

# NORTH/WEST PASSAGE



Photo courtesy of Wyoming DOT

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Transportation Pooled Fund Study TPF-5(506)

**FINAL Work Plan 18**

# North/West Passage

## TRANSPORTATION POOLED FUND STUDY TPF-5(506)

### 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.

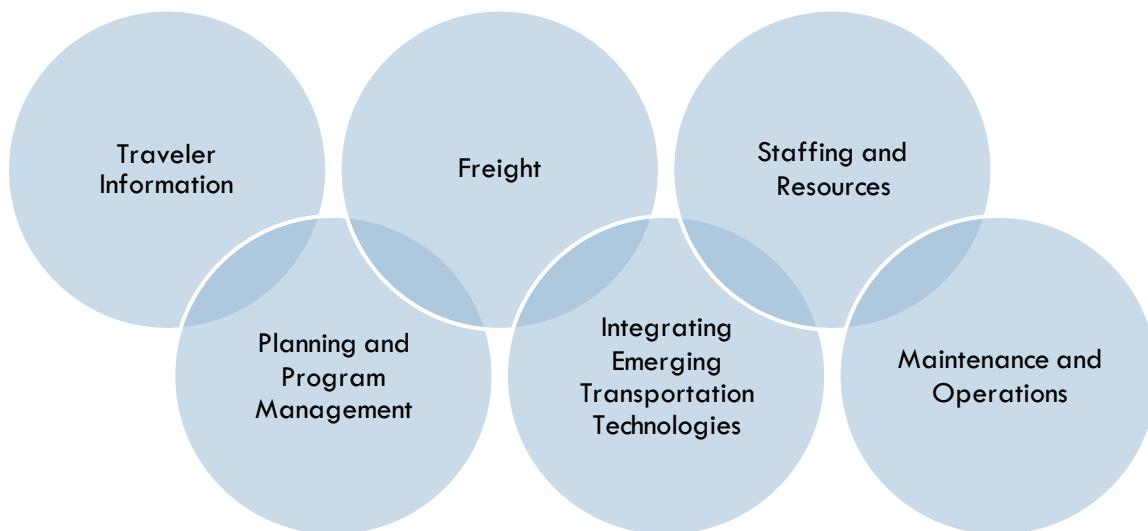
Recognizing the value of coordinated, cross-border collaboration for Intelligent Transportation System (ITS) deployment to address these issues, Minnesota initiated a meeting in 2002 with representatives from each of the states within the corridor. The group established itself as a Transportation Pooled 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. In 2019 TPF-5 (190) was closed out and a new number was assigned (TPF-5(376)). TPF-5(376) was closed out with the completion of Work Plan 12 – Work Plan 17 projects and a new number was assigned (TPF-5(506)) to complete Work Plan 18 – Work Plan 22 projects.

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

The North/West Passage Corridor has developed an ITS Integrated Strategic Plan and has successfully implemented sixteen work plans. Currently the group is completing its seventeenth work plan consisting of seven 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).

### FOCUS AREAS

North/West Passage projects selected annually are focused around six areas. See Figure 1. Members review common issues, problems, or needs around each focus area to assist in identifying project ideas of interest. It is important to note that Integrating Emerging Transportation Technologies incorporates Connected and Automated Vehicle project ideas.



**Figure 1: North/West Passage Focus Areas**

## **ACCOMPLISHMENTS**

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

- 2010 Best of ITS Rural Award Winner
- MOU for Traveler Information Coordination signed by all member states
- Operations Guidelines for Coordinating Traveler Information
- MCOM Federal Grant Recipient
- Successfully Submitted a Project Statement to NCHRP
- Established an Operations Task Force
- Established a Freight Task Forces
- Hosted a Regional Operations Forum
- Created a TMC/TOC Operations Coordination Webpage
- Deployed a Corridor-Wide Traveler Information Website
- Conducted Numerous Workshops and Peer Exchanges on Topics of Interest to North/West Passage Members
- Presented Project Results at Conferences
- Developed North/West Passage Outreach Material

## **FINANCIAL STATUS**

North/West Passage members contribute \$30,000 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 April 2023 North/West Passage Annual Meeting, held 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 18 was then discussed in detail. The prospective projects were based on member suggestions and the ITS Integrated Strategic Plan and corresponding updates. 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 18 PROJECTS**

Project Name	Total Points Voted	Rank by Points
Operations Task Force – Year 11	578	1
Freight Task Force – Year 8	578	2
Providing Recommended Routes to Mapping and Navigation Companies When There is a Closure on the Primary Route	511	3
Purchasing Data from Vendors of Connected Vehicle (CV) Data	497	4
Uniform Allowable Weights for Divisible Loads during Declared Emergencies	495	5
Situational Data Exchange Phase 4 – Business Models	492	6
Truck Travel Times and Need for Hours-of-Service Truck Parking Assessment	489	7
Automated Traveler Information Creation	476	8
Regulatory Harmonization Opportunities	467	9
Wind Energy Component Movement Assessment	458	10
Practices for Entering Accurate Work Zone Reporting	432	11
Locating Dynamic Message Signs (DMS)	430	12
Camera Spacing Guidance in Rural Areas	428	13
Outreach with Other Multi-state Groups	420	14
Traffic Incident Data Exchange (InDx): NWP Road Map	419	15
Freight System Resiliency Assessment	415	16
Traffic Control for Cable Median Barrier Installation and Repair	409	17
Involving ITS and TMSO Earlier in the Planning Process and Incorporating Operations and ITS into Corridor Studies and Other Planning Studies	407	18
Large-scale Project Ideas and Funding Opportunities	387	19
Local Agency Coordination	373	20
Activity to Support the Work Zone Data Initiative – Phase 3	350	21
Integrating Automated Driving Systems (ADS) into Maintenance Activities	318	22

Table 2 provides a funding plan for Work Plan 18 that includes several other expenses in addition to the projects selected through voting. Program administration support is 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 18 FUNDING PLAN**

Expense	Estimated Costs	Project Champion(s)
<b>Project Cost</b>		
Project 18.1 Operations Task Force – Year 11	\$25,000	Brandon Beise, NDDOT
Project 18.2 Freight Task Force – Year 8	\$20,000	Dave Huft, SDDOT
Project 18.3 Providing Recommended Routes to Mapping and Navigation Companies When There is a Closure on the Primary Route	\$20,000	Brandon Beise, NDDOT
Project 18.4 Purchasing Data from Vendors of Connected Vehicle (CV) Data	\$15,000	Cory Johnson, MnDOT
Project 18.5 Uniform Allowable Weights for Divisible Loads During Declared Emergencies	\$30,000	Kevin Daratha, WSDOT and Dave Huft, SDDOT
Project 18.6 Situational Data Exchange Phase 4 – Business Models	\$20,000	Mike Warren, MDT
Project 18.7 Truck Travel Times and Need for Hours-of-Service Truck Parking Assessment	\$30,000	Andrew Andrusko, MnDOT
<b>Total Project Cost</b>	<b>\$160,000</b>	
<b>Administrative Cost</b>		
Program Administration Support	\$40,000	
Program Website Maintenance ( <a href="http://www.nwpassage.info">www.nwpassage.info</a> )	\$5,000	
Member Travel Support	\$10,000	
<b>Total Administrative Cost</b>	<b>\$55,000</b>	
Revenue	Estimated Revenue	
State Contributions		
<ul style="list-style-type: none"> <li>5 states at \$30,000 (Idaho, Minnesota, Montana, North Dakota, and South Dakota)</li> <li>1 state at \$25,000 (Washington) <i>Washington DOT paid \$10,000 on behalf of North/West Passage for Project 15.8 under TPF-3(576). Their contribution to Work Plan 18 is reduced to \$25,000 and their contribution to Work Plan 19 will be reduced to \$25,000.</i></li> <li>1 state at \$0 (Wyoming) <i>Wyoming established contracts on behalf of North/West Passage to complete Project 14.4, Project 15.3, and Project 17.3 under TPF-3(576). Therefore, their annual contribution to Work Plans 18-22 will be reduced by \$80,000 (Work Plan 18: \$0, Work Plan 19: \$0, Work Plan 20: \$10,000, Work Plan 21: \$30,000, Work Plan 22: \$30,000).</i></li> </ul>		\$ 175,000
Carry forward funds		\$40,000
<b>Total (Revenue vs. Expenses)</b>	<b>\$215,000</b>	<b>\$215,000</b>

The member 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 18.

The details of projects 18.1 – 18.7 are included below. For each project, a title, description, and 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. Also identified for each project is which focus area (Figure 1) the project is related to.



<b>Project Title</b>	<b>18.1 Operations Task Force – Year 11</b>
<b>Project Champion</b>	Brandon Beise, North Dakota DOT
<b>Project Purpose</b>	To continue meeting as a task force for another year (September 2023 – August 2024).
<b>Budget</b>	\$25,000
<b>Background</b>	<p>North/West Passage has supported an Operations Task Force for nine years. Since Year 2 the task force has conducted a major event, winter, and flood season review for members to update each other on each winter season. Starting in Year 4, North/West Passage conducted an annual Technician’s Forum to provide technicians with an opportunity to talk with each other and learn about ITS deployments in other states. Following are highlights from each year.</p> <ul style="list-style-type: none"> <li>• <u>Year 1</u> (October 2013 – August 2014) 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> <li>• <u>Year 2</u> (September 2014 – August 2015) Webinars focused on a variety of topics including ITS deployment plans, API use among states, approaches to 24/7 staffing and citizen reporting and other crowd sources. The Operations Task Force also hosted a Regional Operations Forum on May 13-15, 2015.</li> <li>• <u>Year 3</u> (September 2015 – August 2016) Explored third party data providers to better understand the data they provide, summarized ITS deployments for operations, and conducted a Technician’s Forum.</li> <li>• <u>Year 4</u> (September 2016 – August 2017) Discussed color DMS use, working with law enforcement, interpreting DMS guidelines, ITS asset management, and conducted a Technician’s Forum.</li> <li>• <u>Year 5</u> (September 2017 – August 2018) Conducted a Technician’s Forum, hosted a peer exchange on camera placement, integration and maintenance experiences, and hosted a webinar on protest management experiences.</li> <li>• <u>Year 6</u> (September 2018 – August 2019) Conducted a Pathfinder Peer Exchange and Wyoming DOT provided an update on their connected vehicle pilot project.</li> <li>• <u>Year 7</u> (September 2019 – August 2020) Conducted webinars including plow hit experiences and traveler information experiences.</li> <li>• <u>Year 8</u> (September 2020 – August 2021) Conducted webinars on sunseting technologies, small cell deployments in the right-of-way, FCC rule making and reallocating the spectrum, and MnDOT’s fiber planning exercise.</li> </ul>

	<ul style="list-style-type: none"> <li>• <u>Year 9</u> (September 2021 – August 2022) Conducted webinars on advancements in winter operations, worker presence activities, NDDOT autonomous ditch mower, rural traffic incident management, and closing roads without gates or barricades.</li> <li>• <u>Year 10</u> (September 2022 – August 2023) Conducted webinars on the Montana DOT’s response to the 2022 Montana flood, North Dakota DOT TMC planning grant, effectiveness of TMCs, and alerting travelers of maintenance vehicles.</li> </ul> <p>The intent of the task force is to:</p> <ul style="list-style-type: none"> <li>• Establish relationships;</li> <li>• Enhance the scope of operations-oriented, maintenance operations, and TSMO related projects;</li> <li>• Support further implementation of project findings; and</li> <li>• Increase interaction among the states outside of major events.</li> </ul>
<b>Approach</b>	<ul style="list-style-type: none"> <li>• <b>Task 1: Task Force Schedule:</b> Develop a webinar schedule that identifies operations oriented, TSMO, and maintenance operations topics. Schedule task force meetings for the year. Longer meetings will be scheduled as needed to facilitate more in-depth discussion about select topics.</li> <li>• <b>Task 2: Conduct Webinars:</b> Prepare, gather information, facilitate, and conduct task force webinars.</li> <li>• <b>Task 3: Update Website:</b> Post recordings and webinar presentations on the Operations Task Force webpage.</li> </ul>
<b>Focus Area(s)</b>	Maintenance and Operations

<b>Project Title</b>	<b>18.2 Freight Task Force – Year 8</b>
<b>Project Champion</b>	Dave Huft, South Dakota DOT
<b>Project Purpose</b>	To continue meeting and providing informational webinars as a task force for another year (2023-2024).
<b>Budget</b>	\$20,000
<b>Background</b>	<p>North/West Passage has supported a Freight Task Force for seven years, where the task force intends to enhance North/West Passage activities and build a freight community. Key activities have included:</p> <ul style="list-style-type: none"> <li>• Conducted informational web meetings on topics of interest to the NWP members.</li> <li>• Conducted best practice (and practical) research on project funding opportunities.</li> <li>• Identified truck parking opportunities to best fit NWP needs.</li> <li>• Conducted exploratory research on the truck platooning concept, regulations, and supported the engagement of stakeholders to advance a multi-state truck platooning demonstration.</li> <li>• Conducted an assessment of virtual weigh stations and applications for the NWP.</li> <li>• Conducted topic-specific assessments to document existing conditions, assess needs and issues, and identify opportunities for the NWP. Topics of focus have included CMV traveler information, e-screening, and oversize/overweight movement.</li> </ul>
<b>Approach</b>	<p>Ongoing Freight Task Force Support in Year 8 would include:</p> <ul style="list-style-type: none"> <li>• Maintain the task force memberships list with input from the project champion.</li> <li>• Prepare, gather information, facilitate, and conduct up to 4 informational web meetings on topics directed by the task force.</li> <li>• Engage the task force through surveys and/or meetings periodically throughout the year to provide an opportunity for task force members to guide and provide input to work plan projects.</li> <li>• Other support, as needed.</li> </ul>
<b>Focus Area</b>	Freight

<b>Project Title</b>	<b>18.3 Providing Recommended Routes to Mapping and Navigation Companies When There is a Closure on the Primary Route</b>
<b>Project Champion</b>	Brandon Beise, North Dakota DOT
<b>Project Purpose</b>	To develop an approach for other NWP states to provide preferred routes to mapping and navigation companies when there is a closure on a primary route to improve route guidance to motorists.
<b>Budget</b>	\$20,000
<b>Background</b>	<p>North/West Passage Project 17.4 <u>Communicating Route Restrictions to Third Party Mapping/Navigation Providers</u> is documenting challenges and engaging with mapping and navigation providers to explore solutions to avoid or minimize situations where navigation systems advise drivers to divert onto inappropriate routes (e.g., road geometry does not support vehicle size, diversion route is not cleared of snow) during closures or delays on a primary route.</p> <p>WYDOT has been working with Google to develop a process and agreement to feed WYDOT mapping data into Google Maps. This process will communicate local road closures and share preferred county road diversion routes during closures on primary routes.</p>
<b>Approach</b>	<ul style="list-style-type: none"> <li>• <b>Task 1: Understand Wyoming DOT’s Process.</b> Share WYDOT’s process to feed WYDOT mapping data into Google Maps, including sharing local road closures and the preferred county road diversion routes for primary route closures. Gather input and reactions from other NWP member states.</li> <li>• <b>Task 2: Approach for NWP States.</b> Based on learnings from WYDOT’s process, the findings of Project 17.4, and feedback from the NWP states, develop an approach for NWP states to provide preferred routes to established mapping and navigation companies when there is a closure on a primary route.</li> <li>• <b>Task 3: Draft and Final Project Summary.</b> Develop a draft and final project summary to document WYDOT’s process and an approach for the other NWP states share preferred road diversion routes during closures on a primary route with Google.</li> </ul>
<b>Focus Area</b>	Traveler Information

<b>Project Title</b>	<b>18.4 Purchasing Data from Vendors of Connected Vehicle (CV) Data</b>
<b>Project Champion</b>	Cory Johnson, Minnesota DOT
<b>Project Purpose</b>	To share experiences procuring connected vehicle (CV) data from vendors and/or aggregation services.
<b>Budget</b>	\$15,000
<b>Background</b>	<p>One of the aspects of connected vehicles that is widely used is public agencies purchasing vendor provided CV data, either as individual vehicle data or aggregated data (e.g., average speeds).</p> <p>The CV Pooled Fund Study (PFS) completed a Model CV Data Architecture document in March 2023 that outlines use cases and examples of Infrastructure Owner Operators purchasing and using CV data.</p> <p>Vendor provided CV data can benefit operations (e.g., speed data), planning activities (e.g., origin-destination tables), and maintenance performance measures (e.g., friction data, speed data).</p> <p>NWP members have varying levels of experience procuring vendor data and could benefit from sharing their experiences.</p>
<b>Approach</b>	<ul style="list-style-type: none"> <li>• <b>Task 1: Peer Exchange and Industry Update.</b> Conduct a NWP peer exchange for members to share their experiences with procuring vendor data (e.g., costs of data purchased, uses of data purchased, extent to which vendor data is enabling cost savings from eliminating other data collection, etc.). Minnesota, South Dakota, and Washington have bought data. In addition, examples of more than 15 states outside the NWP corridor using vendor data were recently documented in the Connected Vehicle PFS project titled “Model CV Data Architecture.” These examples could be shared as part of the peer exchange and selected other states could be invited to share their experiences.</li> <li>• <b>Task 2: Explore Corridor Procurement Options.</b> Explore the process used by The Eastern Transportation Coalition (TETC) to conduct corridor-wide procurement of CV data, allowing member agencies to contribute funds and receive data. Conduct initial discussions with member states exploring the interest in, potential for, and any barriers to establishing a corridor-wide marketplace for CV data.</li> </ul>
<b>Focus Area</b>	Integrating Emerging Transportation Technologies

<b>Project Title</b>	<b>18.5 Uniform Allowable Weights for Divisible Loads During Declared Emergencies</b>
<b>Project Champion</b>	Kelvin Daratha, Washington State DOT and Dave Huft South Dakota DOT
<b>Project Purpose</b>	Establish common weight limits among NWP states for divisible loads hauling relief supplies during declared emergencies.
<b>Budget</b>	\$30,000
<b>Background</b>	<p>In the case of disruptions or disasters, it is critical to move emergency supplies in a quick and coordinated fashion. In response to the coronavirus pandemic in 2020, FHWA provided states with the authority to adjust truck weight permitting, although Congress has not yet provided this authority to states on the Interstate system during national emergencies or major disasters. Recently, the Mid-America Association of State Transportation Officials (MAASTO) announced the Emergency Divisible Load (EDL) strategy, agreeing to increase legal emergency interstate truck weights after the declaration of a major disaster.</p> <p>A recent Freight Task Force Assessment on Oversize/Overweight Movement documented OS/OW requirements, needs, and opportunities to streamline movements. The assessment identified the opportunity for NWP states to develop a regional emergency plan or agreement for special OS/OW allowances in preparation for emergency incidents, in order to improve regional OS/OW communication and planning. This project evaluates the potential and helps identify an approach for a regional strategy for uniform allowable weights for divisible loads during declared emergencies.</p>
<b>Approach</b>	<p>Develop and execute a task force work plan. The focal points of the work plan will include:</p> <ul style="list-style-type: none"> <li>• Review existing efforts to increase legal weights during emergencies.</li> <li>• Hold roundtables with NWP state DOTs and engage decision-makers to gauge interest and approach in pursuing regional, uniform allowable weights for divisible loads during declared emergencies.</li> <li>• Conduct consultations with MAASTO and other coalition(s) engaged in similar efforts to identify best practices and challenges.</li> <li>• Identify next steps for NWP states to pursue opportunity.</li> </ul> <p>This approach recommends that a select number of NWP Freight Task Force members convene around this research with 2-3 roundtable discussions, which will include refining the scope of work for this assessment.</p>
<b>Focus Area</b>	Freight

<b>Project Title</b>	<b>18.6 Situational Data Exchange Phase 4 – Business Models</b>
<b>Project Champion</b>	Mike Warren, Montana DOT
<b>Project Purpose</b>	To help members better understand the expected costs of utilizing the SDX as well as the benefits (e.g., number of subscribers (current and forecasted), advantages over existing Internet feeds) and if all the costs are to be borne by the state DOTs (i.e., are any costs expected to be borne by subscribers to the SDX).
<b>Budget</b>	\$20,000
<b>Background</b>	<p>Phase 1 provided an understanding of the potential use and expansion of WYDOT's SDX to other NWP agencies while also understanding the ongoing cost implications (both for operations of the exchange and connections to the SDX).</p> <p>Phase 2 performed a gap analysis of the different CAV messages and the ability for members to generate CAV messages with current systems. Phase 2 also developed a summary of the SDX message distribution approaches and researched the potential for a cloud based SCMS system.</p> <p>Phase 3 is currently underway with the goal of developing a WZDx website watcher application and developing a WZDx ingest application.</p> <p>The proposed emphasis of Phase 4 would be to help members better understand the anticipated costs of utilizing the SDX as well as the benefits (e.g., number of subscribers (current and forecasted), advantages over existing Internet feeds) and if all the costs are to be borne by the state DOTs. Phase 4 would help members reach go/no-go decisions about pursuing further efforts with the SDX.</p>
<b>Approach</b>	<ul style="list-style-type: none"> <li>• <b>Task 1: Develop deployment and operational costs.</b> Efforts in Phase 1 provided preliminary cost estimates to establish connections between the NWP members and the SDX. Task 1 of this project would revisit those costs, updating them as appropriate. In addition to the cost to establish a connection with the SDX, efforts in this task would estimate monthly/annual costs for NWP members to publish their event data through the SDX.</li> <li>• <b>Task 2: Estimates of Benefits.</b> Once costs are understood from Phase 1, Phase 2 would be an estimate of the benefits to members (generally not specifically to each member). Examples, of the types of benefits that are expected to possibly be identified are:             <ul style="list-style-type: none"> <li>○ Advantages of the SDX over current Internet feeds of XML/JSON event reports;</li> <li>○ Improvements in security exchanges with vehicles;</li> <li>○ Increased number of vehicles reached (projected with estimates of future connected vehicles).</li> </ul> </li> </ul>
<b>Focus Area</b>	Integrating Emerging Transportation Technologies

<b>Project Title</b>	<b>18.7 Truck Travel Times and Need for Hours-of-Service Truck Parking Assessment</b>
<b>Project Champion</b>	Andrew Andrusko, Minnesota DOT
<b>Project Purpose</b>	Understand real-world truck travel times moving in the NWP, and based on the origins, destinations, and durations of trips, assess the need for truck parking along the region's key corridors to meet federal hours-of-service requirements.
<b>Budget</b>	\$30,000
<b>Background</b>	<p>Long-haul truck drivers rely on overnight truck parking facilities to take their mandated rest breaks in compliance with federal hours-of-service (HOS) regulations. This includes the requirement that drivers may drive a maximum of 11 hours within 14 consecutive hours, after which drivers must take 10 consecutive hours off duty. With these requirements, truck parking facilities support drivers originating from and destined for out-of-state freight establishments.</p> <p>Despite the importance of truck parking to safe and efficient regional and national supply chains, there is a shortage of truck parking spaces nationwide. When drivers are unable to find safe and adequate parking, they may exceed their HOS limits or park in undesignated and unsafe locations to take their mandated breaks.</p>
<b>Approach</b>	<p>Develop and execute a task force work plan. The focal points of the work plan will be on assessing truck trips to understand truck parking demand on I-90 and I-94 in the NWP:</p> <ul style="list-style-type: none"> <li>• Obtain truck speed data for I-90 and I-94 in the NWP from NPMRDS.</li> <li>• Assess truck travel times for key regional freight hubs and develop travel time maps to evaluate where along I-90 and I-94 truck drivers need to park for HOS requirements.</li> <li>• Engage state trucking associations and other industry stakeholders to better understand truck parking needs for HOS.</li> <li>• Identify key locations that may require additional truck parking capacity to support regional freight movements along I-90 and I-94.</li> </ul> <p>This approach also recommends that a select number of NWP Freight Task Force members convene around this research with 2-3 roundtable discussions, which will include refining the scope of work for this assessment.</p>
<b>Focus Area</b>	Freight