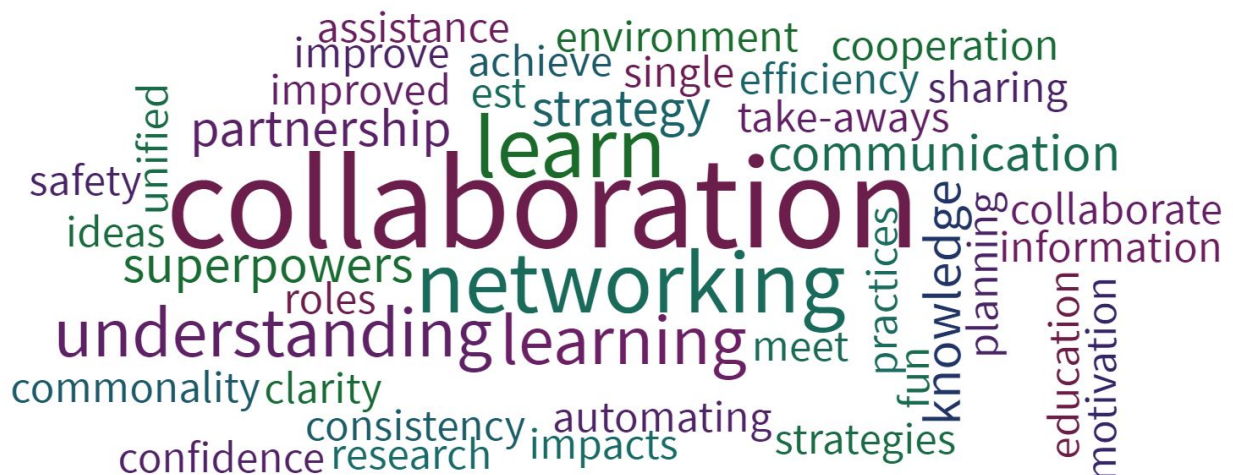




Summary of Workshop Content, Ideas and Outcomes

DAY 1:

Day one focused on shared learning about the Pathfinder Initiative and allowed for participants from the state DOTs, private weather industry and NWS to share their experiences, best practices and feedback related to the implementation of the Pathfinder Initiative.

Welcome and Opening Remarks: Rob Wight, Director, Utah DOT Traffic Management Center

Rob provided welcoming remarks to all of the participants and emphasized the importance of outreach and collaboration with local governments as key. He also noted one of the objectives of the meeting for shared learning among the participants on Pathfinder as an important way to increase the understanding of public needs and provide them with good service.

Welcome and Opening Remarks: Mary Erickson, Deputy Assistant Administrator, National Weather Service

Mary provided opening remarks to all of the participants and highlighted:

- Winter weather and road safety as one of her main focus areas of interest. Small changes in volume can make a huge difference in response capacity.
- Conversation and relationship building at workshops like this are a key to joint success in serving public safety.
- Impact-based Decision Support Services Service Description Document (IDSS SDD) provides guidance on what types of services we provide and what areas of weather demand we will not enter into. Road Weather is a clear space for industry participation and opportunity to build a better understanding of each of our areas of contribution.
- Other drivers important to NOAA and the new Administration include:
 - The Weather Research and Forecasting Innovation Act of 2017, which recognizes the key role NWS will play in providing IDSS to support a government role in protecting the public.
 - Reducing impacts of extreme weather on citizens and the economy is a NOAA priority and in the DOC Strategic plan.

Pathfinder Initiative Overview: Paul Pisano, DOT FHWA, and Roham Abtahi, NWS

Paul and Roham provided an overview of the Pathfinder Initiative with a kick-off video titled, "[Implementing Pathfinder in Your State](#)" and then a short [presentation](#) which highlighted the following aspects:

- Timeline of the Pathfinder Initiative;
- Identified core partners as state DOTs, National Weather Service, and private industry weather providers;
- Discussed ongoing state level Pathfinder projects; and,

- Illustrated the Weather-Savvy Roads Toolkit.

Themes from the group discussion afterwards included the following:

- The level of private industry engagement with states varies.
- There was overall interest from the group in learning more about what states are allowed to post on variable messaging road signs.
- The “Weather-Savvy Roads” campaign is being replaced with “Weather-Responsive Management Strategies” in FY19.

Industry Panel - Perspectives on serving the transportation sector: Ben Hershey, Iteris; Scott Jensen, Weathernet; Shawn Truelson, DTN; Mark Heuer, DayWeather; Steve Early, Vaisala; and Danny Cheresnick, Global Weather Corp

Following the overview of the Pathfinder Initiative, a panel of weather industry representatives were asked to answer the following set of questions:

- How do you think your services have benefited state DOTs and NWS? (or Ontario DOT equivalent and Environment Canada)
- What challenges have you encountered in providing your services and what suggestions do you have for improvement?
- How can you specifically support the Pathfinder Initiative?

The discussion among the panelists evolved as the initial set of questions were asked. A summary of key points from the discussion are captured below:

- Industry seeing high value in embedding with state DOT operations;
- Industry also seeing their data and infrastructure as an additional way to support state DOT needs;
- Pre- and post-weather event collaboration helps build trust and increases satisfaction for customers;
- Having a central NWS point of contact or office by would improve services and consistency of information availability; and,
- Local media also plays an important role for messaging.

Some key challenges as viewed by the panelists included:

- Need for improved coordination across multiple NWS offices;
- Variability of NWS-DOT support across the country;
- Need for streamlining conference calls with various stakeholders;
- Multi-day events and timing of weather impacts;
- Clarity still needed across public and private sectors; and,
- Access to data and data quality.

Consistent Messaging Challenges: Randy Graham, NWS

Randy [presented](#) on “Winter Weather Events, Crashes and Traffic Impacts: Applying Environmental Communication Strategies to Winter Weather Messaging.” Randy covered the challenges of messaging and illustrated some research outcomes that have been explored with the social science community. He also discussed messaging strategies and methods.

Tour UDOT Traffic Management Center: All participants

Participants then had time to tour the Utah DOT Traffic Management Center as a way to visualize how the Utah DOT, NWS and private industry are working together to serve the needs of the public across the state of Utah. Participants got an overview of Utah's typical weather operations and traffic management flow and infrastructure across the state.



Panel: Pathfinder Implementation Examples: Utah, Minnesota, Ohio, and Alabama - Jeff Williams, UDOT; Kevin Barjenbruch, NWS Salt Lake City, UT; Joe Huneke, MNDOT; Shawn DeVinny, NWS Minneapolis, MN; Tim Boyer, ODOT; Karen Oudeman, NWS Cleveland, OH; Kerry NeSmith, Alabama DOT; and Jason Davis, NWS Birmingham, AL

Finally, participants spent the rest of the first day hearing from four different states on how they have or are in the process of implementing the Pathfinder Initiative. The objective for the session was to share state implementation successes, challenges, lessons learned for broader shared learning by participants. The states represented various stages of implementation but all had similar experiences, best practices, and practical advice to offer such as the following:

- Collaboration across sectors increases effectiveness of messaging and improves public behavior response ahead of road impacts.
- Pathfinder does not need to be implemented exactly the same in each state to meet the objectives of the initiative.
- Pre- and post-season planning meetings are critical to improving services across the sectors. In-person opportunities are even more helpful to building trust across all stakeholders.

- For those that are new to Pathfinder, recommend starting by focusing on a particular weather impact relevant to their state and grow from there.
- State capabilities can vary by state and even across the same state.
- Being able to determine when roads will be impacted as opposed to when a weather event will start is key for messaging and road weather preparedness.
- Public education and impactful messaging is still a challenge.

The panel wrapped up by each speaker offering one short piece of advice to give to other states who are just beginning Pathfinder. They offered the following:

- Meet as many people as you can face to face.
- Attend NWS Integrated Warning Team Meetings.
- Don't let small setbacks derail you. Keep pushing forward.

Open Discussion: All participants

The first day wrapped up with a broader discussion with all participants who were not on the panel opening up about their experiences implementing Pathfinder. Some themes that came through were the following:

- Every state is different - there are different organizations and processes, and weather hazards to consider.
- Roles and responsibilities between public and private weather industry still need to be defined in some cases.
- Including other external stakeholders like the media, state patrol, Red Cross, utility industry and others in messaging and event coordination is demonstrating value to states.

Finally, the broader group of participants also discussed methods they have tried for messaging. Advice, ideas and suggestions included the following:

- Be cautious on how messages could negatively impact commerce when a major event is expected or occurring (e.g. don't say "All of state is shut down.").
- Simple messages are key.
- States have varying policies for wording placed on variable messaging signs and the type of information displayed (i.e. forecasts vs observed conditions).
- Sometimes the time descriptor for an event can be confusing to public (e.g. is midnight Thursday referring to Wednesday night or Thursday night).

DAY 2:

Day two focused on putting all of the shared learning from day one into practice.

Weather Scenario/Messaging Activity: All participants

The participants spent their second day working through a weather scenario in cross-sector groups. The objective of the working session was to use weather scenarios and examples to develop methods and ideas for how state, federal and industry partners can meet goals of Pathfinder Initiative. It also served to collect best practices on messaging across states. They

were presented with the following questions to address as it related to their particular weather scenario:

- 1) How would you (e.g. DOT; industry) determine the level of the storm and expected impacts to various roadway types in the scenario geographic area.
- 2) Given the level of storm/roadway impacts, what consistent and impact-based messages would be appropriate? Explain the types of messages for various dissemination approaches (DMS/VMS, website, 511, social media).
- 3) How would you define roles and responsibilities across sectors (e.g. state DOT, NWS, industry)?
- 4) What stakeholders are missing?

Weather Scenario/Messaging Activity Report Out: All participants

The weather event scenarios that were discussed by the groups covered a significant snow event, a blizzard event, a lake effect snow event and a severe weather event.

Each table had the opportunity to debrief their discussions for each weather event and the following themes were captured for each question:

- State DOTs and industry determine weather and roadway impacts through:
 - Collaborative group decisions made by state, NWS and weather industry;
 - Forecasts, data, and briefings from NWS, with NWSChat highlighted numerous times as an important and effective communications tool;
 - DOT road reports; and,
 - Media.
- Message approaches that were recommended included:
 - Shared talking points across Pathfinder core partners;
 - Social media, press conferences, highway radio, reverse 911;
 - Variable Message Signs; and
 - Consistent language as key.
- Roles and responsibilities can be determined through the following methods:
 - Building upon existing relationships and past experiences is extremely valuable;
 - Establishing standard operating procedures;
 - Legal considerations are sometimes relevant to consider
 - Sharing talking points
- Missing stakeholders to consider involving going forward include:

○ Schools	○ Construction community (roads, buildings)
○ Emergency management community/first responders	○ Railway, aviation and trucking communities
○ Media	○ Neighboring states
○ Utilities	○ National Guard
○ Red Cross	
○ Hospitals	

Synthesis, Next Steps and Wrap-up: All participants

In a wrap-up to the two-day workshop, the participants highlighted some of their main takeaways in the following ways:

- Face to face meetings and collaboration are invaluable.

- All sectors can act as a team to meet the objectives of the Pathfinder Initiative.

In closing, the participants were also asked the following live polling question: In one word, how would you describe your experience these two days? The following word cloud was the result:



Conclusion

Participants agreed that this summit and the kind of interaction that occurred was very valuable. It opened up dialog to share best practices, discuss issues and afforded the opportunity for interactive discussion over the two days. Participants appreciated the ability to communicate directly with NWS operational staff, state DOT representatives and members of the weather industry. Participation of these three key groups brought valuable context in working collaboratively toward Pathfinder Initiative implementation across the United States. Participants also expressed interest in conducting meetings like these in the future.