

# NORTH/WEST PASSAGE



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Transportation Pooled Fund Study TPF-5(190)

**FINAL Work Plan 10**



# North/West Passage

## TRANSPORTATION POOLED FUND STUDY TPF-5(190)

### BACKGROUND

Interstates 90 and 94 between Minnesota and Washington function as major corridors for commercial and recreational travel. Extreme winter weather conditions, prevalent in the northern states within this corridor, pose significant operational and travel-related challenges. Idaho, Minnesota, Montana, North Dakota, South Dakota, Washington, and Wyoming are predominantly rural and face similar transportation issues related to traffic management, traveler information, and commercial vehicle operations.

Recognizing the value of coordinated, cross-border collaboration for Intelligent Transportation System (ITS) deployment to address these issues, Minnesota initiated a meeting in 2002 with representatives from each of the states within the corridor. The group established itself as a Transportation Pooled Fund (TPF-5(093)) in 2003 through the Federal Highway Administration (FHWA). The TPF number was then changed to TPF-5 (190) when FHWA transitioned to a new reporting system.

The vision of the North/West Passage Corridor is to focus on developing effective methods for sharing, coordinating, and integrating traveler information and operational activities across state and provincial borders.

The North/West Passage Corridor has developed an ITS Integrated Strategic Plan and has successfully implemented eight work plans containing 45 projects. Currently the group is completing its ninth work plan consisting of five projects. Complete details on previous work plans and individual projects are available through the program web site at [www.nwpassage.info](http://www.nwpassage.info).

### AWARDS

At the Opening Session of the 2010 National Rural ITS Conference, the North/West Passage Program was recognized as the winner of the 2010 Best of ITS Rural Award. The Best of ITS Rural Awards is the only program in the world that recognizes the best and brightest of the rural ITS community.

In 2012, North/West Passage initiated the [Operations and Travel Information Integration Sharing \(OTIIS\)](#) project. FHWA selected OTIIS for federal funding through the Multistate Corridor Operations Management Program (MCOM) Program. The purpose of the MCOM program is to promote regional cooperation, planning, and shared project implementation for research programs and projects that improve multimodal transportation system management and operations.

Research and development during the first phase of the OTIIS project was carried out by the Western Transportation Institute (WTI), which offers extensive experience developing multistate corridor plans and traveler information systems that integrate data from multiple sources. OTIIS leveraged previous North/West Passage projects to implement an enhanced corridor-wide traveler information website. Currently North/West

Passage is in its second phase of the project which will focus on launching the website, gathering feedback on the website as well as operating and maintaining the site. Phase 2 will also include an evaluation.

## **ACCOMPLISHMENTS**

The North/West Passage has completed a number of projects since its inception in 2003, the following bullets highlight some of accomplishments of the corridor:

- North and South Dakota 511 callers can select to receive information on Minnesota's highways.
- Development of one proposal to hire a contractor to perform work in two bordering states.
- Each state uses their own phrases to describe road events. The North/West Passage defined and agreed upon a set of consistent event description phrases to use across the I-90 and I-94 corridor.
- Provided a forum for state patrol/police and DOT staff to discuss integration of systems.
- Held a workshop to create action plans for increased cross-border operation and maintenance collaboration.
- Participated in the USDOT Clarus initiative. The result of the project was an example of all North/West Passage states working together to develop a corridor Concept of Operations document.
- Shared the details of Wyoming's Enhanced Citizen Assisted Reporting Program for expansion to additional states. Idaho has implemented a citizen assisted reporting system.
- Signed a Corridor-Wide Memorandum of Understanding for corridor wide coordination of traveler information.
- Created a benefit/cost spreadsheet tool for typical rural ITS projects.
- Held a webinar to open a dialogue with the freight industry.
- Evaluated traveler information tools used and coordination among the North/West Passage states during major events.
- Documented how each state plans and prioritizes ITS deployments.
- Assessed each state's conformance to SAFETEA-LU 1201 regarding real-time system management information program.
- Held peer exchanges on the development of a concept for rural TMC/TOC operations, Variable Speed Limits, and DOT Efficiencies.
- Hosted a Regional Operations Forum for the North/West Passage and select members of the Great Lake Regional Transportation Operations Coalition (GLRTOC)

## **FINANCIAL STATUS**

North/West Passage members contribute \$25,000 or more annually to the pooled fund and are reimbursed for program travel. The North/West Passage member agencies are anticipated to contribute financially to the projects included in this work plan.

## **PROJECTS**

At the May 2015 North/West Passage Annual Meeting in Bloomington, Minnesota the states reviewed the North/West Passage goals, objectives and projects completed to-date in order to gauge interest in continuing to work as a pooled fund. The states all agreed that goals are being met and the work being done is of value to

warrant continuation of the pooled fund. A list of prospective projects for Work Plan 10 was then discussed in detail. The prospective projects were based on member suggestions and the Strategic Plan. These projects were scored at the Annual Meeting based on anticipated benefits to the corridor, likelihood of success, compatibility with vision and strategic plan, and timeliness of the project.

The voting results are presented in Table 1.

**TABLE 1: VOTING RESULTS FOR WORK PLAN 10 PROJECTS**

Project Name	Total Points Voted	Rank by Points
OTIIS Operations Plan	605	1
Operations Task Force	592	2
Evaluate Effectiveness of Citizen Reporting	569	3
Technicians Forum	562	4
Freight Task Force	558	5
Winter Performance Management Practices	558	6
Multistate Assessment of Interstate Speed Limit Impacts	557	7
Advanced Notice of Truck Parking Availability	516	8
Review of State ITS Deployments	500	9
Assessing the Role of LED Lights in Highway Lighting	497	10
NWP Virtual Weight Station Initiative	487	11
Specifications and Instructions for Deployment of Bluetooth Readers	480	12
Identify Potential Corridor Oriented Performance Management	477	13
Canadian Border Crossing Coordination	422	14
Pursue a “Toward Zero Deaths” CVO Safety Campaign	353	15
i90i94travelinfo.com Website Update	180	16

After discussing the voting results the states agreed to pursue as many of the projects listed in Table 1 as could be accomplished with available funding.

Table 2 provides a funding plan for Work Plan 10 that includes several other expenses in addition to the projects selected through voting. Program administration support is as an overarching contractor task to support the Program Administrator and Chair with meeting preparations, writing conference papers, preparing presentations, maintaining progress reports, etc. The states are also planning their annual meeting in the coming year and the estimated cost noted below consists of associated travel expenses.

**TABLE 2: WORK PLAN 10 FUNDING PLAN**

Expense	Estimated Costs	Project Champion
<b>Project Cost</b>		
Project 10.1 Operations and Travel Information Integration Sharing (OTIIS) Website Operations and Maintenance Plan	\$15,000	Brandi Hamilton
Project 10.2 Operations Task Force <ul style="list-style-type: none"> <li>• Technicians Forum (Vince Garcia)</li> <li>• Review of State ITS Deployments</li> </ul>	\$35,000	Bill Legg
Project 10.3 Evaluate Effectiveness of Citizen Reporting	\$20,000	Cory Johnson
Project 10.4 Freight Task Force <ul style="list-style-type: none"> <li>• Advanced Notice of Truck Parking Availability</li> </ul>	\$40,000	Bob Koeberlein
Project 10.5 Winter Performance Management Practices	\$15,000	Tony Ernest
Project 10.6 Multistate Assessment of Interstate Speed Limit Impacts	\$50,000	Dave Huft
<b>Administrative Cost</b>		
Program Administration Support	\$ 30,000	
Program Website Maintenance ( <a href="http://www.nwpassage.info">www.nwpassage.info</a> )	\$ 5,000	
Member Travel Support (one in person meeting)	\$ 10,000	
<b>Total Administrative Cost</b>	<b>\$ 45,000</b>	
Revenue	Estimated Revenue	
Carryover Funds from Previous Work Plans	\$ 45,000	
State Contributions (7 states@ \$25,000/state)	\$ 175,000	
<b>Total (Revenue vs. Expenses)</b>	<b>\$ 220,000</b>	<b>\$ 220,000</b>

The states will be directly involved with finalizing contractor cost estimates, scopes of work and schedules for each of the projects to ensure concurrence with the final mix of projects contracted for Work Plan 10.

The details of projects 10.1 – 10.6 are included on the following pages. For each project, a title, description, and recommended champion are provided, in addition to a prospective approach. Also provided are planning level cost estimates. This planning level information was used as the basis to develop this work plan and will be used to arrange contractor services to execute the individual projects.

<b>Project Title</b>	<b>10.1 Operations and Travel Information Integration Sharing (OTIIS) Website Operations and Maintenance Plan</b>
<b>Project Champion</b>	Brandi Hamilton
<b>Project Purpose</b>	To review options and develop an Operations and Maintenance Plan to continue the OTIIS website at the completion of Phase 2.
<b>Budget</b>	\$15,000
<b>Background</b>	<p>In 2012, North/West Passage initiated the OTIIS project. FHWA selected OTIIS for federal funding through the Multistate Corridor Operations and Management (MCOM) Program. The purpose of the MCOM program is to promote regional cooperation, planning, and shared project implementation for research programs and projects that improve multimodal transportation system management and operations.</p> <p>Research and development during the first phase of the project OTIIS project was carried out by the Western Transportation Institute (WTI). OTIIS leveraged previous North/West Passage projects to implement an enhanced corridor-wide traveler information website. Currently North/West Passage is in its second phase of the project which will focus on launching the website, gathering feedback on the website as well as operating and maintaining the site. Phase 2 will also include an evaluation.</p> <p>At the close of Phase 2, North/West Passage member agencies will face a decision of whether to continue OTIIS website operations. If public funding is involved, this will require either:</p> <ul style="list-style-type: none"> <li>• the execution of a contract between one of the member states and a contractor/vendor, or</li> <li>• a scenario where one of the member states agreeing to take on hosting, operating and maintaining the software.</li> </ul> <p>The intent of this project is to document the ownership and structure of the OTIIS software to a level that would enable the North/West Passage members to understand the options for forming the needed agreements to continue OTIIS operations, and then to develop a plan for proceeding with executing the agreement(s). The project will stop short of proceeding with extending OTIIS operations, but will establish the information that members need to make the decision at the conclusion of Phase 2.</p>
<b>Approach</b>	<ul style="list-style-type: none"> <li>• Work with WTI to identify and document the structure of the OTIIS website (e.g. hardware and hosting requirements, existing software and programming languages used, use of external applications such as google maps)</li> <li>• Work with WTI and Montana Department of Transportation to understand the ownership of the OTIIS software. Note: The software is understood to be open source or software owned by MDT and/or the North/West Passage Program, however it is understood that some aspects and modules rely on proprietary systems (e.g. mapping and search engines).</li> </ul>

	<ul style="list-style-type: none"> <li>• Estimate the costs to transition the website (one-time cost) to a new hosting facility based on WTI’s experience transitioning it to the Cloud for Phase 2</li> <li>• Identify and highlight the expected challenges with site maintenance should the website be transitioned to a new contractor (e.g. risks and costs of a new contractor/vendor learning and supporting the software)</li> <li>• Create a plan that documents the steps for transitioning into Phase 3 hosting, operations and maintenance of the OTIS website (e.g. current provider, new contractor, state DOT).</li> </ul>
<b>Goals Addressed</b>	This project will further enhance the states’ efforts to provide corridor-wide traveler information (Goal 1) and to develop and promote cross-jurisdictional coordination of operations (Goal 2) for the North/West Passage.

<b>Project Title</b>	<b>10.2 Operations Task Force</b>
<b>Project Champion</b>	Bill Legg
<b>Project Purpose</b>	To continue meeting as a task force for another year.
<b>Budget</b>	\$35,000
<b>Background</b>	<p>North/West Passage has supported an Operations Task Force for two years with the intent to establish relationships, enhance the scope of operations-oriented projects, support further implementation of project findings, and increase interaction among the states outside of major events.</p> <p>The task force meets on a monthly basis for 30 minutes to talk about current operational issues related to the states or I-90/I-94. During their 2014-15 meetings, the task force focused their discussion topics based on:</p> <ul style="list-style-type: none"> <li>• Continued emphasis on identifying, planning for and coordinating major events – planned and unplanned.</li> <li>• Continued peer exchange style discussions of operational approaches that individual states are using to manage events, particularly as it may support states developing TMC/TOC facilities.</li> </ul> <p>In 2015, the task force also participated in a Regional Operations Forum that explored more deeply operational practices among the states.</p> <p>This project would support continuation of the task force for another year, following the same meeting format.</p>
<b>Approach</b>	<ul style="list-style-type: none"> <li>• Scheduled task force meeting every month for 30 minutes.</li> <li>• Develop a task force work plan (based on member input) that identifies the operations oriented topics to be discussed during each monthly webinar. Some topics will require research and information gathering before or after the task force meetings. Details for a providing a Technicians Forum will be included in the work plan. The purpose of this forum will be to provide an opportunity for</li> </ul>

	<p>technicians to interactively discuss topics of interest. The work plan will also include details on conducting a more formal review of the ITS projects and deployments that are planned within each state for the coming year. All meeting information and formats will be reviewed with and approved by the task force chair.</p> <ul style="list-style-type: none"> <li>• Prepare, gather information, facilitate and conduct monthly task force meetings.</li> </ul>
<b>Goals Addressed</b>	This project will further enhance the states’ efforts to provide corridor-wide traveler information (Goal 1) and to develop and promote cross-jurisdictional coordination of operations (Goal 2) for the North/West Passage.

<b>Project Title</b>	<b>10.3 Evaluate Effectiveness of Citizen Reporting</b>
<b>Project Champion</b>	Cory Johnson
<b>Project Purpose</b>	Evaluate citizen reporting systems deployed documenting lessons learned to help assess the benefits of multiple states using citizen reporting.
<b>Budget</b>	\$20,000
<b>Background</b>	<p>The Wyoming Department of Transportation (WYDOT) has successfully developed and deployed an Enhanced Citizen Assisted Reporting (ECAR) program that allows authorized citizens to manually report driving conditions to DOT staff, who then enter the events into the department’s statewide reporting system for dissemination on 511 and the web. Additional details of Wyoming's ECAR program were of interest to the eight North/West Passage states, and the Steering Committee approved a citizen assisted reporting project in their fifth annual work plan. The goals of the <a href="#">Phase 1</a> project were to share details of Wyoming's ECAR program with the other states, to explore ways in which Wyoming's program could be improved upon for maximized success in future implementations, and to explore the feasibility of the citizen reporting system expanding to additional states.</p> <p>Through cooperative efforts with North/West Passage, WYDOT is expanding the ECAR program to allow authorized citizens to use a web-based interface to report driving conditions to DOT staff. Also, Idaho Transportation Department (ITD) developed and implemented a citizen reporting system modeled after the Wyoming system that allows authorized citizens to report conditions through a web interface.</p> <p>With the ultimate goals of consistent reporting across state boundaries, and the potential for long distance travelers to report conditions for both Wyoming and Idaho, North/West Passage helped the two states to work together in <a href="#">Phase 2</a> of this effort to develop common reporting phrases and definitions. The common phrases were identified by first reviewing those used in the initial Wyoming ECAR program, then by reviewing the phrases recommended by an earlier North/West Passage project (<a href="#">Project 3.1</a>), and finally by reviewing the phrases used by ITD. Detailed discussions about the use of common phrases allowed both states to come to agreement on a small list of phrases that were seen as manageable for citizen use. It is also important to note that WYDOT also worked with the Utah DOT to establish citizen reporting in Utah. The common phrases from this project were shared with Utah in an effort to continue the consistency between states.</p>



	<p>In October of 2014 as part of Work Plan 8, Project 8.5: Outreach, a peer exchange webinar was held to continue to discuss states’ interests in citizen reporting, and review approaches and experiences with citizen reporting in Wyoming and Idaho. The Minnesota DOT during the webinar shared the launch of citizen reporting in Minnesota with DOT staff reporting conditions in November 2014 and expanding to truckers in 2015. The phased approach is expected to allow beta testing and modifications to be made before making the new reporting option directly available to citizens.</p> <p>This project would evaluate the citizen reporting systems deployed documenting lessons learned to help assess the benefits of multiple states using citizen reporting.</p>
<p><b>Approach</b></p>	<p>Idaho, Wyoming, Minnesota and Utah Citizen Reporting Evaluation</p> <ul style="list-style-type: none"> <li>• Document the process and lessons learned to implement citizen reporting in in each state,</li> <li>• Review citizen reporting program statistics (number of citizen reporters, number of citizen reports, accuracy of reports), and</li> <li>• Survey DOT staff and citizen reporters to learn what has worked well and suggestions for improvement including the use of the phrases available to report road and weather conditions.</li> </ul> <p>The final summary document for this project will highlight information gathered from each citizen reporting program reviewed and note any common themes and lessons learned to help assess the benefits of multiple states using citizen reporting. Research may also include documenting other options for citizen reporting (e.g. Waze).</p>
<p><b>Goals Addressed</b></p>	<p>This project will further enhance the states’ efforts to support and promote traveler information (Goal 1) for the North/West Passage.</p>

<p><b>Project Title</b></p>	<p>10.4 Freight Task Force</p>
<p><b>Project Champion</b></p>	<p>Bob Koeberlein</p>
<p><b>Project Purpose</b></p>	<p>To continue to meet as a task force for another year.</p>
<p><b>Budget</b></p>	<p>\$40,000</p>
<p><b>Background</b></p>	<p>The Freight Task Force was established in April 2014 to enhance North/West Passage activities with the freight community and efforts. A summary of efforts completed by the Task Force included:</p> <ul style="list-style-type: none"> <li>• Held monthly conference calls</li> <li>• Developed a work plan to guide activities and actions of the Freight Task Force over the next 1-5 years. Nine projects were proposed and prioritized.</li> </ul>

	<ul style="list-style-type: none"> <li>Identified resources for North/West Passage Freight Task Force to carry out and implement its work plan (e.g. federal planning and research funding, federal project funding, state and other funding sources)</li> <li>Developed a technical memorandum assessing the feasibility of a corridor-wide CVO web portal and accompanying concept of operations. The document include background to the Wyoming DOT CVO portal, the importance of the CVO portal in meeting freight related traveler needs in the corridor and a summary of stakeholder outreach.</li> </ul>
<b>Approach</b>	<ul style="list-style-type: none"> <li>Hold monthly Freight Task Force calls</li> <li>Develop high level agenda topics and plan for the year</li> <li>Oversee Steering Committee approved freight projects and activities. This will include focusing on the Advanced Notice of Truck Parking Availability project that was identified in the <a href="#">Freight Task Force Work Plan</a>. This project will focus on collecting relevant research reports and interviewing key project personnel to develop information that can support a corridor wide decision regarding truck parking information.</li> <li>Continue to identify and pursue funding opportunities identified in the Freight Task Force Work Plan.</li> </ul>
<b>Goals Addressed</b>	This project will further enhance the states’ efforts to develop and promote cross-jurisdictional coordination of traveler information (Goal 1) for North/West Passage.

<b>Project Title</b>	<b>10.5 Winter Performance Management Practices</b>
<b>Project Champion</b>	Tony Ernest
<b>Project Purpose</b>	Gather and summarize information regarding the North/West Passage states’ current practices surrounding winter performance measures. The research will identify measures and the associated data being used, as well as targets that have been established. The summary will identify similarities and differences, and recommend common practices for states to streamline winter performance measures, particularly as it may relate to I-90/I-94.
<b>Budget</b>	\$15,000
<b>Background</b>	<p>The North/West Passage states have a variety of approaches for monitoring winter weather performance. For example, MnDOT’s core measures are the frequency of achieving bare lanes within a targeted number of hours and customer satisfaction with snow and ice removal. ITD uses indexes associated with winter performance and mobility, and WSDOT has several measures categorized by outcomes (results) and outputs (work done).</p> <p>The Federal Highway Administration Road Weather Management Program established a set of winter performance measures in 2006. MAP-21 and programmatic changes have influenced RWMP in the years since, and in 2012, a study was undertaken to review the original measures and identify refinements. Key measures noted in the <a href="#">Road Weather</a></p>

	<p><a href="#">Management Performance Measures-2012 Update</a> to improve overall system performance during weather events included:</p> <ul style="list-style-type: none"> <li>• Reductions in agency costs of weather-related maintenance and operations activities.</li> <li>• Reduction in number and types of fatalities and crashes attributed to adverse weather nationally.</li> <li>• Reduction in the extent of capacity losses and delays due to fog, snow, and ice events including freight.</li> <li>• Increase in travel time reliability or decrease in variability due to road weather management strategies during adverse weather scenarios.</li> <li>• Reduction in number of tons of salt or chemical usage in the U.S. normalized by winter severity index.</li> </ul> <p>As of yet there is no widely accepted measure applicable to the different roadway classifications, storm characteristics, or traffic conditions. <a href="#">NCHRP 14-34</a> is a project that will develop a guide for performance measures in snow and ice control operations to address these issues. The 24-month project is scheduled to begin in 2015 and it will also review research and current practice in its initial tasks.</p> <p>Because many of the major events that impact travel along I-90/I-94 are winter weather related, it is logical to understand the states’ winter maintenance performance measures as a way to further explore opportunities for coordinating traveler information and operations across state boundaries.</p>
<b>Approach</b>	<ul style="list-style-type: none"> <li>• Review performance reports and anecdotal information from each North/West Passage state to document measures used, data used and targets established for winter weather performance.</li> <li>• Identify similarities and differences among winter weather performance management practices in the North/West Passage states.</li> <li>• Recommend common practices that could streamline winter performance measures, particularly as they may relate to I-90/I-94.</li> <li>• Develop a summary report of the information gathered and, if desired, host a webinar to present and discuss results of the summary report.</li> </ul>
<b>Goals Addressed</b>	<p>This project will further enhance the states’ efforts to provide corridor-wide traveler information (Goal 1) and to develop and promote cross-jurisdictional coordination of operations (Goal 2) for the North/West Passage.</p>

<b>Project Title</b>	<b>10.6 Multistate Assessment of Interstate Speed Limit Impacts</b>
<b>Project Champion</b>	Dave Huft
<b>Project Purpose</b>	Speed limits along I-90/I-94 have an impact on travel and operations. This project will examine the North/West Passage states’ current practices for setting speeds limits along

	I-90/I-94 and assess the impacts of higher speeds and variable speeds along the multistate corridor.
<b>Budget</b>	\$50,000
<b>Background</b>	<p>Legislation often influences speed limits established by state departments of transportation. Federal legislation outlines parameters that must be followed for a state to receive federal funding. State legislation can mandate speed studies, changes to speeds limits and even how speeding violations are managed.</p> <p>In 2014, the Minnesota Legislature requested the evaluation of two-lane, two-way roadways with posted speed limits of 55 MPH (<a href="#">2014 Minnesota Law Chapter 312-H.F. 3172, Sec. 36. Evaluation of Certain Trunk Highway Speed Limits</a>). The legislation requires MnDOT to study approximately one-fifth of all the roads subject to investigation each year until the statewide study is complete in 2019. <a href="#">MnDOT’s 2014 report</a> resulted in speed limits being raised from 55 MPH to 60 MPH on 38 of 52 control sections.</p> <p>In addition to setting speed limits, enforcing them is an ongoing challenge. In August 2014, I-90/I-94 was the focus of enhanced enforcement through a campaign led by the Minnesota State Patrol in partnership with IACP, NHTSA and law enforcement from 15 states. The I-90/I-94 Challenge was schedule using data from NHTSA and individual states’ crash data. There were several goals associated with the Challenge but the most prominent was zero fatalities during the 4-day enforcement period. There were over 20,000 traffic enforcement contacts during the Challenge and two fatalities.</p> <p>In March 2015, South Dakota’s Governor signed a state transportation funding bill that establishes funding for transportation projects and raises the maximum speed limit on South Dakota intersects to 80 MPH.</p> <p>This project will examine the North/West Passage states’ current practices for setting speeds limits along I-90/I-94 and assess the impacts of higher speed limits and varying speed limits along the multistate corridor.</p>
<b>Approach</b>	<ul style="list-style-type: none"> <li>• Review and summarize the history of crashes attributed to speed along I-90/I-94 in the North/West Passage states.</li> <li>• Review and summarize current speeds limits, as well as speed limit changes over the previous 10 years, along I-90/I-94 in the North/West Passage states.</li> <li>• Identify patterns, if any, between crash history and speed limits along I-90/I-94.</li> <li>• Review and summarize engineering, enforcement and educational countermeasures used by the North/West Passage states to manage speed limits along I-90/I-94 (e.g. I-90/I-94 Challenge).</li> <li>• Recommend potential countermeasures that could be collaboratively implemented along I-90/I-94 by the North/West Passage states.</li> </ul>
<b>Goals Addressed</b>	This project will further enhance the states’ efforts to develop and promote cross-jurisdictional coordination of operations (Goal 2) for the North/West Passage.