

North/West Passage Pooled Fund Study

TPF-5(190)
Work Plan 4

Project 4.2:
Call Forwarding and Evaluation of Cross Border Information

Summary of Results

Final Report

Prepared by:



Athey Creek Consultants

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1. Introduction

The eight states involved in the North/West Passage Pooled Fund Program each operate individual 511 phone systems, delivering traveler information to callers about conditions within their state. One goal of the North/West Passage member agencies is coordinated information dissemination corridor-wide. This document summarizes research conducted regarding the potential to implement access to adjacent states' information between the 511 phone systems operated in each state.

Following this brief introduction, the remainder of the document outlines the current status of 511 access to adjacent state's information and the options each North/West Passage state has with their current systems. Finally, a set of recommendations are included for the program to consider.

2. Background

2.1 Background of 511 Call Handling

In states with active 511 phone systems, travelers dialing 511 from any landline or cellular phone are connected to the 511 phone system if the telecommunications providers have programmed the system to route calls placed to the three digit code. The process for routing these calls to the 511 phone system is typically performed as follows:

- The public transportation agency operating the 511 phone system operates a 10 digit telephone number that terminates at the location where the traveler information system is hosted.
- Telecommunications providers offering landline and cellular service throughout the state have programmed the switch to recognize the three digit dialing code of 5-1-1, and to route those calls to the 10 digit number operated by the public transportation agency.
- The 10 digit number that is operated by each public transportation agency is typically one of the following:
 - A 10 digit toll-free number (typically 800, 888, etc.);
 - A 10 digit toll number (typically with the local area code where the calls are terminated); or
 - A 10 digit toll number with a toll free number mapped to it (so either the toll free or toll number will complete the call).
- The 10 digit number that the telecommunication providers 'point' 511 to can be used by travelers to call the 511 phone system in the event that the three digit 5-1-1 is not

recognized in their area, or they are outside the state but wish to dial the service. In other words, travelers may also dial the 10 digit number to reach the 511 phone system.

- The 10 digit number is also an option for 511 call forwarding from one 511 system to another (in this case, the system would simply forward the call to a neighboring state's 10 digit number).

2.2 Background of the Need for Access to Adjacent States' Information

Many trips performed along the North/West Passage Corridor involve travel through multiple states. For example, if a traveler lives in Northern Idaho and commutes to Spokane, Washington, they may call 511 as they prepare to leave in the morning and receive information about the Idaho roads. At that time, without some form of access to adjacent states' information, they would not be able to access information about their entire commute. Similarly, as another example, a traveler driving eastbound across South Dakota could dial 511 in South Dakota and hear conditions for the drive to the state border. With some form of access to adjacent states' information, the traveler could also hear conditions for their route as they cross into Minnesota.

For these travelers, the weather or driving conditions that impact their trip do not stop at state borders. Similarly, roadwork, closures, or other obstructions across state boundaries will significantly impact their travel, and there is a need for advanced notice of these. The option exists for travelers to dial the 10 digit number of the adjacent states' systems; however this requires the traveler to know the adjacent state's 10 digit number. Similarly, the travelers can simply dial 511 once they cross the state border, however this does not give much advance notice of events. Therefore, travelers dialing 511 phone systems need to have the ability to access information about adjacent states.

2.3 Background of Options for Access to Adjacent States' Information

This section presents three options for addressing the needs of travelers to access traveler information for adjacent states:

- **Call forwarding.** The most common and simplest method for allowing access to adjacent states information is to perform a call forward. Call forwarding is further defined by one of two methods:
 - ***Call forwarding to non-toll free numbers*** is the most commonly available option. The costs of transfers is typically minimal however it most often occupies two phone lines (one for the inbound call and one for the outbound call); and
 - ***Call forwarding to toll free numbers.*** This option is less common than the forwarding to non-toll free numbers. It typically requires larger per transfer costs,

or requires that the phone line be configured and a fee paid for each call, regardless of whether the transfer is performed.

It is common that the configuration of a call center or Interactive Voice Response (IVR) phone system only allows call forwarding to either toll free numbers or to non-toll free numbers.

- **Common 511 Providers.** A second method for allowing travelers to access adjacent states' information is an option that may be available depending upon the 511 service provider. If the 511 service provider operates 511 systems for multiple states/agencies, it may be possible to link from one state's 511 phone system to another states phone system directly as an internal exchange. Often, this does not involve any call forwarding, but rather it is ultimately the same common phone system. Two 511 service providers operate services for multiple states within the North/West Passage Corridor. Minnesota and Idaho have the same 511 service provider and therefore calls can be linked between the Minnesota and Idaho without any physical call forward. Similarly, Montana, Wyoming, North Dakota, and South Dakota have the same 511 service provider and therefore calls received by any one of these states can be linked to other states seamlessly.
- **Data Exchange.** The third method for allowing travelers access to adjacent states' information is to not actually transfer the caller from one system to another, but rather to offer the information for adjacent states from within the 511 phone system that the caller has called. As an example, through a data exchange, Minnesota sends information describing conditions and events to neighboring states North Dakota and South Dakota. The 511 phone systems in North and South Dakota offer that callers to their phone systems can hear reports for major Interstates through Minnesota. For example, a caller calling the North Dakota 511 system can hear reports for I-94 through all of Minnesota from within the North Dakota system. Therefore, while this is not a call transfer and the caller remains within the original system, the objective of allowing travelers to access adjacent states' information is achieved. The possible advantages to this approach are that callers remain in the 511 system they called and access the menu options they are familiar with (and never have to transfer to a new system). The possible disadvantage to this approach is that the adjacent state's 511 phone system may have offered additional options such as transfers to transit or additional details that the caller would not know about.

3. Summary of Current North/West Passage States

The following is a summary of the current status of call forwarding for each of the North/West Passage States (note: several of these states offer call forwarding or access to information for other states outside the North/West Passage corridor, e.g. Washington state forwards to Oregon, however for brevity, only call forwarding within the corridor are described).

Washington State

- 10 digit non-toll free number
- Can forward to Toll free and Non-Toll free numbers
- Plans are to forward to Idaho in near future

Idaho

- 10 digit Non-toll free number with a toll free number mapped to it
- Can only forward to non-Toll free numbers
- Currently forwards to Washington
- Cannot forward to Montana, Wyoming, North Dakota, South Dakota
- Can perform a ‘Common 511 Provider’ transfer to Minnesota

Wyoming, Montana, North Dakota, South Dakota

- 10 digit Toll free number
- Can perform a ‘Common 511 Provider’ link among these four states’ systems
- Cannot transfer to Idaho, Washington, or Minnesota
- North and South Dakota currently offer Minnesota reports to callers through a ‘Data Exchange’, therefore callers to any of these four systems can access Minnesota information;
- Has initiated discussions with Idaho to establish a ‘Data Exchange’ to offer Idaho information on Montana and Wyoming 511 phone systems.

Minnesota

- 10 digit Non-Toll free number with a Toll Free number mapped to it
- Can only forward to Non-Toll free numbers
- Cannot forward to North Dakota, South Dakota, Montana, Wyoming
- Could possibly forward to Wisconsin (needs to determine if Wisconsin has a non-toll free number);
- Can perform a ‘Common 511 Provider’ link to Idaho; and
- Could transfer to Washington State (not adjacent).

Wisconsin

- 10 digit Toll-free number
- Currently forwards to Minnesota

4. Recommendations and Next Steps

The current status of access to adjacent states' information between 511 phone systems within the North/West Passage Corridor is summarized as follows:

- There is call forwarding on the western portion of the corridor, between Washington and Idaho;
- There is call forwarding among and between the middle four states (Montana, Wyoming, North Dakota, South Dakota);
- There is one way call forwarding on the eastern portion of the corridor, between Minnesota and Wisconsin; and
- There is a one way data exchange where callers to the middle four states can receive information about Minnesota roads.

Therefore, the corridor does offer considerable access to adjacent states' information.

The intent of this research was to identify what is possible without performing considerable changes to the existing 511 phone systems.

4.1 Recommendations

The following recommendations are suggestions to advance the ability of travelers to access information about adjacent states, either to be pursued collectively by the North/West Passage group, or by individual states:

1. It is recommended that the Minnesota 511 system explore the possibility of offering a call forward to the Wisconsin 511 system. The Wisconsin system launched in late 2008 and was not operational when Minnesota went originally launched 511. Therefore, it may be possible to include a call forward option for little or no significant changes to the system (e.g. if Wisconsin has a non-toll free number that Minnesota can forward to).
2. It is recommended that Idaho and the four middle states continue discussions and attempt to establish the data exchange that exists between Minnesota and the four central states. This would allow callers to Montana and Wyoming to access information in Idaho.
3. Because physical limitations of existing 511 phone systems restrict the ability to perform call forwarding between some states, it is recommended that the North/West Passage Corridor continue towards the vision of open data exchanges among member agencies that would allow 511 phone systems to offer reports of conditions and events in adjacent states (as currently offered on the North and South Dakota Systems). This would require that additional member states would need to post event and condition descriptions to Internet accessible locations (as is currently done by Minnesota and Montana). However,

the North/West Passage states are planning to implement these posts of events and conditions for the Phase 2 Traveler Information Web Site project.

A potential series of deployment steps could involve:

- a. Step 1 could be where each North/West Passage Corridor state establishes a ‘post’ of their real-time event and condition event descriptions to an Internet accessible location.
- b. Step 2 could be where the two multi-state 511 service providers (Meridian who operates the middle four states’ 511 systems and the CARS Consortium that operates Idaho and Minnesota’s systems) could establish the ability to ingest event and condition reports from adjacent states using the Internet ‘post’ developed in Step 1. This would require the systems to include location descriptions for the roads within the adjacent state(s). However, if the focus is primarily on the Interstates or very major US and State Highways, the number of routes would be minimal. Finally, the Meridian system already ingests data from Minnesota and includes the Minnesota roads.
- c. If Steps 1 and 2 are accomplished, then:
 - i. Callers to the Washington 511 system could be forwarded to Idaho, where they could receive information for Montana, Wyoming, North Dakota, and South Dakota.
 - ii. Callers to the Wisconsin system could be forwarded to the Minnesota system, where they could also receive information for North and South Dakota.
 - iii. Callers to any of the middle four states could receive information about conditions in Idaho and Minnesota (and potentially Washington State).

If Steps 1 and 2 are accomplished, travelers along the North/West Passage Corridor would essentially have access to adjacent states’ information.

4.2 Conclusions

The research conducted into the capabilities of the 511 phone systems along the North/West Passage Corridor to perform additional access to adjacent states' information has identified physical limitations to the phone systems that make it difficult to add considerable call forwarding functionality without structural changes to the systems in place. Therefore, only a few minor additions are possible to expand call forwarding along the corridor.

However, through data exchanges between the two 511 service providers that collectively operate 6 of the 8 states' 511 phone systems, callers would have nearly full access to adjacent states' information.

Several previous accomplishments position the North/West Passage Corridor states to achieve this, as follows:

- The North/West Passage Corridor-wide Major Event Descriptions Project has defined an approach for consistency in the phrases used to describe major events, and the related Implementation Plan has outlined each state's intended use of the consistent descriptions.
- Efforts during the North/West Passage Work Plan 1 developed an Interface Control Document to define an approach that could be used by any state to exchange event reports with neighboring states using National ITS Standards. While this may need to be updated and reviewed, it should lay the foundation for defining the data exchange.
- National ITS Standards exist and each system along the corridor implements some form of the ITS standards. While this will not guarantee immediate interoperability, it will certainly contribute towards it.
- Minnesota and the Dakotas have already demonstrated the feasibility of the data exchange approach.
- Each member state will need to post incident and event data for the corridor-wide traveler information website Phase 2 project, therefore this could build upon this planned effort.