day permits.

Permit harmonization may not be a good project for NWP collaboration because five states are or will be actively working on harmonization through other organizations, such as AASHTO and WASHTO. NWP involvement could result in a duplication of effort. It is worthwhile for the NWP to monitor these activities led by others and provide assistance, as needed.

2.3.3 Electronic Display of Oversize/Overweight Permits

States throughout the NWP vary on whether they allow carriers to display OSOW permits electronically or if they require a hard copy be carried with the load. Electronic display of permits save time and resources by removing a step in the OSOW permitting process. Electronically-issued permits and permit attachments can be displayed on electronic devices like smartphones and tablets.[13]

The first phase of this project would include a review of industry standards and available technologies, interviews with states that use electronic systems, and development of an implementation plan flexible enough to meet each state's needs.[14]

Since this project was initially proposed, smartphones, tablets, and other onboard electronic devices have continued to grow as an essential tool for truckers. In 2013, an estimated 66 percent of drivers had smartphones. By 2016, estimates of truckers' smartphone ownership were over 90 percent.[15] The high prevalence of smartphones and other electronic devices in the trucking industry has increased the potential time and material savings to be found through use of electronic OSOW permits.

The first phase of this project, is estimated to take six months, with an estimated cost between $25,000 and $30,000. The second phase, systems engineering and implementation, would require an additional four to six months and $25,000 to $30,000. Figure 2-8 shows state interest in electronic display of OSOW permits.

[13] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014
[14] Ibid.
[15] 2016 King of the Road Survey, Atlas Van Lines

Figure 2-8: State Interest in Electronic Display of OSOW Permits

State	Status
Idaho	Not Answered
Minnesota	Active
Montana	Not interested, not planned*
North Dakota	Active
South Dakota	Not Answered
Washington	Active
Wyoming	Interest in Topic, but Not Currently Funded

Source: CPCS Survey of NWP States; *Montana allows for display of electronic OSOW permits, but is not interested in further research on this topic.

Minnesota, North Dakota, Montana, and Washington currently allow for the electronic display of OSOW permits, although specific requirements vary. For example, Minnesota state statute allow for electronic permits if they may be "easily read." By comparison, the Washington Administrative Code allows for electronic permits under very specific conditions, summarized below:

1. Permittees accept all liability for damage and loss of electronic device.
2. Permits must be verifiable through the WSDOT electronic permitting system.
3. Permittees agree to allow law enforcement to have physical control of the device for inspection purposes.
4. Device screens must be no less than 3.5 by 5 inches for permits with routing information.
5. Permits must be legible, or the device must be able to zoom to make it legible.[16]

Given that four NWP states already allow for the use of electronic permits, one state is interested in this project, and one state said they were not interested, there may not be value in additional regional cooperation on electronic OSOW permitting.

2.3.4 Pilot Escort Certification and Reciprocity Universal Standard

NWP states have a varied set of regulations governing the movement of OSOW loads, and one type of regulation that varies between states is escort vehicle requirements. Complying with varying requirements across the corridor is expensive for carriers, who must obtain different permits and different types of escort vehicles, depending on the state.[17]

[16] Washington Administrative Code, 468-38-050, § e – vi
[17] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014

Standardizing escort certification requirements, or enabling escort vehicle reciprocity between states would reduce the burdens placed on OSOW carriers who need escorts in the NWP. Standardization and reciprocity may also reduce the workload for state DOT staff engaged in OSOW permitting.[18]

The proposed project would include two tasks: 1) Documentation of each state's key pilot escort requirements and certification requirements, and 2) interviews with OSOW stakeholders at state DOTs to develop uniform standards for escort vehicle and escort pilot requirements. Once the project is complete, further work to develop a corridor-wide pilot standard would be an option.[19]

Since this project was identified in 2014, AASHTO has continued work on Phase II of developing a standard set of permit requirements, which includes escort requirements.[20] AASHTO's standardization work could serve as the basis for NWP collaboration on standardized pilot requirements. Additionally, FHWA published a pilot/escort vehicle operator's best practice guide, training manual, and other supporting materials in March 2017.[21]

When it was first proposed in 2014, this project was expected to take six to eight months, and cost about $35,000. Figure 2-9 shows which state interest in pilot escort harmonization.

Figure 2-9: State Interest in Pilot Escort Certification and Reciprocity Universal Standard

State	Status
Idaho	Not interested, not planned
Minnesota	Active
Montana	Interest in the topic, but not currently funded
North Dakota	Interest in the topic, but not currently funded
South Dakota	Not Answered
Washington	Active
Wyoming	Not interested, not planned

Source: CPCS Survey of NWP States

In terms of agreements, Washington State currently has a Pilot Escort Reciprocity Agreement with seven states: Colorado, Utah, North Carolina, Georgia, Oklahoma, Minnesota, and Virginia. Agreements with additional states are being developed.

Two states noted their educational work related to OSOW pilot training. The Minnesota DOT is currently overseeing pilot escort training through the Hennepin Technical College in the Twin Cities area.[22] Washington State DOT oversees a Pilot/Escort Vehicle Operator training program

[18] Ibid.
[19] Ibid.
[20] "Oversize/Overweight Permit Harmonization," AASHTO Subcommittee on Highway Transport, highwaytransport.transportation.org/Pages/Harmonization.aspx
[21] See FHWA-HOP-16-050, FHWA-HOP-16-051, FHWA-HOP-16-054, and FHWA-HOP-16-071 for documents and materials
[22] "Pilot/Escort Driver Certification," Hennepin Technical College, hennepintech.edu/cts/pages/1233

offered through the Evergreen Safety Council,[23] a non-profit instructional organization in the Pacific Northwest.

While standardization of escort requirements showed a moderate level of interest relative to other projects, recent work by AASHTO and FHWA on pilot and escort requirements suggest NWP resources may be unnecessary for this project. It is however worthwhile for the NWP to monitor these activities led by others.

2.3.5 Calibrate Downstream Weigh in Motion Scales with Permanent Scale Data

WIM scales are increasingly common tools for collecting information on traffic volume and weight data. The information collected by WIM scales can be used for a range of purposes, including bridge design, performance measurement, and weight enforcement. However, maintenance and calibration of WIM sensors is time-consuming. Identifying information from trucks can be combined with traditional weigh station measurements, and then used to calibrate WIM sensors equipped with vehicle identification systems on downstream sections of highway.[24]

This project seeks to improve the accuracy of, and reduce resources needed to maintain or calibrate WIM stations on I-90, I-94, and other major routes in NWP states. Potential research tasks include: 1) evaluation of existing WIM calibration methods in the NWP; 2) meetings with trucking and technology stakeholders to solicit participation; 3) identification of technology for communications between weigh stations and WIM sensors; 4) creation of calibration algorithms; and 5) an implementation and test of a communication and calibration system.[25]

The concept of using weigh stations to calibrate WIM sensors is not new.[26] However, the generally used methods for WIM calibration do not include use of scale data to calibrate WIMs, and there have not been major developments or changes to WIM technology or application in the past three years.[27] This means that a NWP project on calibrating WIM sensors with scale data has the potential to improve the transportation sector's understanding and application of WIM technology.

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[23] "Pilot/Escort Vehicle Operator (P/EVO)," Evergreen Safety Council, www.esc.org/vehicle-safety/pilotescort-vehicle-operator-training-pevo/

[24] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014

[25] Ibid.

[26] A Proposed Method of Calibration of Correlation of Weigh in Motion Systems, Kentucky Transportation Center, 1996

[27] Montana Weight-in-Motion (WIM) and Automatic Traffic Recorder (ATR) Strategy, Western Transportation Institute for the Montana DOT, March 2017

Phase I of the project is expected to take 12-18 months with costs ranging from $75,000 to $250,000, depending on research tasks. Figure 2-10 shows which states are active and interested in this project.

Figure 2-10: State Interest in WIM Calibration

State	Status
Idaho	Not interested, not planned
Minnesota	Active
Montana	Interest in the topic, but not currently funded
North Dakota	Active
South Dakota	Not Answered
Washington	Interest in the topic, but not currently funded
Wyoming	Not interested, not planned

Source: CPCS Survey of NWP States

Related to these activities, Minnesota DOT is currently testing a calibration system at a weigh station on I-90. They are using monthly weigh data from traditional scales at the station to calibrate the WIM sensors. So far, WIM measurements and scale measurements have only differed by about five percent, and most of the adjustment has been for the WIM sensors placed in the right lane of the highway, where trucks most frequently drive. A potential future project is using additional WIM scales on local roads to determine which trucks are intentionally bypassing the highway weigh station. North Dakota noted that it was active because it calibrates each of its WIM sensors yearly.

WIM scale calibration received moderate interest overall, however it may be a worthwhile for NWP to further explore. Joint research could yield cost savings on WIM maintenance in the future, and each state's financial contribution to the research would be less than if they performed the work on their own.

2.3.6 NWP Virtual Weigh Station Initiative

Technologies like WIM scales, cameras, and screening software can be combined to create virtual weigh stations (VWS), which monitor the weights of trucks and record weight violations. These VWS observations can help state enforcement identify vehicles for inspection. VWS cost less to operate than traditional weigh stations, and may be of benefit in the rural areas of the NWP, where traditional staffed weigh stations may be an inefficient use of enforcement funds.[28]

[28] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014

The purpose of this project is to determine if VWS could be used to increase enforcement during peak periods for movement of heavy commodities like agriculture, petroleum, and timber. This project would collect information about the existing VWS systems in the NWP and those specifically on I-90 and I-94. This NWP-specific collection would be complemented by research on best practices in VWS technologies and applications. The final product will provide recommendations for the adoption of specific technologies, identification of possible VWS installation sites, and protocols for sharing VWS data among states.[29]

VWS have been implemented in many states since the mid-2000s, and is a well-understood technology.[30] No significant technological changes in VWS or WIM systems have occurred in the past three years. Expected time for this project is six months, and expected cost ranges from $20,000 to $50,000. Figure 2-11 shows the states interested in potential use of VWS.

Figure 2-11: State Interest in Virtual Weigh Stations

State	Status
Idaho	Interest in the topic, but not currently funded
Minnesota	Not interested, not planned
Montana	Active
North Dakota	Interest in the topic, but not currently funded
South Dakota	Not Answered
Washington	Interest in the topic, but not currently funded
Wyoming	Interest in the topic, but not currently funded

Source: CPCS Survey of NWP States

Related to these activities, Montana recently published a report on its WIM and automatic traffic recorder (ATR) strategy.[31] The report evaluates the quality of the data being collected by Montana DOT's WIM and ATR programs. An example of VWS application is Montana's State Truck Activities Reporting System, which monitors the geographic and seasonal distribution of overweight vehicles across the state, which helps plan enforcement efforts. A possible barrier to a VWS project could be laws related to collection of license plate data by governments; Minnesota DOT noted that they are prevented from pursuing this research due to state statute interpretations that do not allow the DOT to identify and collect license plate data.

VWS is a logical area for NWP collaboration because it is a topic of interest in four states, and Montana's recent

[29] Ibid.
[30] Montana Weight-in-Motion (WIM) and Automatic Traffic Recorder (ATR) Strategy, Western Transportation Institute for the Montana DOT, March 2017
[31] Montana Weight-in-Motion (WIM) and Automatic Traffic Recorder (ATR) Strategy, Western Transportation Institute for the Montana DOT, March 2017

research on VWS could serve as the starting point for regional cooperation on a VWS information sharing system.

2.3.7 Model Legislation for Autonomous Commercial Vehicle Operation

Autonomous commercial vehicles have the potential to revolutionize trucking in the NWP. While the technology for autonomous vehicles is rapidly improving, the legislation required for autonomous operations is not in place in most states.[32]

This project seeks to develop model legislation to allow autonomous vehicle operations in NWP states. Tasks include collecting successful legislation, and interviews with representatives in states where autonomous vehicle legislation failed, and in states where it was successfully adopted. Autonomous vehicle legislation best practices would be identified, and model legislation developed for potential adoption by NWP states.[33]

Since this project was proposed in 2013, development and demonstration of autonomous technologies has continued to advance. One of the most important demonstrations of autonomous technology in the U.S. occurred in October 2016. Otto, a company owned by ridesharing service Uber, completed the first commercial delivery by an autonomous truck when a truckload of beer was driven 120 miles from Fort Collins to Colorado Springs.[34] The potential labor and fuel savings from autonomous vehicles make this technology very appealing for private industries, and will likely drive further research and development of autonomous systems.

The estimated time for this project is six to nine months, and estimated cost is about $25,000. Figure 2-12 shows which states are interested in developing model legislation

Figure 2-12: State Interest in Model Autonomous Vehicle Legislation

State	Status
Idaho	Interest in the topic, but not currently funded
Minnesota	Not interested, not planned
Montana	Interest in the topic, but not currently funded
North Dakota	Active
South Dakota	Not Answered
Washington	Not interested, not planned
Wyoming	Interest in the topic, but not currently funded

Source: CPCS Survey of NWP States

Active state work is limited to North Dakota. In early 2017, North Dakota's legislature signed a bill directing the North Dakota DOT to begin studying how autonomous vehicles could be used

[32] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014
[33] Ibid.
[34] "Self-Driving Truck's First Mission: A 120-Mile Beer Run," The New York Times, October 25, 2016

in the state, gathering information on what data could be collected by autonomous vehicles, and studying how current laws and requirements would apply to autonomous vehicles. The long-term goal of the bill is to support the state's role as an early leader in autonomous vehicle development.[35]

Due to the overwhelming interest in this topic by NWP states and the natural cross-border nature of autonomous vehicles, it makes sense for the NWP to lead research and advocate on behalf of the NWP so that standards established at the national level consider state DOT perspectives.

2.3.8 Advanced Notice of Truck Parking Availability – Phase 2

Truck parking shortages are common throughout the U.S., and current shortages may worsen as truck volumes increase in the future. This project builds upon the completion of Phase 1 of the NWP Advanced Notice of Truck Parking Availability project (2017), which included a review of literature on parking shortages and parking technology, and stakeholder interviews with trucking associations and private firms.

Since this project was initially proposed in 2014, research and development of systems for monitoring and communicating parking availability have advanced significantly. In 2014, only four parking systems/pilots existed in the U.S. (one of which was Minnesota). As of mid-2017, that number grew to include eight additional states. The largest parking information system, the Mid-America Association of State Transportation Officials (MAASTO) Truck Parking Information Management System (TPIMS) serves eight states,[36] including Minnesota, and could serve as a model of regional cooperation for the NWP.

Preliminary findings from Phase 1 of the Advanced Notice of Truck Parking Availability, suggests much of the NWP region does not have sufficient truck parking problems to warrant creation of a technologically-advanced parking availability system. The region may be better served by low-cost, easily implemented parking information options like static signs and maps, and future NWP work could focus on establishing a regional parking map, and brand for parking signage. However, Figure 2-13 shows that many NWP states are still interested in a system, but have not allocated funds.

[35] "Lawmakers Encouraging Self Driving Vehicle Research," The Bismarck Tribune, January 19, 2017
[36] Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Ohio and Wisconsin.

Figure 2-13: State Interest in Truck Parking Information Systems

State	Status
Idaho	Interest in the topic, but not currently funded
Minnesota	Active
Montana	Interest in the topic, but not currently funded
North Dakota	Interest in the topic, but not currently funded
South Dakota	Not Answered
Washington	Interest in the topic, but not currently funded
Wyoming	Interest in the topic, but not currently funded

Source: CPCS Survey of NWP States

Minnesota was an early adopter and innovator for truck parking information systems. Their work began in 2012 when the Minnesota DOT created the Truck Parking Availability Demonstration Project, which collected parking availability information at three rest areas, and communicated with drivers via dynamic signs, in-cab messaging, and a website.[37] This work set the stage for Minnesota's current participation in the MAASTO TPIMS project.

States showed very strong interest in Phase 2 Advanced Notice of Parking Availability, but the output of Phase 1 research indicates alternate approaches may best serve truck parking needs in the NWP. This topic could be one of continued NWP research, based on state interest.

2.3.9 Multistate Commercial Vehicle Platoon Demonstration

Platooning, or the close operation of trucks at highway speeds has the potential to improve vehicle throughput while reducing fuel consumption and improving highway safety. Should NWP states successfully pass legislation enabling autonomous vehicle operations, platooning will become a potential research topic.[38]

The purpose of this project is to demonstrate the potential safety and environmental benefits of platooning in the NWP corridor. Possible tasks include applying for grants to explore and demonstrate multi-state, multi-vehicle platoons.[39] The current work plan includes multistate CMV platoon discussions and next steps identification.

[37] "Truck Parking Availability Demonstration Project," University of Minnesota – Center for Transportation Studies, www.cts.umn.edu/research/featured/truckparking

[38] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014

[39] Ibid.

Like autonomous technology, platooning technology has advanced significantly in the past three years. The most recent demonstration occurred in March 2017, when a three-truck platoon was demonstrated on 12 miles of highway in Southern California.[40]

This project is expected to take two years, with an estimated cost of $250,000. The NWP funded a small project on truck platooning in 2017. Future projects should take the findings of this work into account.

Figure 2-14: State Interest in CMV Platoon Demonstrations

State	Status
Idaho	Interest in the topic, but not currently funded
Minnesota	Not interested, not planned
Montana	Interest in the topic, but not currently funded
North Dakota	Interest in the topic, but not currently funded
South Dakota	Not Answered
Washington	Not interested, not planned
Wyoming	Interest in the topic, but not currently funded

Source: CPCS Survey of NWP States

As a group of states with a shared highway corridor and varied terrain, the NWP is in unique position to host a long-distance demonstration of platooning technology. This regional approach makes this project a good candidate for future cooperation.

2.4 Summary of Projects Status

Based on the assessment presented in this Chapter, Figure 2-15 categorizes proposed projects into four categories of action, indicating whether the project topic requires additional research, is ready for implementation, there is no need for additional action, or if next steps are to be determined. The following outlines the criteria for categorizing project actions:

- **Research** – There is currently a lack in underlying research or exploration of the role of the NWP Freight Task Force for member states to identify next steps for implementation.
- **Implementation** – Sufficient research has been conducted by the NWP or other organizations to enable NWP member states to begin implementing the project.

[40] "Caltrans, Volvo Test Truck Platooning on Busy Los Angeles Freeway," Trucks.com, March 8, 2017

- **No Action** – Due to current ongoing research, activities by other organizations, or a lack of role for the NWP Freight Task Force, it is recommended that no action is taken on the project at this time.
- **To Be Determined** – The NWP is currently researching these topics, which will change the focus of these projects.

Beyond the type of next steps, Figure 2-15 presents a potential future role in each project for the NWP. In cases where the NWP is referred to as "limited," this is due to the fact that others are already well along in leading these efforts that the NWP should simply monitor on behalf of the member states.

Figure 2-15: Potential NWP Task Force Role and Next Steps

Project	Action Type	Potential NWP Task Force Next Steps
Pursue a "Toward Zero Deaths" Commercial Vehicles Safety Campaign	Implementation	Building on TZD campaigns being led by NWP states, this project develops common messaging and conducts joint initiatives throughout the corridor.
Oversize / Overweight Permitting Uniformity	No Action	Given the existing efforts of national and regional AASHTO groups, no research action is recommended at this time. Rather, NWP states should participate in these activities led by others and leverage their familiarity with other NWP DOTs, as needed.
Electronic Display of Oversize / Overweight Permits	No Action / Limited Implementation	Due to the majority of NWP states allowing Electronic Display of OSOW permits, there is limited value in additional regional cooperation on this topic. Limited implementation for the three states without electronic display of permits could occur on a state by state basis.
Pilot Escort Certification and Reciprocity Universal Standard	No Action	Given the background work by AASHTO and FHWA on this topic, NWP states should monitor implementation activities and provide assistance to members, as needed. Should individual states seek to implement a pilot escort certification program, the NWP could act as a forum for coordinating this implementation.
Calibrate Downstream WIM Scales with Permanent Scale Data	Research	NWP led research could yield cost savings on WIM maintenance in the future, and each state's financial contribution to the research would be less than if they performed the work on their own.
NWP Virtual Weigh Station Initiative	Research	VWS is a logical area for NWP collaboration because it is a topic of interest in four states, and Montana's recent research on VWS could serve as the starting point for regional cooperation on a VWS information sharing system.
Model Legislation for Autonomous Commercial Vehicle Operations	To be Determined	Current efforts on this topic are underway. The findings of these reports will help inform the role of the NWP to led research and implementation on behalf of the NWP will ensure standards established at the national level consider state DOT perspectives.
Advanced Notice of Truck Parking Availability – Phase 2	To be Determined	States showed very strong interest in Phase 2 Advanced Notice of Parking Availability, but the output of Phase 1 research indicates that a full system is best suited for metros in MN and WA, not the corridor as a whole. Given the findings of the Phase 1 report, NWP states should identify their state priorities and then collectively identify a path forward for implementation or no action.
Multistate Commercial Vehicle Platoon Demonstration	To be Determined	As a group of states with a shared highway corridor and varied terrain, the NWP is in unique position to host a long-distance demonstration of platooning technology. This regional approach makes this project a good candidate for future cooperation.

Source: CPCS Analysis

As shown in Figure 2-15, recently completed and ongoing research has potentially changed the focus of the projects identified in 2014. The information presented in this section can be used to focus on the next steps for NWP Freight Task Force research and implementation. Projects with next steps for implementation, that have a defined role for the NWP, and, using the information provided in the Working Paper, are of interest to NWP member states have high potential for coalition wide implementation. Projects without clear next steps for implementation, with interest from states, and with a role for the NWP should be researched further. Projects lacking interest from other states and with no role for the NWP should be removed from the list to make resources available for new projects and additional research or implementation of existing projects.

Using the information provided in Figure 2-15, NWP Freight Task Force Projects are classified as follows:

- **Research** – Due to there being a role for the NWP, Calibrate Downstream WIM Scales with Permanent Scale Data and NWP Virtual Weigh Station Initiative are defined as in the research phase. Subject to NWP member preferences on redefined and new projects, these projects should compete for funding in the next work plan. Note that the project on Downstream WIM Scales had mixed support, suggesting lower priority relative to the other projects in this category.

- **Implementation** – Due to active efforts underway in individual states and the potential for a NWP role in making the TZD Commercial Vehicles Safety Campaign a corridor wide effort, the TZD project is defined as in an implementation stage. Subject to NWP member preferences on redefined and new projects, the TZD project should compete for funding in the next work plan.

- **No Action** – Due to the limited role for the NWP and/or low interest from member states, OSOW Permitting Uniformity, Electronic Display of OSOW Permits, and Pilot Escort Certification and Reciprocity Universal Standard have a recommendation of no action. These projects should be removed or redefined with a focus on an identified role for the NWP Freight Task Force that does not duplicate efforts already underway or completed.

- **To be Determined** – The Model Legislation for Autonomous Commercial Vehicle Operations, Advanced Notice of Truck Parking Availability – Phase 2, and Multistate Commercial Vehicle Platoon Demonstration are, or have been, the topic of research projects in the last year. These projects should be redefined based on recent study findings, and in line with the role of the NWP.

3 Project Funding and Approach to Advancement

Key Chapter Takeaway

The projects that the NWP Freight Task Force identified in 2014 include a mix of freight operations-related research and implementation activities. Based on their intended objectives, these projects are well suited for a variety of state and Federal funding sources, however as they are currently defined they may be too cost prohibitive for states to tackle on their own. At the same time, these projects may not qualify for grant programs such as FASTLANE and TIGER, on the basis of their comparatively low project cost in relation to the grant minimums (in some cases $5 million, $25 million, or more).

With the advent of new Federal dollars aligned to freight system needs, the NWP has an opportunity to re-evaluate their list of priority projects and examine ways to redefine and combine projects concepts to increase their size and scope to become eligible for Federal programs, similar to the MAASTO coalition where eight states joined forces, secured a $25 million grant and are now advancing a truck parking availability system in partnership with each other.

3.1 Introduction

Constrained state funding and the need to be fiscal stewards of transportation resources necessitates exploring the options available to fund research, planning and implementation efforts. To that end, this Chapter identifies state and federal funding sources, and assesses which sources could be appropriate for NWP projects.

3.2 State Funding

NWP member states may choose to fund projects through state transportation funds. The availability and restrictions on state transportation funds varies state-to-state, but is often used to complement and match federal funds (see next section) for activities such planning, operations, maintenance and construction.

NWP states rely heavily on fuel taxes for transportation spending. Figure 3-1 displays state fuel taxes in NWP states, along with the year of the last increase in fuel tax. Though some states have recent increases, many have not. Figure 3-1 also shows that all fuel taxes make up over half of state transportation user revenues.

Figure 3-1: North/West Passage State Motor Fuels Tax Rate Information

State	Last Fuel Tax Increase	Fuel Tax Rate (cents per gallon)	Proportion of State Transportation User Revenues from Fuel
Idaho	2015	33¢	56%
Minnesota	2012	28.6¢	56%
Montana	1994	Gas - 27.75¢ Diesel - 28.50¢	50%
North Dakota	2005	23¢	63%
South Dakota	2015	30¢	54%
Washington	2015	49.4¢	57%
Wyoming	2013	24¢	52%

Sources: American Petroleum Institute, *State Motor Fuel Taxes*; National Conference of State Legislatures, Recent Legislative Actions Likely to Change Gas Taxes.

In the NWP, member states already use state funding or allocations for State Planning and Research from the Federal Government to support NWP Projects, when member states make their annual contributions to the NWP pooled fund. The pooled fund then is used to pursue research activities.

Another source of state funding is in-kind research or investment. In-kind funding is particularly important for multi-year infrastructure investment that is informed by NWP research. For example, if NWP states actively pursue a truck parking system or parking expansion along I-90 and I-94, the differences in the needs for each NWP state could require states to fund these projects individually, but informed by NWP research. In this case, a Memorandum of Understanding between states to advance a common objective could be used to guide this in-kind investment in a NWP research project or objective. Additionally, as NWP member states conduct research within their state, sharing of findings will bolster the impact of state research funds by limiting redundant research and more fully informing NWP member states.

3.3 Federal Funding

At the Federal level, there are a number of funding programs that may be used for Research and Implementation Projects. While each funding program has its own restrictions, a notable difference is whether funding is allocated to states for their decision on its use or if funding is competitive. For example, the Fixing America's Surface Transportation (FAST) Act allocates funding to states for the Federal-aid Highway Program based on a defined formula. States are then allowed to spend Federal-aid Highway Program funds based on project eligibility, match, and other requirements. Whereas, the Transportation Investment Generating Economic Recovery (TIGER) grant program allocates funding based on a competitive application process. States may apply for a TIGER grant, but they are not guaranteed funding.

While both allocated and competitive funding programs have restrictions on eligibility, the major difference between the two is the certainty of whether the state DOT will receive funds. Additionally, most competitive funding programs are used for what this Working Paper defines as Implementing Projects, rather than Research Projects.

The remainder of this section outlines the Federal Funding Programs that are most relevant to the Freight Task Force Projects discussed in Chapter 2.

3.3.1 Federal-Aid Funding Programs

National Highway Performance Program

The National Highway Performance Program (NHPP) promotes improvements in the condition and performance of the National Highway System (NHS). The FAST Act did not make significant changes to the NHPP compared to in the Moving Ahead for Progress in the 21st Century (MAP-21) Act. NHPP eligibility is largely is focused on the NHS and does not include project eligibility for research. Projects must be consistent with state and metropolitan planning and support progress toward achieving the national performance goals. Relevant project eligibility included in the NHPP, is safety, operations, truck parking, and Intelligent Transportation Systems (ITS) including vehicle-to-infrastructure (V2I) communication equipment.[41]

Surface Transportation Block Grant Program

The Surface Transportation Block Grant Program (STBG) is a flexible funding source used on construction, operational improvements, environmental, parking measures, and safety improvements. In general, the STBG has eligibility for most roadways, other than those located on local road or rural minor collectors. The most relevant eligible projects for the NWP Freight Task Force are, ITS, V2I equipment, truck parking facilities, operational and safety improvements, planning, research, and technology transfer.[42]

Highway Safety Improvement Program

The Highway Safety Improvement Program (HSIP) is focused on the reduction in traffic fatalities and injuries on all public roadways. HSIP funding can be used for infrastructure and non-infrastructure projects that correct or improve a hazardous road or address a highway safety problem.

HSIP projects are required to be consistent with a state's Strategic Highway Safety Plan. Relevant HSIP eligible projects for this analysis include operational improvements on high risk rural roads, truck parking facilities, and V2I equipment.[43]

Congestion Mitigation and Air Quality Improvement Program

The Congestion Mitigation and Air Quality Improvement Program (CMAQ) program is focused on reducing congestion and improving air quality. States containing current or previous non-attainment areas for emissions are required to spend CMAQ funds on projects identified in the state implementation plan and in non-attainment areas. In state's without nonattainment areas, CMAQ funds can be spent throughout the state, but must be an eligible CMAQ project or eligible under STBG. CMAQ has wide ranging eligibility for projects including operations, ITS,

[41] 23 USC 119(d)(2)
[42] 23 USC 133(b)
[43] 23 USC 148(a)(4)(B)

systems management, and V2I. Eligible projects must contribute to the reduction in emissions and attainment or maintenance of the national ambient air quality standard.

National Highway Freight Program

The National Highway Freight Program (NHFP) is a new program defined in the FAST Act. The NHFP allocates funds on a formula basis to improve the efficient movement of freight on the National Highway Freight Network (NHFN). As such, NHFP funds are restricted to spending on the NHFN roadways[44] and projects using NHFP funds must be included in a state's Freight Plan. The NHFP has extensive eligibility, relevant project types for the NWP include construction, rehabilitation, ITS, truck parking, real-time trucking information systems, and WIM technology, among others.[45]

Motor Carrier Safety Assistance Program

The Motor Carrier Safety Assistance Program (MCSAP) is a formula grant program from the Federal Motor Carrier Safety Administration (FMCSA). MCSAP supports state and local law enforcement agencies. States must establish a New Entrant Safety Audit Program as a condition of MCSAP. Only agencies designated as the state lead responsible for administering the Commercial Vehicle Safety Plan (CVSP) within the state are eligible. In some cases, the agencies responsible for the CVSP is outside the DOT, requiring additional coordination within the state. Relevant eligible projects include enforcing size and weight limits at locations outside of fixed-weight facilities.[46]

3.3.2 Competitive Federal Funding Programs

Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies

The FAST Act created the Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies (FASTLANE) competitive grant program and included annual authorizations of between $800 million and $1 billion in fiscal years 2016 through 2020. The goals of FASTLANE are as follows:[47]

- Improve safety, efficiency, and reliability of transportation
- Generate national or regional economic benefits and increase U.S. global economic competitiveness
- Reduce highway congestion and bottlenecks
- Improve connectivity between freight modes

[44] Montana is restricted from spending NHFP funds on interstates not included on the Primary Highway Freight System. This restriction is due to Montana having over two percent of all Primary Highway Freight System miles.
[45] 23 USC 167(i)(5)
[46] 49 CFR 350
[47] 23 USC 117

- Enhance the resiliency of highway infrastructure and help protect the environment
- Improve roadways vital to national energy security
- Address the impact of population growth

FASTLANE allows many different groups to apply for grants. Most importantly for the NWP, a single state or a group of states are eligible applicants. Project eligibility for FASTLANE projects are limited to freight projects on the NHFN, a highway or bridge project on the NHS, a railway-highway grade crossing or separation project, or a freight project with the following characteristics:

- An intermodal or rail project or
- A public or private freight rail, water, or intermodal facility necessary to facilitate direct surface intermodal interchange, transfer, or access into or out of the facility, provided that:
  - The project will make a significant improvement to the NHFN,
  - The Federal share of non-highway portions of the project funds only elements of the project that provide public benefits, and
  - The total of Federal FASTLANE grants for non-highway portions of these projects does not exceed $500 million for fiscal years 2016 through 2020.

The FASTLANE portion of a project may not exceed 60 percent of total eligible project costs. Other Federal funds may be used for a FASTLANE project, up to a maximum of 80 percent of eligible project costs. FASTLANE also requires a programmatic balance of spending based on rural vs urban and large vs small projects. For each Fiscal Year, at least 25 percent of funds must be spent on rural projects and at least ten percent of funds must be spent on small projects. Small projects are defined as grants over $5 million. Large projects grants must be for at least $25 million. The overall project size of a large project must be anticipated to exceed the lower of $100 million or the following (see Figure 3-2 NWP specific minimums):

- Project in One State – 30 percent of the Federal-aid Highway apportionment for the most recently completed fiscal year
- Project in More than One State – 50 percent of the Federal-aid Highway apportionment for the most recently completed fiscal year[48]

[48] 23 USC 117(d)

Figure 3-2: Minimum Project Size for Large FASTLANE Projects in NWP Member States

State	Minimum Project Size – One State ($ million)	Minimum Project Size – Multiple States($ million)
Washington	$100	$100
Idaho	$87	$100
Montana	$100	$100
Wyoming	$78	$100
North Dakota	$76	$100
South Dakota	$86	$100
Minnesota	$100	$100

Source: US DOT Build America Bureau

Selection criteria for FASTLANE grants also varies based on project size. Large projects must meet the following criteria:

- The project will be cost effective and generate national or regional economic, mobility, or safety benefits
- The project will advance one or more of the national goals
- The project is based on the results of preliminary engineering
- Non-Federal financial commitments are available to construct, maintain, and operate the project and contingency amounts are available to cover the unanticipated cost increases
- The project cannot be easily and efficiently completed without other Federal funding or financial assistance available to the project sponsor
- The project is reasonably expected to begin construction not later than 18 months after the date of obligation of funds.[49]

When selecting large projects, the Secretary of Transportation must also consider the utilization of non-traditional financing, innovative design and construction techniques, innovative technologies, and non-Federal contributions, as well as the geographic diversity among grant recipients.[50] Conversely, small projects are selected based on whether the project is cost-effective and the effect the project would have on mobility.

Transportation Investment Generating Economic Recovery Grants

The TIGER program is a competitive grant program that launched in 2009. To date nearly $4.6 billion has been provided to projects on all modes in addition to the non-Federal funds.

[49] 23 USC 117(g)
[50] 23 USC 117(h)

Selection for TIGER grants is made based on a cost-benefit analysis of the project conducted by the applicant. Past iterations of TIGER have allowed for both planning and construction projects, but the most recent TIGER grant solicitation (2016) did not allow for planning only grants. The future of the TIGER grant program is in question, due to President Trump's proposed 2018 budget removing funding from the program.[51]

Innovative Technology Deployment

The Innovative Technology Deployment (ITD) program is a discretionary grant program that advances technological capabilities and promotes the deployment of ITS for applications for CMV, commercial driver, and carrier-specific information systems, and networks. ITD is largely focused on enforcement technologies, but states that have completed core deployment of exchange, credentials administration, and electronic screening can pursue expanded ITD projects. Expanded projects include smart roadside systems/application which include information sharing between in-vehicle, on-the-road, and freight facility systems, as well as data sharing between the Unified Carrier Registration, intrastate registrations, and OSOW permitting systems. [52]

Research and Implementation Programs

The FAST Act, and MAP-21 before it, contains a number of programs that fund research activities and promote the implementation of innovative technologies and solutions throughout the U.S. These programs provide funding for transportation research at Federal and state levels as well as implementation of research finding. The following list provides examples and overviews relevant programs:

- Highway Research and Development (HRD) program – authorized at $125 million per year from 2016-2020, the HRD funds research activities. The FAST Act requires the HRD to fund the following programs:
    - Future Interstate Study – $5 million allocated in 2016 to study future needs, roles and regulations needed to update and prepare the Interstate System for the future.
    - Surface Transportation System Funding Alternatives – $15 million in 2016 and $20 million from 2017-2020 to implement user-based alternative funding mechanism.
    - Performance Management Data Support – up to $10 million in 2016-2020 for data and analysis to assist transportation agencies in performance management analyses.
    - Advanced Transportation and Congestion Management Technologies Deployment Program (ATCMTD) – a $60 million program (partially funded by

[51] America First: A Budget to Make American Great Again, Executive Office of the President of the U.S., 2017
[52] Motor Carrier Safety Assistance Program – Grant Comprehensive Policy, FMCSA, June 2016

HRD) for competitive grants to develop large scale installation and operation of advanced transportation technologies. Five to ten grants will be awarded each year, with a maximum grant size of $12 million.

- Technology and Innovation Deployment Program (TIDP) – a $67 million program in 2016 and $67.5 million program in 2017 to 2020 to accelerate the implementation of new innovations and technologies from highway research and development. TIDP funds at least $12 million annually for a pavement program and an unspecified amount for the ATCMTD. TIDP also funds the following:
    - Accelerated Innovation Deployment (AID) – provides funding for innovative uses of technology. Approximately $10 million is available annually from 2016 to 2020. Funds are available for any phase of a project including both project planning and delivery. Projects must be initiated within 12 months of application for AID funding. The maximum size of a project is $1 million. Previous applicants have been awarded ITS and truck parking, with most awards going to construction projects.
    - Intelligent Transportation Systems Program (ITSP) – a $100 million program to research, develop, and test ITS. This program is guided by five-year ITS Strategic plan, which focuses on CV and V2I. In fact, funds used for operational tests under the ITSP shall be for ITS infrastructure, equipment, and systems rather than physical surface infrastructure.

3.4 Research Projects

Research Projects, as defined in Chapter 2, are projects where there is a role for the NWP and interest from states, but not enough data and information to progress to implementation.

3.4.1 North/West Passage Virtual Weigh Station Initiative

The purpose of this project is to collect information about the existing VWS systems in the NWP and conduct research on best practices in VWS technologies and applications. The final product will provide recommendations for the adoption of specific technologies, identification of possible VWS installation sites, and protocols for sharing VWS data among states.

VWS are topic of interest for the NWP Freight Task Force, as shown by four states expressing their interest in the project. That said, a comparison of Work Plan 10 to Work Plan 11 (most recent) shows the VWS project was not included in the list of potential projects in Work Plan 11, calling into question the interest from the wider non-freight members of the NWP.

Funding

The expected cost of the VWS project ranges from $20,000 to $50,000. The research focus of the VWS project makes it most likely to be funded by the NWP pooled fund, but state or federal

research programs could also fund the project.[53] Subsequent phases of this research focused on implementation of could be funded by federal surface transportation programs depending on the need and intended purpose of the project. Additionally, FMCSA funding sources such as the MCSAP and ITD may present opportunities for funding subsequent steps on the VWS Initiative.

3.4.2 Calibrate Downstream WIM Scales

This project would research approaches to improve the accuracy of, and reduce resources needed to maintain or calibrate WIM stations on I-90, I-94, and other major routes in NWP states. Potential research tasks include 1) evaluation of existing WIM calibration methods in the NWP; 2) meetings with trucking and technology stakeholders to solicit participation; 3) identification of technology for communications between weigh stations and WIM sensors; 4) creation of calibration algorithms; and 5) an implementation and test of communication and calibration systems.

In terms of interest in the WIM project, two state indicated they were interested, two states are active, two states are not interested, and one state did not respond.

Funding

Phase I of the project is expected to take 12-18 months with costs ranging from $75,000 to $250,000, depending on research tasks. Given the research focus of the WIM project, Phase 1 is best funded through the NWP pooled fund, though admittedly this may stretch the resources of the fund.

3.5 Implementation Projects

Implementation Projects are defined as projects with advanced enough research to support specific implementation activities, have interest from NWP member states, and have a role for the NWP.

3.5.1 Pursue Toward Zero Deaths Commercial Vehicles Safety Campaign

This project seeks to reduce commercial vehicle accidents and fatalities by using TZD strategies and marketing to raise awareness and engage commercial operators in the NWP.[54] Potential tasks in this project include a review of TZD strategies currently used by NWP states, and research and analysis of CMV-related accidents and fatalities on I-90 and I-94 in the NWP. A second step would be development of specific strategies and marketing materials for a corridor-wide TZD policy, based upon results of accident analysis.[55]

When asked about research on the TZD Commercial Vehicles Safety Campaign project, four states indicated they had active projects, one state was interested in the project, one state was not interested, and one state did not respond. A CMV safety campaign could be a good option

[53] Concept of Operations for Virtual Weigh Station, Federal Highway Administration, June 2009
[54] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014
[55] Ibid.

for NWP cooperation as shown by the level of interest. Additionally, since safety outreach is already common and well-understood, this is a "quick start" option and has the potential to address safety issues from a uniquely regional perspective.

Funding

The TZD Commercial Vehicles Safety Campaign project is estimated to take 12 months, with projected costs between $50,000 and $100,000. General research on lessons learned in the implementation of TZD and the development of specific strategies and marketing materials are best funded through the NWP pooled fund. Subsequent outputs or corridor wide initiatives using technology or other means could be eligible for federally allocated funding and grants. On a state-by-state basis, TZD activities could be funded through HSIP. HSIP projects or strategies must be included in the state's Strategic Highway Safety Plan, requires additional lead time to add lessons learned and initiatives to those documents.

3.6 No Action Projects

No Action Projects are defined as not having a role for the NWP because another group or organization is already advancing the initiative, making a separate NWP initiative redundant.

3.6.1 Oversize/Overweight Permitting Uniformity

This project seeks to document the costs to industry generated by a "patchwork" of OSOW requirements, and identify the highest-cost issues in the region. Identifying overall costs, and particularly high costs will help illustrate the need for harmonization of OSOW policies across the region, and make the issue more relevant for policymakers.[56] Due to the already ongoing work on this topic by the Transportation Research Board and regional and national AASHTO groups, as well as uniformity efforts by individual states, a NWP project on permit harmonization would be redundant. Therefore, this project was recommended for no action.

Funding

The OSOW Uniformity Project was expected to take one year and cost $150,000. NWP member states should continue to engage and provide resources to national and regional OSOW Uniformity Efforts on a state-by-state basis.

3.6.2 Electronic Display of Oversize/Overweight Permits

The first phase of this project would include a review of industry standards and available technologies, interviews with states that use electronic systems, and development of an implementation plan flexible enough to meet each state's needs.[57]

Given that four NWP states already allow for the use of electronic permits, a NWP project on this topic may not be of value for the region as a whole. One role for the NWP highlighted in Section 2.4 is the potential for the NWP to serve as a connection point for states seeking to

[56] Technical Memorandum 1: Freight Task Force Work Plan, North/West Passage, October 2014
[57] Ibid.

allow electronic display of OSOW permits to learn from states already allowing electronic display. This limited role in implementation is most relevant on a state-by-state basis and would not require a formal research projects.

Funding

The first phase of the Electronic Display of OSOW Permits project was estimated to take six months at an estimated cost of between $25,000 and $30,000. The second phase, systems engineering and implementation, would require an additional four to six months and $25,000 to $30,000.

Given the majority of NWP states allow for the electronic display of OSOW permits, states exploring a permitting change to allow the electronic display of OSOW permits should fund the staff time needed to reach out to neighboring and other NWP states.

3.6.3 Pilot Escort Certification and Reciprocity Universal Standard

Similar to the other OSOW projects the Pilot Escort Certification and Reciprocity Universal Standard project focuses on creating uniformity between states on pilot escort requirements, certification, and establishing reciprocity between certification programs. Recent research by FHWA developed best practices and an approach to pilot escort certification and OSOW permitting uniformity efforts by AASHTO covers Pilot Escort Certification.

As currently proposed, the Pilot Escort Certification and Reciprocity Universal Standard project has the potential to be redundant with ongoing efforts, especially the permitting uniformity work. As states consider the best practices and approach to pilot escort certification developed by FHWA the NWP could facilitate discussions surrounding reciprocity for programs developed in other states.

Funding

The Pilot Escort Certification and Reciprocity Universal Standard project was expected to take six to eight months and cost approximately $35,000. NWP member states should continue to engage and provide resources to advance national and regional efforts for pilot escort certification on an as needed and state-by-state basis. A greater NWP role could be focused only on promoting corridor wide reciprocity as states consider the 2017 FHWA research and either change or implement their own Pilot Escort Certification.

3.7 To Be Determined Projects

To be Determined Projects are currently under research, which will likely change the next steps of the projects.

3.7.1 Advanced Notice of Truck Parking Availability – Phase 2

The findings of Task 4, the *Research Advanced Notice of Truck Parking Availability* Working Paper, suggests that the NWP region does not have the widespread truck parking challenges found in other parts of the U.S., rather the findings suggest three targeted needs:

- Additional truck parking (primarily in Seattle and Twin Cities, and select rural areas)
- Information on truck parking facility locations and amenities throughout the NWP region
- Information on truck parking availability (primarily in Seattle and Twin Cities)

In addition to identifying targeted needs in the NWP region, Task 4 identified the following incremental options for additional study of truck parking in the NWP region:

- Establish a project champion,
- Inventory truck parking facility location and amenity information and develop a map,
- Provide a website that houses truck parking facility location and amenity information,
- Confirm the need for truck parking availability information and agree on future partnership,
- Conduct follow-up studies, and
- Continue to track on-going TPIMS deployments to gather best practices.

Funding

The Task 4 Working Paper, *Research Advanced Notice of Truck Parking Availability*, identified incremental options for additional study of truck parking in the NWP region, generally classified into collaboration on data collection, and communication. The initial steps identified in the Task 4 research are related to research and data collection. These projects fit better within the NWP pooled fund research or state research funding.

Subsequent tasks focused on the implementation of truck parking information systems or truck parking facilities match many of the allocated and competitive funding sources. Specifically, truck parking is eligible for the following programs:

- NHPP includes broad eligibility for the NHS in support of the national performance goals. Three specific eligibilities indicate support for Advanced Notice of Truck Parking Availability – Phase 2: 1) Eligibility for capital and operating costs for traffic and traveler information monitoring, management, and control facilities and programs; 2) Infrastructure-based ITS capital improvements, including the installation of V2I communication equipment; and 3) Highway safety improvements on the NHS.[58]

[58] Eligibility of Title 23 Funds for Truck Parking, Federal Highway Administration, 2016

- The NHFP,[59] HSIP,[60] and STBG[61] include eligibility for the construction and promotion of publically or privately available truck parking facilities on the NHS using ITS under Jason's Law in MAP-21.

Federal programs have anywhere from 80 to 100 percent federal share depending on the location of the facility.[62]

In addition to allocated funds, a TIGER grant awarded to eight states in the Midwest shows a successful application for a truck parking information and management system. FASTLANE and AID have also been successfully used for truck parking notification projects in Florida. ATCMTD and ITSP are also potential sources of implementation of Phase 2 projects.

3.7.2 Multistate Commercial Vehicle Platoon Demonstration

The purpose of this project is to demonstrate the potential safety and environmental benefits of platooning in the NWP corridor. Possible tasks include applying for grants to explore and demonstrate multi-state, multi-vehicle platoons.

The advancement of this research project will be partially informed by the output Project 11.5: Exploring Options for Truck Platooning along the North/West. Project 11.5 answers the following questions:[63]

- Do North/West Passage member states have an interest in a similar truck platoon project along the I-90/94 corridor?
- Do North/West Passage member states have any concerns about a private led truck platooning expansion of the demonstrations in Texas?

Information and recommendations from these projects will inform the options and opportunities for the NWP Freight Task Force to pursue a Multistate Commercial Vehicle Platoon Demonstration Project.

Funding

The NWP has current research assessing connected and autonomous vehicles. The outcome of this research will impact the next steps identified for the NWP. There are a significant number of programs that allow for investment in V2I equipment including the NHPP, STBG, CMAQ, and the NHFP. Additionally, research and demonstrations could be eligible for research and implementation projects as shown by Wyoming DOT receiving a grant under the CV Pilot Deployment Program. Other programs outlined in this chapter may be applicable, the ITSP and the ATCMTD both note CVs as an area of focus.

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[59] 23 USC 167(i)(5)(C)(xi) and 23 USC 167(i)(5)(C)(xii)
[60] 23 USC 148 (a)(B)(xxiii)
[61] 23 U.S.C. 133(b)(1)(E)
[62] Eligibility of Title 23 Funds for Truck Parking, Federal Highway Administration, 2016
[63] Transportation Pooled Fund Study TPF-5(190) – FINAL Work Plan 11, North/West Passage, August 16, 2016

The increased interest in connected and autonomous vehicles presents a significant opportunity for NWP member states to actively pursue funding. As shown, V2I is eligible for a variety of programs, suggesting that NWP states could position themselves to pursue grant opportunities on a multistate basis when available.

3.7.3 Model Legislation for Autonomous Commercial Vehicles

Currently ongoing research under Project 11.4 Day One Activities to Prepare for Connected and Automated Vehicles Project covers the following topics:

- Work with North/West Passage member agencies to confirm (and define details of) the need for better guidance on what they need to do to prepare for CV/AV deployments.
- Provide North/West Passage members with direction to better use the vast amount of resources that have been (and are still) being developed regarding CV/AV technologies and preparation guidance.
- Develop a mechanism for North/West Passage members to share knowledge of CV/AV resources in an organized way to maximize efficient use of such material.
- Identify gaps and/or needs for additional training or skills needed to make CV/AV deployments a success.
- Develop a plan to help achieve the additional training and knowledge identified as missing from current sources

As the findings of Project 11.4 become available, NWP state should identify the next steps, with an explicit focus on the role the NWP. A focus on the role of the NWP ensures that projects provide value to the passage.

Funding

Autonomous Vehicles do not have the same infrastructure needs as CVs. Therefore, it is likely that subsequent projects will be research focused, making NWP Pooled funds and state research funds relevant funding sources. Additionally, the Federal Government is dedicating significant funds to research Connected and Autonomous Vehicles. Active Federal research should be considered when defining the next research steps for Autonomous Vehicle research.

3.8 Conclusion

The projects that the NWP Freight Task Force identified in 2014 are, in some cases, more relevant in 2017, but in others their relevance has diminished. The development of this Working Paper presents the NWP Freight Task Force with an opportune time to discuss the projects as they were outlined in 2014 and identify projects to remove or change given new factors, as well as, identify new projects based on current information and emerging trends and technology.

Additionally, Chapter 3 outlines potential funding sources for NWP Freight Task Force Projects. Again, the availability of current information on funding sources presents an opportunity for

the Freight Task Force to align projects with funding sources. Of particular relevance are grant programs, such as TIGER and FASTLANE. Currently, the projects listed in this document are not at a phase or of sufficient size to be FASTLANE eligible. The NWP Freight Task Force should focus on developing research and transitioning that research to implementation, with a deliberate focus on the potential for competitive grant funding. The Freight Task Force could serve as the venue to discuss corridor wide projects for future grant programs, both benefiting the probability of a successful application, as well as, the benefits received by implementation.

4 Conclusions and Next Steps

4.1 Conclusions

This Working Paper provides a review of the priority projects identified by the NWP Freight Task Force in a 2014 survey, an update on NWP member state implementation and interest in those projects, identifies potential future NWP roles in advancing each project, and assesses funding opportunities that best align with project objectives. The findings of this work and suggested next steps are provided below.

4.1.1 Priority Projects

As shown in this Working Paper, while there are worthwhile projects identified for the NWP, the results of the 2017 survey of NWP member states indicate that the original slate of priority projects may not currently reflect NWP member state priorities. While only three years have passed since the original project list was established, the economy and technological advancements have rendered the list a bit out of sync with DOT progress in past years and their emerging priorities. Additionally, several projects have been funded and moved beyond the NWP work plan.

4.1.2 Future NWP Freight Task Force Role

The role of the NWP varies from project to project. Based on a check of current research and implementation status conducted with NWP member states during development of this Working Paper, the following provides guidance on where the NWP Freight Task Force could focus future activities related to priority projects. The NWP role is described related to conducting research, partnering/leading implementation, no action, or action is to be determined based on on-going activities.

- **Research** – Due to there being a role for the NWP, Calibrate Downstream WIM Scales with Permanent Scale Data and NWP Virtual Weigh Station Initiative are defined as in the research phase. Subject to NWP member preferences on redefined and new projects, these projects should compete for funding in the next work plan. Note that the project on Downstream WIM Scales had mixed support, suggesting lower priority relative to the other projects in this category.

- **Implementation** – Due to active efforts underway in individual states and the potential for a NWP role in making the TZD Commercial Vehicles Safety Campaign a corridor wide effort, the TZD project is defined as in an implementation stage. Subject to NWP

member preferences on redefined and new projects, the TZD project should compete for funding in the next work plan.

- **No Action** – Due to the limited role for the NWP and/or low interest from member states, Oversize / Overweight Permitting Uniformity, Electronic Display of Oversize / Overweight Permits, and Pilot Escort Certification and Reciprocity Universal Standard have a recommendation of no action. These projects should be removed or redefined with a focus on an identified role for the NWP Freight Task Force that does not duplicate efforts already underway or completed.

- **To Be Determined** – The Model Legislation for Autonomous Commercial Vehicle Operations, Advanced Notice of Truck Parking Availability – Phase 2, Multistate Commercial Vehicle Platoon Demonstration are, or have been, the topic of research projects in the last year. These projects should be redefined based on recent study findings, and in line with the role of the NWP.

4.1.3 Funding Priorities and Project Advancement

Project costs were estimated as part of NWP Freight Task Force Year 1 activities (2014) and were not updated for this project. These estimates ranged between $25,000 and $250,000; however, an estimate was not available for Advanced Notice of Truck Parking Availability – Phase 2. While this range of costs is not inordinately high compared to typical research and planning projects, and in some cases low in terms of project implementation, these costs must be weighed and considered against all other state DOT activities. As such, while it is expected that state sponsored NWP pooled funds will likely be used to continue to advance relevant research, for higher cost projects (likely those in excess of $25,000) other sources will need to be explored.

In terms of Federal funding, there are numerous options that align with priority project objectives. Of particular relevance are grant programs, such as TIGER and FASTLANE; programs that emphasize providing benefits to goods movement, and where multi-jurisdictional and multi-partner projects score well. However, in some cases these programs have established minimum grant requests ($5 million, $25 million, or more), which the NWP priority projects do not meet. However, there are a few examples of “sweet spots” where the level of interest and current state of implementation makes sense for NWP Freight Task Force to take an active role in advancing research or implementation, including:

- **Pursue Toward Zero Deaths Commercial Vehicles Safety Campaign** – The TZD Commercial Vehicles Safety Campaign project is estimated to take 12 months, with projected costs between $50,000 and $100,000. General research on lessons learned in the implementation of TZD and the development of specific strategies and marketing materials are best funded through the NWP pooled fund. Subsequent outputs or corridor wide initiatives using technology or other means could be eligible for federally allocated funding and grants. On a state-by-state basis, TZD activities could be funded through HSIP. HSIP projects or strategies must be included in the

state's Strategic Highway Safety Plan, requires additional lead time to add lessons learned and initiatives to those documents.

- **North/West Passage Virtual Weigh Station Initiative** – The expected cost of the VWS project ranges from $20,000 to $50,000. The research focus of the VWS project makes it most likely to be funded by the NWP pooled fund, but state or federal research programs could also fund the project. Subsequent phases of this research focused on implementation of could be funded by federal surface transportation programs depending on the need and intended purpose of the project. Additionally FMCSA funding sources such as the MCSAP and ITD may present opportunities for funding subsequent steps on the VWS Initiative.
- **Calibrate Downstream WIM Scales** – Phase I of the project is expected to take 12-18 months with costs ranging from $75,000 to $250,000, depending on research tasks. Given the research focus of the WIM project, Phase 1 is best funded through the NWP pooled fund, though admittedly this may stretch the resources of the fund.

Note, the NWP is currently conducting research on three projects, 1) The Model Legislation for Autonomous Commercial Vehicle Operations, 2) Advanced Notice of Truck Parking Availability – Phase 2, and 3) Multistate Commercial Vehicle Platoon Demonstration. As the results of those efforts is finalized, the future role of the NWP may be expanded to also include these topics.

4.1.4 Next Steps

The findings presented in this Working Paper have revealed several additional next steps the NWP should consider as it works to implement projects that enhance the safety and efficiency of corridor wide operations. These next steps should include:

- **Update or Remove Irrelevant Projects** – Projects in the 2014 priority listing may not be relevant anymore or may need to be updated based on research underway or already completed.
- **Identify New Projects** – Incorporating the current state of the practice, NWP member states should generate new research projects to ensure the list of project options presents the state of the art applications of technology that address current and emerging needs and issues.
- **Align Projects with Funding** – Using the information provided in this report, specifically on grant programs such as TIGER and FASTLANE, work to identify corridor wide project proposals that link multiple projects together, that today are disconnected. Proactive planning could result in better positioning the NWP to compete in future grant application cycles for larger, more impactful projects.
- **Transition to Implementation** – The NWP should continue developing research, but should place greater emphasis on transitioning that research to implementation (with a deliberate focus on the potential for competitive grant funding as noted above). The Freight Task Force could serve as the venue to discuss where implementation will provide greatest benefit as a guide to where the shift to implementation should be focused.