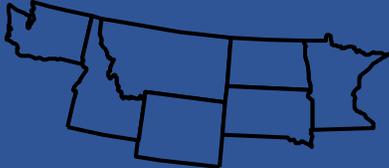


# North/West Passage

Transportation Pooled Fund Study



## Progress Report

NWPASSAGE.INFO

APRIL 2019

## Background

Interstates 90 and 94 between Wisconsin 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, 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 in 2003 through the Federal Highway Administration (FHWA).

### Vision

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 vision provides a framework to guide the states' future projects in the corridor.

### Members

- Washington State DOT
- Montana DOT
- Idaho Transportation Department
- Wyoming DOT
- North Dakota DOT
- South Dakota DOT
- Minnesota DOT

### Contact

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## Work Plan Project Results and Outcomes

The following pages identify the project results and outcomes of major activities performed from each work plan North/West Passage develops and approves annually. Final project reports are available at: [nwpassage.info](http://nwpassage.info).

# Work Plan 13 Project Results and Outcomes

NWP Project	Results and Outcomes
<b>Operations Task Force - Year 6 (2019)</b>	<ul style="list-style-type: none"> <li>Held periodic webinars on operations related topics (e.g. Pathfinder and Wyoming DOT Connected Vehicle Pilot Project Update).</li> </ul>
<b>Freight Task Force - Year 4 (2020)</b>	<ul style="list-style-type: none"> <li>The intent of the freight task force is to enhance NWP activities with the freight community and efforts.</li> </ul>
<b>NWP Corridor and Safety Mobility (2020)</b>	<ul style="list-style-type: none"> <li>This project will conduct an overall assessment of the safety and mobility issues and challenges along the I-90 and I-94 NWP corridor.</li> </ul>
<b>North/West Passage Traveler Information Work Zone Alerts: Feasibility Study (2019)</b>	<ul style="list-style-type: none"> <li>The purpose of this project is to understand what changes might be needed to each NWP state's traveler information system and work zone reporting procedure to provide work zone alerts to travelers.</li> </ul>

# Work Plan 12 Project Results and Outcomes

NWP Project	Results and Outcomes
<b>Operations Task Force - Year 5 (2018)</b>	<ul style="list-style-type: none"> <li>Monthly webinars discussed operations-oriented topics including protest management and camera placement/integration/maintenance experiences. A technician's forum was held on fiber communication and ITS/Signal/Signage/Sign Structures condition rating dashboard.</li> </ul>
<b>Freight Task Force - Year 3 (2018)</b>	<ul style="list-style-type: none"> <li>Supported the active engagement of Task Force members on emerging freight operations issues in the corridor and nationally.</li> <li>Conducted research on and recommended criteria for regulations in the corridor to support truck platooning.</li> <li>Recommended guidance for selecting virtual weigh station deployments in the North/West Passage states.</li> </ul>
<b>NWP Corridor Large Scale ITS Deployment Development (2018)</b>	<ul style="list-style-type: none"> <li>This project lead NWP member states through a process to determine the most appropriate large scale ITS deployment by prioritizing the technologies to be deployed and the location. The project identified focused on enhancing each state's 511 system to provide work zone alerts to travelers.</li> </ul>
<b>Evaluation of Rural 511 Phone Service (2018)</b>	<ul style="list-style-type: none"> <li>This project examined the state of practice and trends in 511 phone usage to determine the potential future role in effectively satisfying travelers' needs.</li> <li>Kentucky, Missouri and North Carolina were studied to understand why they moved away from delivering traditional 511 phone services.</li> </ul>
<b>Asset Management Practices for ITS Infrastructure (2018)</b>	<ul style="list-style-type: none"> <li>Summarized the states' asset management practices regarding ITS infrastructure in order to understand the extent to which ITS devices are recognized and the state of asset management for establishing life-cycles, preventative maintenance, etc.</li> </ul>
<b>Plow Camera and Location Sharing (2018)</b>	<ul style="list-style-type: none"> <li>Using phone interviews and a peer exchange webinar, this project gathered information to summarize the current practices some states use to share plow cameras and locations for traveler information.</li> </ul>
<b>TSMO Practices Peer Exchange (2019)</b>	<ul style="list-style-type: none"> <li>Facilitated a webinar to gather information about NWP states' TSMO organizational practices and where they are at in establishing TSMO practices.</li> </ul>

# Work Plan 11 Project Results and Outcomes

NWP Project	Results and Outcomes
<b>Operations Task Force - Year 4 (2017)</b>	<ul style="list-style-type: none"> <li>• Topic area discussion included color DMS use, law enforcement relationships with the DOT, interpreting DMS guidelines, and ITS asset management.</li> </ul>
<b>Forecasting &amp; Alerting Travelers about Critical Road Conditions (2017)</b>	<ul style="list-style-type: none"> <li>• Researched and summarized the approaches used by North/West Passage states to forecast and alert drivers about crucial roadway conditions.</li> </ul>
<b>Work Zone Management Practices for I-90/I-94 (2017)</b>	<ul style="list-style-type: none"> <li>• Researched and documented current work zone management practices in the North/West Passage states including intelligent work zone strategies.</li> </ul>
<b>Day One Activities to Prepare for Connected and Automated Vehicles (2017)</b>	<ul style="list-style-type: none"> <li>• Developed a list of available resources related to connected and automated vehicles. Other efforts included discussions on the resources needed for states to prepare for the transition of connected and automated vehicles.</li> </ul>

# Work Plan 10 Project Results and Outcomes

NWP Project	Results and Outcomes
<b>Operations and Traveler Information Integration Sharing (OTIIS) Website Ops &amp; Maintenance (2016)</b>	<ul style="list-style-type: none"> <li>• Documented the ownership and structure of the OTIIS website to a level that would enable the North/West Passage members to support future decisions about funding operations and maintenance.</li> </ul>
<b>Operations Task Force - Year 3 (2016)</b>	<ul style="list-style-type: none"> <li>• Discussed many topic areas including the use of an open Applications Protocol Interface (API) to share traveler information content with third-party traveler information service providers, options and approaches for establishing single points of telephone contact within each state, upcoming state ITS deployments, and coordination for planned major events.</li> <li>• Conducted a Technician’s Forum to provide operations field and office staff with best practices on parking management systems and selecting pavement sensors.</li> </ul>
<b>Evaluate Effectiveness of Citizen Reporting (2016)</b>	<ul style="list-style-type: none"> <li>• Evaluated the benefits, costs, and lessons learned of agencies using citizen reporters by examining Citizen Reporting Systems in Minnesota, Wyoming, Utah, Idaho, and Oregon.</li> </ul>
<b>Freight Task Force - Year 2 (2016)</b>	<ul style="list-style-type: none"> <li>• Conducted outreach and education webinars on freight data, truck parking, and connected vehicle trucks. Also, identified freight funding opportunities and outreach opportunities. Additional efforts included developing a paper on identifying truck parking availability systems corridor-wide that provide near-real time information to commercial vehicle drivers. A paper exploring truck platooning technology was also developed.</li> </ul>
<b>Winter Performance Management Practices (2016)</b>	<ul style="list-style-type: none"> <li>• Gathered and summarized information regarding the North/West Passage states' current practices surrounding winter performance measures.</li> </ul>

**Multistate Assessment of Interstate Speed Limit Impacts (2016)**

- Reviewed the North/West Passage states that had increased their speed limits, but because it did not include data from all member states and only a couple years of data were available since the speed limit changes, results were limited.

## Work Plan 9 Project Results and Outcomes

NWP Project	Results and Outcomes
<b>Operations Task Force - Year 2 (2015)</b>	<ul style="list-style-type: none"> <li>• Developed and completed a task force work plan, provided guidance and input to North/West Passage operations related efforts, and provided an opportunity for peer exchange.</li> <li>• Hosted a North/West Passage Regional Operations Forum to provide practitioners along the corridor with new and innovative approaches for managing and operating the highway system, especially across state boundaries.</li> </ul>
<b>Peer Exchange (2015)</b>	<ul style="list-style-type: none"> <li>• Hosted two webinars on member-identified topics of interest (Variable Speed Limits (VSL) and DOT Efficiencies).</li> </ul>
<b>Highlighting Operations Innovations (2015)</b>	<ul style="list-style-type: none"> <li>• Identified and tried different options (video conferencing) to highlight operation innovations (VSL) within an agency other than a typical scanning tour or webinar.</li> </ul>
<b>Research Need for Corridor Performance Measures (2015)</b>	<ul style="list-style-type: none"> <li>• Documented performance measures in general, corridor specific performance management, and practices among other groups. Presented potential performance measures for North/West Passage to further consider as a corridor.</li> </ul>

## Federal Grant: Multistate Corridor Operations and Management Program (MCOM)

NWP Project	Results and Outcomes
<b>Operations and Travel Information Integration Sharing (OTIIS) (2017)</b>	<ul style="list-style-type: none"> <li>• Promoted regional cooperation, planning, and shared project implementation for research programs and multimodal transportation management system management and operations.</li> <li>• Leveraged previous North/West Passage projects to implement an enhanced corridor-wide traveler information website.</li> </ul>

# Work Plan 8 Project Results and Outcomes

NWP Project	Results and Outcomes
<b>Operations Task Force - Year 1 (2014)</b>	<ul style="list-style-type: none"> <li>• Provided more in-depth expertise on the states' individual operating procedures and on the approaches that North/West Passage could pursue to strengthen and maintain coordination among the states, particularly during major events.</li> </ul>
<b>Concept of Rural TMC/TOC Operations (2014)</b>	<ul style="list-style-type: none"> <li>• Supported a peer exchange among the North/West Passage states on the development of a concept for rural Traffic Management Center (TMC)/Traffic Operations Center (TOC) operations.</li> </ul>
<b>Freight Task Force (2014)</b>	<ul style="list-style-type: none"> <li>• Established a freight task force designed to assess the value of an ongoing, dedicated group focused on North/West Passage freight related activities and projects.</li> </ul>
<b>Member Outreach Support (2014)</b>	<ul style="list-style-type: none"> <li>• Developed materials for and provided outreach support to the steering committee members as they shared information about North/West Passage with other staff in their agencies.</li> </ul>
<b>Corridor-Wide Commercial Vehicle Portal Feasibility Study (2014)</b>	<ul style="list-style-type: none"> <li>• Program support consultant served as a temporary, central point for identifying and facilitating agency coordination during major events along I-90/I-94.</li> </ul>

# Work Plan 7 Project Results and Outcomes

NWP Project	Results and Outcomes
<b>NWP Goal Assessment and Planning for ITS Corridor Development (2013)</b>	<ul style="list-style-type: none"> <li>• Identified how NWP projects met the corridor's vision, goals, and objectives and identified gaps.</li> <li>• Summarized how each NWP state planned and prioritized ITS deployments along the I-90 and I-94 Corridor.</li> <li>• Assessed existing ITS deployments for potential gaps that could lead to future deployments.</li> </ul>
<b>Corridor-Wide Traveler Information Coordination Operational Test: Phase 2 (2013)</b>	<ul style="list-style-type: none"> <li>• Determined the threshold of when multi-state coordination is needed for planned and unplanned events along the corridor.</li> <li>• Expanded the roadwork map display website developed by the Great Lakes Regional Transportation Operations Coalition (GLRTOC) to include the North/West Passage states.</li> <li>• Extended evaluation of coordination during major events.</li> </ul>
<b>NWP Freight Industry Webinar (2013)</b>	<ul style="list-style-type: none"> <li>• Provided the opportunity to share existing traveler information sources from public agencies along the I-90/I-94 corridor and provided the opportunity to learn about the freight industry needs related to traveler information through a webinar.</li> </ul>
<b>Multistate Coalition Coordination (2013)</b>	<ul style="list-style-type: none"> <li>• Facilitated coordination among the North/West Passage program and the Great Lakes Regional Transportation Operations Coalition.</li> </ul>

# Work Plan 6 Project Results and Outcomes

NWP Project	Results and Outcomes
<b>Corridor-wide Traveler Information Coordination - Operational Test (2012)</b>	<ul style="list-style-type: none"> <li>• Several NWP projects have developed guidelines for reporting consistent traveler information. This project tested the effectiveness of these guidelines during actual major events that occur along the NWP Corridor by conducting an operational test.</li> </ul>
<b>23 CFR 511 Final Rule (2013)</b>	<ul style="list-style-type: none"> <li>• This project assessed each state’s conformance to SAFETEA-LU Section 1201 regarding the real-time system management information program.</li> </ul>
<b>Cost/Benefit Tool Evaluation - Phase 2 (2012)</b>	<ul style="list-style-type: none"> <li>• This project enhanced the C/B Tool developed in Work Plan 5 – Phase 1 by:               <ul style="list-style-type: none"> <li>○ Adding 'MetaData' to the tool which would explain deployment parameters for cited references, descriptions of how each device is used, and conditions for deployment.</li> <li>○ Adding additional ITS devices to the four developed in Phase 1.</li> <li>○ Continuing to expand/improve the tool based on input from the North/West Passage states as well as the ITS community.</li> </ul> </li> </ul>
<b>NWP Regional Permitting - Phase 3 (2013)</b>	<ul style="list-style-type: none"> <li>• Continued the goal of increasing the efficiency of trucking in the corridor by reducing the confusion in regulations and requirements for oversize/overweight trips and by providing a single mechanism for obtaining permits for oversize/overweight loads moving over the corridor.</li> </ul>
<b>Corridor-wide Marketing and outreach to CVOs (2012)</b>	<ul style="list-style-type: none"> <li>• Commercial vehicle operators identified traveler information communication channels and existing gaps.</li> </ul>
<b>Citizen Assisted Reporting - Phase 2 (2013)</b>	<ul style="list-style-type: none"> <li>• Expanded Wyoming's ECAR system discussed in Phase 1 from Work Plan 5 by:               <ul style="list-style-type: none"> <li>○ Developing an ECAR web entry tool for the Wyoming DOT ECAR Program.</li> <li>○ Defining consistent citizen assisted road and weather phrases.</li> <li>○ Deploying a citizen web-entry tool in Idaho based on Wyoming’s ECAR system.</li> </ul> </li> </ul>

# Work Plan 5 Project Results and Outcomes

NWP Project	Results and Outcomes
<b>Citizen Assisted Reporting Feasibility Study (2011)</b>	<ul style="list-style-type: none"> <li>• Shared details of Wyoming’s Enhanced Citizen-Assisted Reporting (ECAR) project with other NWP states, explored ways in which Wyoming’s program could be improved upon for maximized success in future implementations, and explored the feasibility of the citizen reporting system expanding to additional NWP States. Work Plan 6 included a project enhancing Wyoming’s system and expanding the program into Idaho.</li> </ul>
<b>Use of Mobile Sensors and Maintenance Decision Support for Automated Road Condition Reporting (2013)</b>	<ul style="list-style-type: none"> <li>• Performed a synthesis of the best practices of mobile sensors. The synthesis documented successful deployments that remain in operation today and what can be learned by the approaches that did not succeed.</li> <li>• Explored the current state of the MDSS initiatives and researched whether MDSS is a viable option for automating road condition reporting systems.</li> </ul>

**Cost/Benefit ITS Tool Evaluation (2012)**

- Completed the first phase of a Cost/Benefit spreadsheet tool to help agencies determine whether the benefits of a project outweigh the associated costs (especially in rural areas). This first phase focused on the following four devices: DMS, Traffic Detection, RWIS, and CCTV. The tool is portable (Excel spreadsheet) and can be executed easily with minimal preparation. The tool was developed for use in rural and urban areas. A Metropolitan Planning Organization model is not required to use the spreadsheet.

**Consistent and Coordinated DMS Use (2011)**

- Conducted a workshop to discuss all traveler information dissemination methods not just DMS for sharing information across states.
- Developed Operational Guidelines for Coordinating Traveler Information with Other States along I-90/I-94.
- Created a web page to map out the traveler information tools along the corridor.
- Signed a corridor-wide Memorandum of Understanding for cooperation and coordination of traveler information among the states.

**NWP Regional Permitting - Phase 2 (2012)**

- Continued to facilitate discussions among the NWP states to improve movement of overweight/oversized loads in the corridor by making permitting easier, making regulations more harmonious, and improving communications between agencies and the industry.

**Facilitating the Use of Open Source Software Throughout the Corridor**

- Conducted a workshop to advance the concept of open source software throughout the corridor to help each NWP state reduce the costs of developing and maintaining software systems.

## Work Plan 4 Project Results and Outcomes

NWP Project	Results and Outcomes
<p><b>Traveler Information Website-Phase 2 and Center-to-Center Communications ConOps (2010)</b></p>	<ul style="list-style-type: none"> <li>• Developed a ConOps, designed, and then implemented a second generation corridor-wide traveler information website that built upon the first generation website. The second generation beta website added the ability to acquire active event reports posted by member agencies and display active corridor events.</li> </ul>
<p><b>Call Forwarding and Evaluation of Cross Border Information Requests (2009)</b></p>	<ul style="list-style-type: none"> <li>• Summarized the potential to implement access to adjacent states' information between the 511 phone systems operated in each state. The final report outlines the current status of 511 access to adjacent states' information and the options each NWP state has with their current systems and includes a set of recommendations for implementation.</li> </ul>
<p><b>North/West Passage Regional Permitting (2010)</b></p>	<ul style="list-style-type: none"> <li>• The project team identified and recommended feasible approaches to implementing a regional oversize/overweight permitting process for the NWP states. The outcome of this project has provided additional information to allow North/West Passage states to continue to consider the options for regional permitting.</li> </ul>

**Traveler Information Dissemination to Commercial Vehicle Operators (2010)**

- The original goal of this project was to provide the information necessary for states to consider expanding short term truck parking availability along I-90 and I-94. However, there were a number of similar efforts occurring and in order to not duplicate efforts the NWP group decided to defer action on this project.
- The revised project goal produced a document that summarized the truck parking status in the corridor as well as summarized the experiences, challenges, and successes disseminating travel information to truckers.

## Work Plan 3 Project Results and Outcomes

NWP Project	Results and Outcomes
<p><b>Corridor-Wide Consistent Major Event Descriptions (2008)</b></p>	<ul style="list-style-type: none"> <li>• Completion of this report was the first step to define a set of consistent event description phrases to be used when sharing messages corridor-wide.</li> <li>• The event descriptions may be used in future phases of the traveler information website developed by the corridor.</li> <li>• An implementation plan was also completed to identify likely next steps for using the consistent event description phrases.</li> </ul>
<p><b>CAD to Reporting System Integration Workshop (2008)</b></p>	<ul style="list-style-type: none"> <li>• The workshop provided the opportunity to discuss future working relationships between public safety agencies and DOTs.</li> <li>• NWP states can use the information gathered to identify the next steps to integrate their CAD and reporting system.</li> </ul>
<p><b>North/West Passage Traveler Information Website (2008)</b></p>	<ul style="list-style-type: none"> <li>• Created a first generation basic travel information website for the entire NWP corridor that was enhanced and expanded upon in Work Plan 4.</li> <li>• The website provided users with camera images and weather conditions along the corridor to serve as a comprehensive source for traveler information. The website also identified rest areas and provided links to each state’s commercial vehicle restriction information as well as truck stop information.</li> </ul>
<p><b>Cross Border Operations and Maintenance Collaboration Workshop (2008)</b></p>	<ul style="list-style-type: none"> <li>• This workshop provided the opportunity to discuss potential collaboration benefits corridor-wide (efficiency of maintenance operations, seamless travel for motorists, reduced duplication of equipment and system deployments, improved traveler information, and reduced overall costs).</li> <li>• Each state created an action plan for improving operations and maintenance collaboration with bordering states.</li> </ul>
<p><b>Clarus (2008)</b></p>	<ul style="list-style-type: none"> <li>• A ConOps was developed to demonstrate an integrated surface transportation weather observing, forecasting and data management system and to establish a partnership to create a nationwide surface transportation weather observing and forecasting system.</li> <li>• This was an example of all NWP states working together to develop a ConOps.</li> </ul>

# Work Plan 2 Project Results and Outcomes

NWP Project	Results and Outcomes
<b>ITS Integrated Corridor Strategic Plan (2007)</b>	<ul style="list-style-type: none"> <li>The plan was developed to help the NWP achieve their vision by identifying the next projects and steps to move the program forward.</li> </ul>

# Work Plan 1 Project Results and Outcomes

NWP Project	Results and Outcomes
<b>Integrate Reporting Systems (2005)</b>	<ul style="list-style-type: none"> <li>Travelers in North Dakota and South Dakota can select to receive Minnesota's 511 traveler information.</li> <li>An Interface Control Document (ICD) was created to identify the process to allow the North Dakota condition reporting system (IRIS) to send data, and for the Minnesota Condition Acquisition Reporting System (CARS) system to receive the data. North/West Passage states using a different condition reporting system could simply edit the ICD to one that specifically supports exchanges with the other North/West Passage (NWP) reporting systems.</li> </ul>
<b>Condition Reporting System Trial in Wisconsin (2005)</b>	<ul style="list-style-type: none"> <li>The project alleviated fears about the time demands of a reporting system.</li> <li>The Wisconsin State Patrol used a trial reporting system for 1 month.</li> <li>Wisconsin deployed a statewide reporting system in 2008 including a traveler information website and 511 phone system.</li> </ul>
<b>Provide Integrated Communications Capabilities for ND DMS (2005)</b>	<ul style="list-style-type: none"> <li>North Dakota received grant money to complete this project.</li> <li>North Dakota staff is able to communicate and coordinate use of DMS and messages displayed for the traveler.</li> <li>Provided other states with the steps to upgrade DMS to NTCIP compliance.</li> </ul>
<b>Concept of Operations for DMS Deployment at the ND/MN border (2006)</b>	<ul style="list-style-type: none"> <li>A Concept of Operations (ConOps) was developed to document operations and maintenance DMS roles and responsibilities at the border of North Dakota and Minnesota.</li> <li>The ConOps includes a draft MOU for operating the DMS that could be applied to other bordering states.</li> <li>The document also includes operations guidelines for coordinating message when closing I-94 Westbound and Eastbound at the border that could also be applied to other NWP bordering states.</li> </ul>
<b>Concept of Transportation Operations document for providing Traveler Information Tomah Split in WI (2005)</b>	<ul style="list-style-type: none"> <li>Provides a high level perspective of providing traveler information at the Tomah split in Wisconsin.</li> <li>The document was coordinated with other planning efforts in Wisconsin to ensure the focus of providing traveler information at the Tomah split fit into Wisconsin's statewide plan.</li> <li>This document could assist the NWP in identifying key traveler information dissemination points along the corridor.</li> </ul>

**Develop a North/West Passage Program Website (2004)**

- The program website provides easy access to NWP information worldwide and to communicate and educate users about the NWP Transportation Pooled Fund (TPF) study.
- The website also provides a central communication point for those working on the NWP Program.

**RFP for the Anti-Icing System on the Red River between Minnesota and North Dakota (2005)**

- One Request for Proposals (RFP) was developed to deploy an anti-icing system on the Red River Bridge that is now operated and maintained by both Minnesota and North Dakota.
- Other NWP states can use the RFP as an example of hiring one contractor to perform work in two different states.