NORTH/WEST PASSAGE

October 2024

Providing Recommended Routes to Mapping and Navigation Companies When There is a Closure on the Primary Route

Project 18.3 – FINAL

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Cover photo provided courtesy of the Wyoming Department of Transportation.

1. INTRODUCTION

The North/West Passage (NWP) pooled fund study program focuses on developing effective methods for sharing, coordinating, and integrating traveler information, operational activities, and emerging technologies across state and provincial borders. Membership includes the states of Washington, Idaho, Montana, Wyoming, North Dakota, South Dakota, and Minnesota, as illustrated in Figure 1.
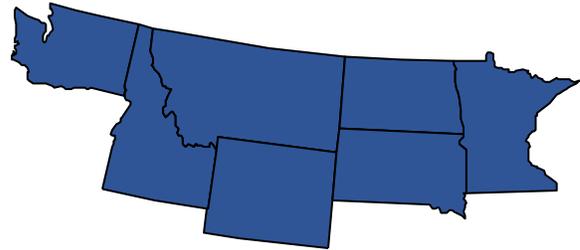

Figure 1: North/West Passage Members

The NWP states are predominantly rural and face similar transportation challenges. One common issue among the members is drivers being routed to alternate and often inappropriate routes when there is a closure on the primary route, and the challenges these events create. For example, during a winter storm that closes the primary route, the diversion routes may not have reports of the inclement driving conditions or closures and therefore mapping and navigation systems may route drivers from the primary route to these routes that may not be safe or appropriate for travel.

Project Purpose
To introduce and encourage NWP members to consider implementing approaches to provide information on local roads to mapping and navigation companies when there is a closure on the primary route.

NWP completed this project to introduce and encourage member consideration and implementation of approaches that would provide information on local routes to mapping and navigation companies when there is a closure on the primary route, with the intent that this will reduce routing drivers on routes that may not be appropriate for travel.

The sections of this report include:

- 2. The Problem – Describes the problem with drivers routed onto local routes when a primary route is closed.
- 3. NWP Activities – Describes the efforts of a previous related project completed by NWP.
- 4. Candidate Solutions – Provides a description and suggested implementation steps for four options for NWP to consider addressing the challenge of drivers routed to roads that are inappropriate for travel. Also included is NWP member implementation status with moving forward with the identified options.
- 5. Outreach – Provides a summary of outreach and input gathered from the American Association of State Highway and Transportation Officials (AASHTO) Committee on Transportation System Operations (CTSO) Community of Practice on Traveler Information and discussion with two third party mapping and navigation companies.
- 6. Next Steps – Provides suggested next steps for NWP members to consider to continue moving towards providing recommended routes to mapping and navigations companies when there is a closure on the primary route.

2. THE PROBLEM

The use and reliance on in-vehicle navigation systems continues to increase as is indicated by a survey conducted by United Tires. Residents in the top 20 cities in America with the most cars per capita were surveyed and 1,200 responses were compiled to understand how much the drivers that responded rely on their GPS and their usage habits. Over 60% of Americans use a GPS service at least one a week and 83% of respondents said they would get lost without their GPS. *Source: Study Reveals Where Drivers Are Most Reliant on Their GPS (March 2024)*

State DOT operated interstates are typically the highest priority to treat during inclement winter conditions. The conditions and closures for the interstates are commonly reported to DOT traveler information systems and then made available through data feeds to third party consumers. Third party mapping or navigation consumers may use the information included in the DOT data feed to provide the shortest route to a user.

Routes parallel to interstates are commonly operated by a city or county. Treatment frequencies during a winter storm event vary, but generally resources are less to treat conditions compared to the interstates. In addition, while there are some exceptions, typically there is no reporting of conditions or closures on these routes.

A challenge occurs when interstates are closed due to driving conditions. Local routes typically have bad or worse conditions than the interstate or primary route. Travel most often should not be rerouted onto these adjacent roads and instead should be routed further upstream or the travelers advised to delay their trips. However, the NWP members cited multiple examples of navigation systems routing travelers onto parallel routes that are not reported closed. See Figure 2. This is a considerable challenge when as stated above many Americans rely on their GPS for directions.
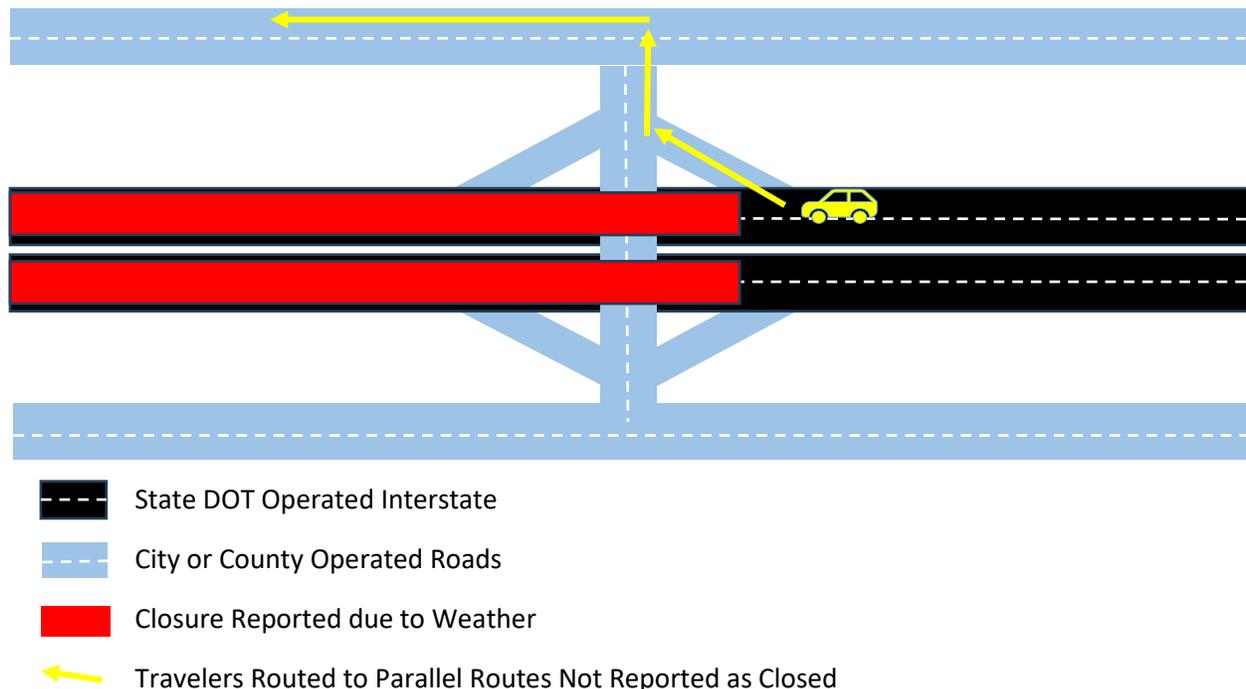

State DOT Operated Interstate

City or County Operated Roads

Closure Reported due to Weather

Travelers Routed to Parallel Routes Not Reported as Closed

Figure 2: Travelers Routed to Parallel Routes Not Reported as Closed

3. NORTH/WEST PASSAGE ACTIVITIES

In 2023, North/West Passage completed a project, Project 17.4 Communicating Route Restrictions to Third Party Mapping/Navigation Providers, to document challenges experienced by members that occur when travelers follow routing advice and divert trips to unsafe routes. The project also engaged with third party mapping and navigation providers to explore potential solutions to avoid or minimize situations where navigation systems advise drivers to divert onto inappropriate routes during highway closures or delays.

Following are four key challenges that NWP members noted during Project 17.4 with travelers being routed onto unsafe routes:

> When road weather conditions are bad enough to warrant interstate closures, the secondary road system is worse, and traffic should not be routed onto these secondary roads.

- Most challenges reported occurred during winter weather events (e.g., snow, ice, low visibility) when the primary route was closed.
- When road weather conditions are bad enough to warrant interstate closures, the secondary road system is worse, and traffic should not be routed onto these secondary roads.
- Closures due to road work also cited examples of vehicle rerouting onto inappropriate routes.
- The impact of each situation reported was most often indicated as "significant."

Project 17.4 also engaged with two mapping and navigation providers and input received included:

- It would be beneficial if selected road events would have an attribute phrase attached (e.g., "Don't reroute").
- It would also be beneficial if information about which roads to downgrade was provided so mapping/navigation providers are not using an inappropriate route.
- Even if updated closure information is available, in rural areas it may not be available to drivers due to cell service connectivity limitations.

Five potential mitigation strategies were also defined, two of which have already been implemented by Wyoming Department of Transportation (WYDOT) (Mitigation Strategy #1 and #2), one that has been implemented by South Dakota Department of Transportation (SDDOT) (Mitigation Strategy #2), and three strategies (Mitigation Strategy #3, #4, and #5) that were identified based on input from mapping and navigation companies and input from NWP members during the project. These mitigation strategies included:

- Mitigation Strategy #1: Wyoming Outreach to Educate the General Public on Choosing Routes Wisely and Providing Local Signing to Avoid Following GPS Navigation Guidance.
- Mitigation Strategy #2: State DOT Collaboration with Local Agencies to Describe Roads as Closed.
- Mitigation Strategy #3: Additional Message Phrases or Event Attributes with Road Closure or Event Reports.

- Mitigation Strategy #4: Road Reclassification to Classify Roads that are Not Appropriate Alternate Routes.
- Mitigation Strategy #5: Season Closure Information Details Provided for Ingest by Mapping and Navigation Companies.

This project (Project 18.3) document includes steps to move forward with Mitigation Strategy #2 and #3. Mitigation Strategy #2 is addressed in Candidate Options 1 and 2 described in Section 4 and Mitigation Strategy #3 is addressed in Candidate Option 3 described in Section 4.

4. CANDIDATE SOLUTIONS

The following four options were suggested by the NWP members for addressing the challenge of drivers being routed to roads that are inappropriate for travel as well as an overarching effort to engage national groups. See Figure 3.

- Option 1: Expand Wyoming DOT Approach
- Option 2: Expand South Dakota DOT Approach
- Option 3: Create a New Consistent Phrase Describing Local Routes
- Option 4: Create an Area Wide Event

OPTION 1: Expand Wyoming DOT Approach	OPTION 2: Expand South Dakota DOT Approach	OPTION 3: Create a New Consistent Phrase Describing Local Routes	OPTION 4: Create an Area Wide Event
Wyoming DOT provides third parties with reports that selected local routes are also closed when there is a closure on the interstate. In this option, NWP states would implement a similar approach.	South Dakota DOT provides counties and tribes access to their traveler information system to select if "no travel is advised" or "roads are closed" for the entire county/tribal area. In this option, NWP states would implement a similar approach.	NWP states would work together to agree on a consistent phrase that is understandable to drivers when a local route is determined inappropriate for rerouting drivers. Navigation companies could then use this phrase to make safe routing decisions. For example, a DOT may post "I-94 closed WB from Exit 75 to Exit 110 **expect similar conditions on local parallel routes**, due to severe weather."	NWP states would select an area (e.g., polygon large enough that traffic could be rerouted at a critical decision point or the area identified by the National Weather Service) around an event (e.g., closure). ITIS code(s) (e.g., 7375 Travel not advised) would be selected for an area wide event.
National Engagement			
As NWP states move forward with any aspects of Option 1, Option 2, Option 3, or Option 4 it is important for national engagement to share results and initiate engagement for wider consistency.			

Figure 3: Options for NWP to Consider for Addressing Drivers Routed to Roads that are Inappropriate for Travel

This section provides an overview of each suggested approach and suggested implementation steps.

4.1 Option 1: Expand Wyoming DOT Approach

In Option 1, NWP states would replicate the Wyoming DOT approach of coordinating with counties (or other local agencies) to document how local routes automatically display when there is a closure on the interstate by individual routes. See Figure 4.

Wyoming DOT has coordinated with each county in their state to document how individual local routes display (e.g., closed, open) when there is a closure on the interstate. A Memorandum of Understanding (MOU) is established between each county and Wyoming DOT. The MOU is used to establish terms and conditions including that the county will provide Wyoming DOT with real-time closure information. See

Appendix A for an example MOU. When there is an interstate closure, previously identified local route closures are also provided automatically with Wyoming DOT's data feed for consumption by third parties. Wyoming DOT does not include the local route information on their traveler information system.
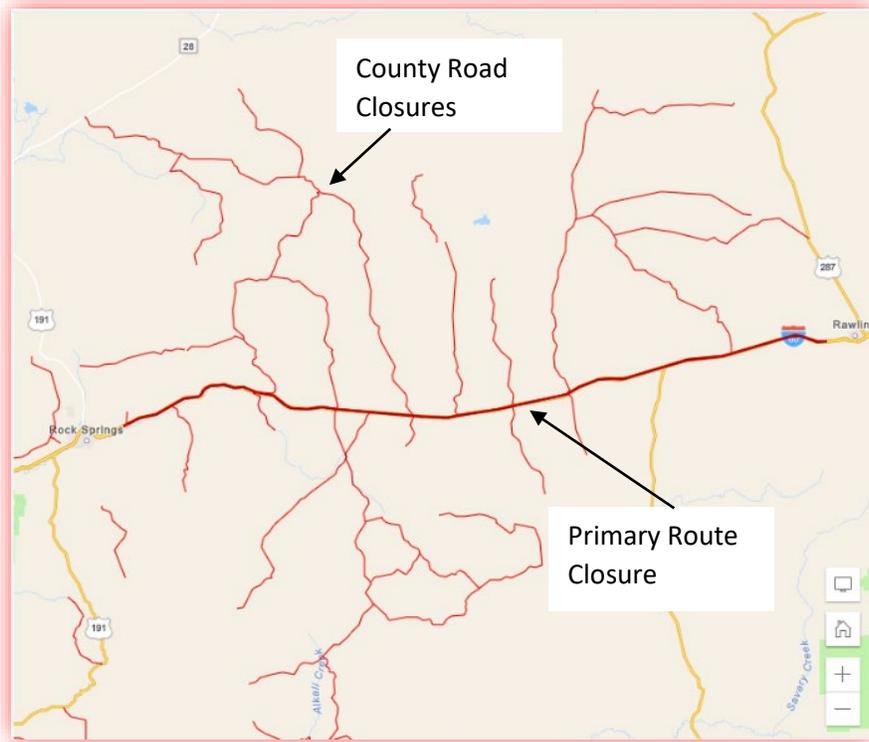

*Figure 4: WYDOT Example of Primary Route Closed and Corresponding Pre-Defined Closures on County Roads
(Source: WYDOT)*

4.1.1 Implementation Steps

This section provides suggested implementation steps for NWP members to consider for moving forward with Option1: Expand Wyoming DOT approach.

Step 1: Internal Outreach to Identify NWP States to Conduct Pilot Test

In Step 1, the NWP members would engage others within their agency (e.g., traveler information manager) by providing background information on the project including the benefits of providing information on local routes to mapping/navigation companies when a primary route is closed and inviting them to participate/listen to the recording of a NWP Operations Task Force Webinar held on June 12, 2024 to learn more about Wyoming DOT's efforts.

Each NWP member agency would then be encouraged to conduct an internal meeting to discuss moving forward with implementing Wyoming DOT's approach. If a member agency agrees to move forward, additional meetings may be scheduled with an Internal Project Team throughout the implementation process to continue to provide guidance to the effort.

Step 2: Develop Project Approach and Identify Pilot Test Location(s)

In Step 2, each NWP state pursuing this option would develop a detailed project approach for replicating Wyoming DOT's approach. The project approach would provide the background and overview of the project, document how local route information will be updated (e.g., automated when there is a closure on the primary route), define if closures will be selected for individual routes, identify establishment of any agreements (e.g., MOU between the DOT and the local agency), and develop an outreach plan for coordinating with local agencies. This step would also include a decision whether the local agency reports will be displayed on their state DOT operated traveler information system or if they will only be made available in data feeds available to third party providers.

In addition, coordination is encouraged among states that are supported by a common traveler information system vendor to discuss logistics and understand the process for implementing the Wyoming DOT approach.

In Step 2, each state may also identify a pilot test location (e.g., a State DOT District, selected highway or segment of a highway) for implementation. The duration and the details of the pilot test would be documented in this step. Based on the results of the pilot test, the effort may be expanded.

Step 3: Conduct Local Agency Outreach within the Pilot Test Location

In Step 3, each NWP participating state would conduct coordination with the appropriate local agency or agencies impacted by the pilot test area to present the overall project concept and discuss the details of the project approach. This step would also include gaining input on individual routes that would display as closed automatically when there is a closure on the primary route. The roles of the stakeholders would also be discussed and defined as well as parameters of the pilot test. It is anticipated that the NWP participating states would consider including the local agency or agencies on the Internal Project Team and involving them in key decisions. A key aspect is the agreement from local agencies that closures on their roads can be disseminated even when they are not physically closed.

Step 4: Add or Modify Traveler Information Systems

In Step 4, each participating NWP state would identify and perform modifications to their state's traveler information system. If pursuing an approach similar to Wyoming, the agency may modify their traveler information system to automatically identify selected local routes as 'closed' when specific segments of interstates are closed. Further, this modification may only post these closures to a data feed for third party providers or may disseminate them on the state operated traveler information system.

Step 5: Conduct Pilot Test

In Step 5, the pilot test would be conducted based on the approach and pilot test details outlined in Step 2.

Step 6: Outreach to Third Party Providers

In Step 6, after a pre-determined period of time, a select number of established third party providers would be contacted to share the efforts of the project. The outreach in this step would be coordinated with other options pursued by the members.

Step 7: Pilot Test Assessment

In Step 7, an assessment of the overall pilot test effort will be documented. This would include documenting the level of effort to implement, the successes that were recognized, the lesson learned, and any feedback or observations about how third party providers route traffic when a closure on a primary route with local route closures is active.

NWP Member State Engagement and National Engagement

NWP member state engagement and national engagement would occur throughout the duration of the effort. NWP members trialing this option would meet periodically to share implementation efforts. In addition, national groups will be identified to share project efforts.

4.2 Option 2: Expand South Dakota DOT Approach

South Dakota DOT has worked with county and tribal areas throughout their state to provide login access to the DOT's traveler information system. The access enables county or tribal users to select "no travel is advised" or "roads closed" for the entire county or tribal area, but they do not have the option to indicate closures on individual routes. See Figure 5 for an example of the dashboard entry tool for use by counties and tribes as well as the state map illustrating how a county closure is displayed. The information is available on South Dakota DOT's traveler information system and through SDDOT data feeds for consumption by third parties. In Option 2, NWP states would replicate South Dakota's approach.
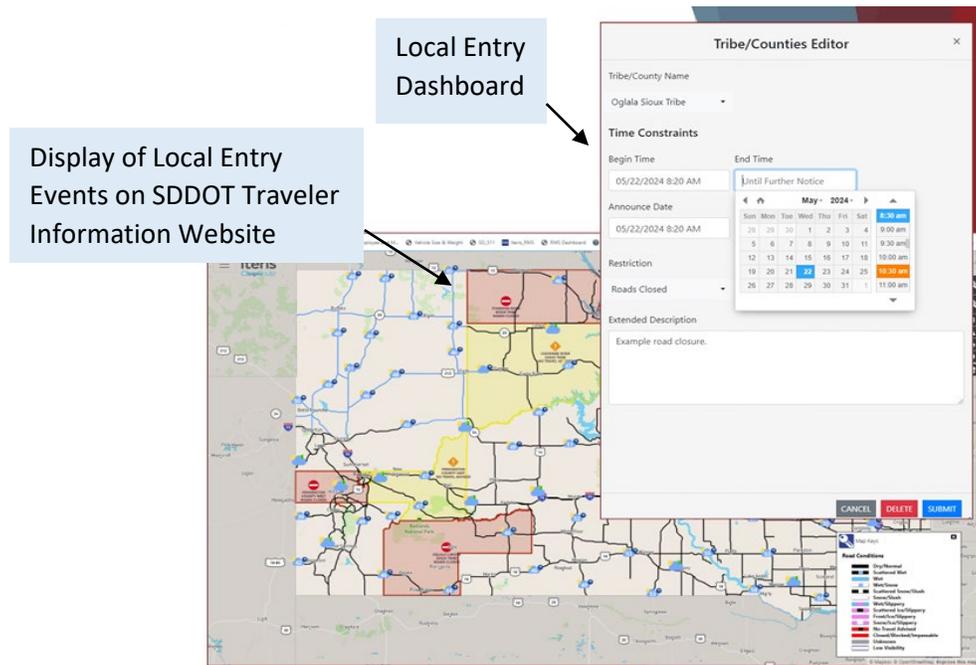

*Figure 5: SDDOT Example of Local Route Entry Dashboard of Selecting if "No Travel Advised" of "Roads Closed"
(Source: SDDOT)*

4.2.1 Implementation Steps

This section provides suggested implementation steps for NWP members to consider for moving forward with Option 2: Expand South Dakota DOT approach.

Step 1: Internal Outreach to Identify NWP States to Conduct Pilot Test

In Step 1, the NWP members would engage others within their agency (e.g., traveler information manager) by offering background information on the project including benefits of providing information on local routes to mapping/navigation companies when a primary route is closed and inviting them to participate/listen to the recording of a NWP Operations Task Force Webinar held on June 12, 2024 to learn more about South Dakota DOT's efforts.

Each NWP member agency is encouraged to conduct an internal meeting to discuss moving forward with implementing South Dakota DOT's approach. If a member agency agrees to move forward, additional meetings may be scheduled with an Internal Project Team throughout the implementation process to continue to provide guidance to the effort.

Step 2: Develop Project Approach and Identify Pilot Test Location(s)

In Step 2, each NWP state pursuing this option would develop a detailed project approach for replicating South Dakota DOT's approach. The project approach would provide the background and overview of the project, document how local route information will be updated (e.g., entry by local agency), define if closures will be selected for all routes county-wide, identify establishment of any agreements (e.g., MOU between the DOT and the local agency), and develop an outreach plan for coordinating with local agencies. This step would also include a decision whether the local agency reports will be displayed on their state DOT operated traveler information system or if they will only be made available in data feeds available to third party providers.

In addition, coordination is encouraged among states that are supported by a common traveler information system vendor to discuss logistics and understand the process for implementing the South Dakota DOT approach.

In Step 2, each state may also identify a pilot test location (e.g., a State DOT District) for implementation. The duration and the details of the pilot test would be documented in this step. Based on the results of the pilot test, the effort may be expanded.

Step 3: Conduct Local Agency Outreach within the Pilot Test Location

In Step 3, each NWP participating state would coordinate with the appropriate local agency or agencies impacted by the pilot test area to present the overall project concept and discuss the details of the project approach. This step would also include gathering input on routes or counties that will display as closed when there is a closure on the primary route. The roles of the stakeholders would also be discussed and defined as well as the parameters of the pilot test. It is anticipated that the NWP participating states would consider including the local agency or agencies on the Internal Project Team and involving them in key decisions. A key aspect is the agreement from local agencies that closures on their roads can be disseminated even when they are not physically closed.

Step 4: Add or Modify Traveler Information Systems

In Step 4, each participating NWP state would identify and perform modifications to their state's traveler information system. If pursuing an approach similar to South Dakota, the agency may grant login access to counties or local agencies to enter closure conditions.

Step 5: Conduct Pilot Test

In Step 5, the pilot test would be conducted based on the approach and pilot test details outlined in Step 2.

Step 6: Outreach to Third Party Providers

In Step 6, after a predetermined period of time, a select number of established third party providers would be contacted to share the efforts of the project. The outreach in this step would be coordinated with other options pursued by the members.

Step 7: Pilot Test Assessment

In Step 7, an assessment of the overall pilot test effort would be documented. This would include documenting the level of effort to implement the option, the successes that were recognized, the lessons learned, and any feedback or observations about how third party providers route when a closure on a primary route with local route closures is active.

NWP Member State Engagement and National Engagement

NWP member state engagement and national engagement would occur throughout the duration of the effort. NWP members trialing this option would meet periodically to share implementation efforts. In addition, national groups will be identified to share project efforts.

4.3 Option 3: Create a New Consistent Phrase

In Option 3, NWP states would work together to agree on a consistent phrase(s) that is understandable to drivers when a local route is determined inappropriate for travel. The phrase (e.g., "expect similar conditions on parallel routes") would then be used by member states to include with other phrases used when describing a closure on a primary route. Navigation companies could then use this phrase to make safe routing decisions. The phrase would also be informative to drivers. For example, a DOT may post "I-94 WB closed from Exit 75 to Exit 110 **expect similar conditions on local parallel routes**, due to severe weather."

4.3.1 Implementation Steps

This section provides suggested implementation steps for NWP members to consider for moving forward with Option 3: Create a New Consistent Phrase.

Step 1: Conduct Internal Outreach

In Step 1, the NWP members would engage others within their agency (e.g., traveler information manager) by providing background information on the project including benefits of providing information on local routes to mapping/navigation companies when there is an event (e.g., road closed) on the primary route.

Each NWP member agency is encouraged to conduct an internal meeting to discuss moving forward with coordinating with other member states to identify a new phrase describing similar conditions on local routes to include in road closure descriptions. If member states agree to move forward, additional meetings may be scheduled with an Internal Project Team throughout the implementation process to continue to provide guidance to the effort.

Step 2: Develop Project Approach and Identify Pilot Test Location

In Step 2, each NWP state pursuing this option would develop a detailed project approach for coordinating with other NWP member agencies to select a phrase or phrases (e.g., summer phrase, winter phrase) to describe local routes when there is a closure on the primary route. The project approach would provide the background and overview of the project and document how consensus of the phrases will be achieved.

In addition, coordination would occur with states that are supported by a traveler information vendor to discuss the logistics and understand the process for implementing a new phrase(s). NWP member agencies that have common traveler information system vendors are encouraged to coordinate during these discussions.

In Step 2, each state may also identify a pilot test location (e.g., State DOT District, selected highway or segment of a highway) for implementation. The duration and the details of the pilot test would be documented in this step. Based on the results of the pilot test, the effort may be expanded.

Step 3: Add or Modify Traveler Information Systems

In Step 3, each participating state's traveler information system may be modified to allow additional phrases to be selected by operators to describe local routes when there is an event (e.g., closure) on the primary route. Each state would work with their traveler information vendor to complete the process as defined in Step 2.

Step 4: Conduct Pilot Test

In Step 4, the pilot test would be conducted based on the approach and pilot test details outlined in Step 2.

Step 5: Outreach to Third Party Providers

In Step 5, after a predetermined period of time, a select number of established third party providers would be contacted to share the efforts of the project and document, if possible, how third party providers intend to implement the local road closures in providing routes to their users. The outreach in this step would be coordinated with other options pursued by the members.

Step 6: Pilot Test Assessment

In Step 6, an assessment of the overall pilot test effort would be documented. This will include the level of effort to implement the pilot, successes, and lessons learned as well as monitoring and documenting if and how third party providers route traffic when phrases are used to describe local conditions when there is an event (e.g., closure) on the primary route. Feedback from DOT staff using the phrases would also be documented.

NWP Member State Engagement and National Engagement

NWP member state engagement and national engagement would occur throughout the duration of the effort. North/West Passage members trialing this option will meet periodically to share implementation efforts. In addition, national groups will be identified to share project efforts.

4.4 Option 4: Create Area Wide Events

In Option 4, NWP states would select an area (e.g., a polygon large enough that traffic could be rerouted at a critical decision point or the area identified by the National Weather Service) around an event (e.g., closure) on the primary route that would include local routes that may be affected by the event. Individual NWP states would select or collectively select common International Traveler Information System (ITIS) codes for the event:

- ITIS Code 7306: Local travel only
- ITIS Code 7375: Travel not advised
- ITIS Code 7680: Road closed to through traffic.

It is critical to note in the alert that only local travel is advised. For example, if heavy snow and drifting is requiring a closure on I-90 in Minnesota, and the NWS has issued a broader region of "No travel advised," a polygon area could be identified to assist mapping and navigation companies in routing motorists around the event in Luverne, Minnesota at a critical decision point. See Figure 6.
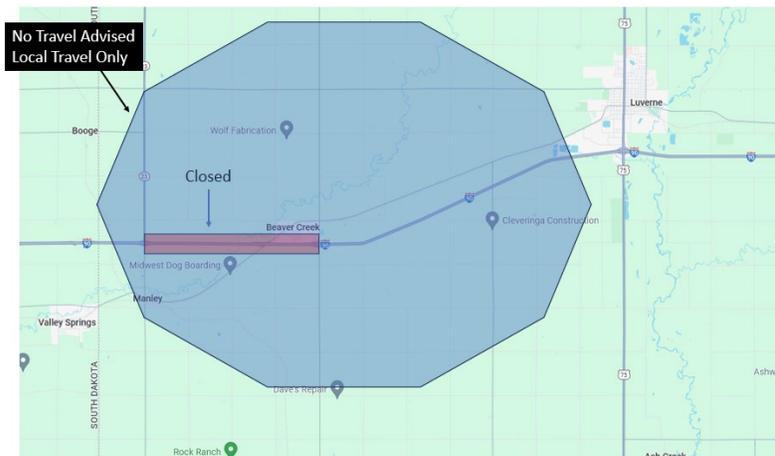

Figure 6: Example of Routing Traffic around a Closure Where No Travel is Advised

The phrase would then be used by member states to create area wide events. There are at least two possible ways that area-wide events could be created and shared:

1. One way this could be accomplished is through each state's condition reporting system if area-wide events are possible. Some condition reporting systems are equipped to create county-wide events as well as other area-wide events. A challenge in sharing area-wide events is that the third party information dissemination systems typically expect route-based event reports.

2. A second approach that could also accomplish this is through the creation of SAE J2735 Traveler Information Messages (TIMs). TIMs require "valid regions" for each message (i.e., the area where the message should be delivered to travelers). The TIM Message valid region is defined by centerline nodes and width of a region. The content of the TIM would be described by ITIS codes.

If third party navigation providers are equipped to process data from TIMs, this could be an effective way to communicate the area-wide restrictions/conditions. A centralized data exchange (e.g., Situational Data Exchange (SDX)) could be a mechanism for sharing the TIMs.

4.4.1 Implementation Steps

This section provides suggested implementation steps for NWP members to consider for moving forward with Option 4: Create Area Wide Events.

Step 1: Conduct Internal Outreach

In Step 1, the NWP members would engage others within their agency (e.g., traveler information manager) by providing background information on the project including benefits of providing information on local routes to mapping/navigation companies when there is an event (e.g., road closed) on the primary route.

Each NWP member agency is encouraged to conduct an internal meeting to discuss moving forward with coordinating with other member states to identify ITIS codes describing an area wide event. If member states agree to move forward, additional meetings will be scheduled with an Internal Project Team throughout the implementation process to continue to provide guidance to the effort.

Step 2: Develop Project Approach and Identify Pilot Test Location

In Step 2, each NWP state pursuing this option would develop a detailed project approach that describes how their existing traveler information system could support area-wide events or if they wish to manually create TIMs when needed. Existing phrases in the traveler Information are expected to support the area-wide events, however, if the state opts to create TIMs they will need to create additional details. NWP member agencies that have common traveler information system vendors are encouraged to coordinate during these discussions.

In Step 2, each state may also identify a pilot test location (e.g., a state may create a small number of geographic areas as template events to be used in the next winter season) for implementation.

Step 3: Add or Modify Traveler Information Systems

In Step 3, each participating state may either need to use existing area-wide event creation features of their traveler information system or create new functionality in their system. Each state would work with their traveler information vendor to complete the process as defined in Step 2.

In the event a state is interested in pursuing the approach of area-wide events through TIMs, they should seek input from other related NWP project efforts.

Step 4: Conduct Pilot Test

In Step 4, the pilot test would be conducted based on the approach and pilot test details outlined in Step 2.

Step 5: Pilot Test Assessment

In Step 5, an assessment of the overall pilot test effort would be documented. This would include the level of effort to implement, successes, and lessons learned as well as monitoring and documenting if and how third party providers route with an area wide event. Feedback from DOT staff drawing the polygon areas would also be documented.

NWP Member State Engagement and National Engagement

NWP member state engagement and national engagement would occur throughout the duration of the effort. North/West Passage members trialing this option will meet periodically to share implementation efforts. In addition, national groups would be identified to share project efforts.

4.5 NWP Members Implementation Status

The following bullets summarize the NWP member state's status or plans to move forward with the four options documented in this report.

- **Wyoming DOT** – Wyoming DOT provides third parties with reports that selected local routes are also closed when there is a closure on the interstate as described in Section 4.1. Wyoming coordinates weekly with one navigation company and will be starting in October 2024 to coordinate with another company.
- **Minnesota DOT** – Minnesota DOT has interest in all options identified in this project and has started internal discussions on moving forward with adding an additional phrase (Option 3) to event descriptions. Moving forward with this option will provide additional details to the driver.
- **South Dakota DOT** – South Dakota DOT provides counties and tribes access to their traveler information system to select "no travel is advised" or "roads are closed" for the entire county/tribal area as described in Section 4.2. Training was conducted in the Fall of 2024 to go through the process of how to enter county or tribe wide closures or advisories in South Dakota's traveler information system. The first season of utilizing the system will be during the 2024-2025 winter season.
- **North Dakota DOT** – North Dakota is planning to discuss each option internally and is considering Option 3 for the short term.
- **Montana DOT** – Montana DOT has not yet implemented any options; however internal discussion will continue on which options may be considered.
- **Washington State DOT** – Washington State is currently going through revisions to its traveler information website. Once those are complete the different options will be discussed.
- **Idaho Transportation Department** – Idaho has reviewed the options and is planning to discuss the options internally to identify interest in which option or options may be pursued.

5. OUTREACH

Outreach for this project was conducted by sharing project efforts with the AASHTO CTSO Community of Practice on Traveler Information as a start to initiate national engagement on sharing efforts on the challenge of travelers routed on inappropriate routes. In addition, established mapping and navigation companies were contacted to offer the opportunity to provide input on how their company would utilize the data provided through the four different options described in Section 4 of this report. Discussions were held with a total of two different mapping and navigation companies.

5.1 CTSO Community of Practice on Traveler Information

On July 17, 2024, NWP presented to the CTSO Community of Practice on Traveler Information. The presentation provided an overview of NWP and its members and the problem with travelers routed onto routes that are not reported as closed. In addition, the four candidate solutions for addressing the challenge of drivers being routed to roads that are inappropriate for travel were shared. There was interest in the different approaches and those in attendance shared their related efforts.

- *Maine DOT*: Primarily during major events, counties call in closures to the DOT to enter into the State DOT traveler information system.
- *Missouri DOT*: There are predetermined routes for closures on all interstates. The routes are displayed on the traveler information systems, however there is not a process to share these routes with navigation providers. The routes are automatically checked for a variety of items such as bridge rating, work zones, etc.
- *Iowa DOT*: In June 2024 a request from the Governor via DOT Executive Director was issued to find a way to display county road closures on the DOT 511 Site. The County Engineers Service Bureau already provides an Iowa 511 County Map. The information from the Iowa 511 County Map was launched as a new layer on the Iowa DOT 511 website on July 1, 2024 and on the mobile app July 9, 2024 with implementation from Iowa's traveler information consultant.

5.2 Third Party Mapping and Navigation Consumers

Input was received on the four options through discussions with two third party mapping and navigation providers.

- **Option 1: Expand Wyoming DOT Approach:** Wyoming DOT provides third parties with reports that selected local routes are also closed when there is a closure on the interstate.
  - This was a preferred option by both third party providers.
  - This is an automated process where local roads have agreed that if the primary route is closed that a local route should also be described as closed. However, if a third party consumer detects traffic on that local route, it will be opened and used for routing traffic.
- **Option 2: Expand South Dakota DOT Approach:** South Dakota DOT provides counties and tribes access to their traveler information system to select "no travel is advised" or "roads are closed" for the entire county/tribal area.
  - This approach is used by one third party provider for events such as wildfires, however it requires manual action for navigation systems to enter the event.

- o There is also recognition by the third party providers that local partners may not have staff to update information.
- **Option 3: Create a New Consistent Phrase(s):** States would work together to agree on a consistent phrase(s) that is understandable to drivers. Navigation companies could then use this phrase to make safe routing decisions. For example, "expect similar conditions on local parallel routes."
    - o It was agreed by both third party consumers interviewed for this project that Option 3 would be easy to implement but would not be very helpful. There are issues in how different systems would interpret the phrase. Additional consideration would be needed by the third party providers on the extra effort needed to interpret the phrase.
    - o If an extra phrase is added, it is important that as much detail is provided in the description (e.g., direction of travel).
- **Option 4: Create Area Wide Events:** In Option 4, NWP states would select an area (a polygon large enough that traffic could be rerouted at a critical decision point or the area identified by the National Weather Service) around an event (e.g., closure). Individual NWP states would select or collectively select common ITIS codes for the event.
    - o This was a preferred option by both third-party providers. When an event is created you have to include a closure to provide an alert, but in the future, you could draw a polygon to reflect the closures in an area.

Overall input received by the mapping and navigation providers included:

- There are challenges and especially in rural areas that if drivers don't have access or subscribe to data, the solution is not applicable.
- It is better to have advisories than closures.
- Standardization of a data exchange format nationally is desired to streamline approaches.
- Unless a road is shown as closed it will be used for routing.
- It is important the data received comes from an authoritative source.
- Line events are preferred: Lat/long or a polygon is needed. Navigation and mapping companies can't handle exit to exit data.
- If a detour route is desired, this information is needed a week or two in advance. This is a manual entry by the mapping or navigation company.

6. NEXT STEPS

The following bullets document suggested next steps for the North/West Passage members to consider to continue moving forward with providing recommended routes to mapping and navigation companies when there is a closure on the primary route.

- **Consider identifying a future NWP Workplan effort to conduct an evaluation of Wyoming DOT's approach**. A future NWP effort could evaluate how private mapping and navigation systems process and handle data communicated by Wyoming using their approach. This could help understand if the approach is accomplishing the goal of avoiding navigation systems routing inappropriately. Note that NWP Project 19.3 Assessment: Third party Mapping/Navigation Providers Display of Traveler Information Events scheduled to start in the winter season of 2025 could include observing how closures are displayed and how traffic is routed on third party providers systems during a primary road closure.

- **Consider identifying a future NWP Workplan effort to conduct an evaluation of South Dakota DOT's approach.** Conduct an evaluation of South Dakota DOT's approach to understand what works well and document lessons learned as other states consider following this approach. Note that NWP Project 19.3 Assessment: Third party Mapping/Navigation Providers Display of Traveler Information Events scheduled to start in the winter season of 2025 could include observing how third party providers display an area wide event.

- **Continue to discuss members' progress on implementation of each option** periodically during NWP Steering Committee meetings.

- **Continue engagement during NWP Operations Task Force webinars with mapping and navigation providers** through bi-annual or annual check-in webinars to provide an update on NWP activities and to continue to coordinate efforts. Also, explore the CTSO Community of Practice on Traveler Information taking on the role of bi-annual or annual role of check-in webinars for a national approach of information sharing.

- **Continue to connect with the CTSO Community of Practice on Traveler Information** by requesting a round robin agenda item annually during an in-person meeting to share NWP activities and learn about efforts from states nationwide on providing recommended routes to mapping and navigation companies.

In addition, these suggested next steps will be discussed with the NWP members to consider including as a project idea(s) as their next annual work plan is developed.

Appendix A: WYDOT AND LARAMIE COUNTY MOU EXAMPLE

**MEMORANDUM OF UNDERSTANDING BETWEEN
THE WYOMING DEPARTMENT OF TRANSPORTATION, GEOGRAPHIC
INFORMATION SYSTEMS/INTELLIGENT TRANSPORTATION SYSTEMS
PROGRAM
AND
LARAMIE COUNTY**

1.   **Parties.** The parties to this Memorandum of Understanding (MOU) are the Wyoming Department of Transportation, Geographic Information Systems/Intelligent Transportation Systems Program (WYDOT), whose address is: 5300 Bishop Boulevard, Cheyenne, Wyoming 82009 and Laramie County (County), whose address is: 310 West 19th Street Suite 300, Cheyenne, Wyoming 82001.

2.   **Purpose.** The purpose of this MOU is to establish the terms and conditions by which the County will provide WYDOT with real-time road closure information to be reported to navigation companies through a data feed and to the traveling public through WYDOT's public traveler information systems.

3.   **Term of MOU.** This MOU shall commence upon the day and date last signed and executed by the duly authorized representatives of the parties to this MOU (Effective Date) and shall remain in full force and effect for five (5) years.

4.   **Payment.** No payment shall be made to either party by the other party as a result of this MOU.

5.   **Responsibilities of County.** The County agrees to:

   A.   Acknowledge the following:

   (i)   WYDOT will serve as the conduit to provide information to navigation companies and to the traveling public. The County maintains responsibility for verifying accuracy of all information submitted to WYDOT and shall notify WYDOT immediately if any data errors are discovered.

   (ii)   WYDOT cannot guarantee that navigation companies will use the County road closure information provided.

   (iii)   The County is responsible for sharing information with residents about the potential for County road closures and managing any programs that allow drivers to travel on otherwise closed County roads.

   (iv)   The data feed requirements imposed by navigation companies may be changed from time to time. WYDOT will coordinate with the County to ensure compliance.

B.   Provide WYDOT a list of County roads subject to closure. For each road, the County shall provide the following information:

     (i)   Whether the road is subject to seasonal road closure. If yes, the following additional data elements are required:

         (a)   Start and end date of the seasonal road closure. Provide an estimated opening time.

         (b)   Physical extent of the road closure (closure start and end points).

         (c)   The drivers and/or vehicle types impacted by the closure. For example, all vehicles, trailer traffic, local traffic permitted, etc.

     (ii)   Whether the road is subject to automatic closure based on pre-defined conditions. If yes, the following additional data elements are required:

         (a)   Conditions under which WYDOT should report the road as closed. For example, the closure of an adjacent state route or county road.

         (b)   Physical extent of the road closure (closure start and end points).

         (c)   The drivers and/or vehicle types impacted by the closure. For example, all vehicles, trailer traffic, local traffic permitted, etc.

         (d)   Reason for the closure.

         (e)   County representatives authorized to request an exception to automatic closures.

         (f)   Whether WYDOT should provide an estimated road opening time.

     (iii)   Whether the road is subject to closure on an ad hoc basis. If yes:

         (a)   The County shall provide WYDOT a list of County representatives authorized to report road closures.

         (b)   The County shall provide the following data elements for each closure:

             (1)   Physical extent of the road closure (closure start and end points).

        (2)   Reason for the closure.

        (3)   Estimated road opening time, if available.

   (c)   The drivers and/or vehicle types impacted by the closure. For example, all vehicles, trailer traffic, local traffic permitted, etc.

   (d)   The County acknowledges WYDOT will report the road as closed until an authorized County representative requests that the road be reported as opened. WYDOT may ask for updates to the road opening time.

  (iv)   Any additional information requested by WYDOT necessary to report the road closures.

C.   Identify a point of contact for the County regarding this MOU. WYDOT will send notices regarding this MOU to:

     Laramie County Public Works
     13797 Prairie Center Cir
     Cheyenne, WY 82009
     307-633-4302
     Molly.bennett@laramiecountywy.gov

     Laramie County Information Technology
     310 W 19th Ste 410
     Cheyenne, WY 82001
     307-633-481
     itd@laramiecountywy.gov

D.   Authorize WYDOT to disclose information to navigation companies.

E.   Authorize WYDOT to display on WYDOT information systems.

   (i)   Coordinate with WYDOT for information to be posted.

F.   Coordinate with WYDOT to verify mutual understanding of data provided to WYDOT under the terms of this MOU.

G.   Coordinate with WYDOT to verify how County data will be displayed on WYDOT public information systems.

6.   **Responsibilities of WYDOT.** WYDOT agrees to:

A.   Provide navigation companies information regarding County road closures through a data feed.

B.   Provide the County instructions on how to contact WYDOT to report ad hoc road closures, report exceptions to automatic road closures, and update seasonal road closure information.

C.   Coordinate with the County to verify mutual understanding of the data provided.

D.   Notify the County in the event data feed requirements are changed and coordinate with the County to ensure compliance.

E.   Reports from the County regarding this MOU should be forwarded to:

         GIS/ITS Program Manager, WYDOT
         5300 Bishop Blvd
         Cheyenne, WY 82009
         307-777-4231
         wyoroad@wyo.gov

F.   Display authorized data on WYDOT information systems.

     (i)   Coordinate with the County for information to be posted.