

---

---

# 1. The NWS-DOT Partnership

**Instructor Notes:** Welcome to this lesson on the NWS-Ground Transportation Partnership. This presentation discusses the NWS Policy on supporting Departments of Transportation (or DOTs) and some ideas on how NWS forecasters might help both agencies meet their respective missions better. This presentation should take approximately 15 minutes. **NOTE:** Gray speaker notes in italics surrounded by brackets (i.e., [show text] ) indicate at what point during the speaker notes specific animations occur.

**Student Notes:**



---

---

## 2. Lesson Outline

**Instructor Notes:** [show 1st bullet] This training will present several discussion points that build on topics discussed in the previous three lessons. For each topic, a brief summary of the original content will be provided. [show 2nd set of bullets] The discussion will then turn towards how the NWS-DOT partnership may be strengthened (directly or indirectly). These discussions are more about opportunities to work more closely together and not about new products or specialized services, which are against NWS policy. [show last bullet] As with the previous 3 lessons, the learning objectives for all of the road weather lessons are available by clicking on the objectives tab along the top of the module window.

Student Notes:

AWOC Winter Weather Track

### Lesson Outline

**DOT Product**

Last Updated Mon Dec 19 10:23:30 2005.

**NWS Product**

- Lesson builds on topics in previous three lessons
- Present ideas to improve the NWS-DOT partnership
  - Opportunities to work more closely together
  - Not about new products or specialized service
- Learning objectives available at tab (upper right corner)

### 3. Four Topics on the NWS-DOT Partnership

**Instructor Notes:** This lesson will address four topics that impact your office's support of DOT operations. Many of you may apply some, or even all, of these ideas in your office already. These four topics will tie into subjects discussed in the previous lessons in this instructional component. They are: [1st picture & text appears] NWS policy on DOT support [2nd picture & text appears] Staffing issues [3rd picture & text appears] High Impact, Sub-Advisory Events and [4th picture & text appears] RWIS Data Quality.

Student Notes:

AWOC Winter Weather Track

### Four Topics That Can Help Improve the NWS-DOT Partnership

NWS Policy on DOT Support

Staffing Issues

High Impact, Sub-Advisory Events

RWIS Data Quality

### 4. NWS Policy on DOT Support Revisited

**Instructor Notes:** In the overview lesson, we discussed that the NWS has updated & clarified its policy on DOT support in a document published in June 2009. This document details how NWS employees can (and should) support DOT operations during hazardous weather, but direct them to America's Weather Industry for customized support. This policy document is available by clicking on the attachments tab at the top of the module window. Now let's look at some examples of what sorts of support are appropriate and inappropriate.

**Student Notes:**

AWOC Winter Weather Track

**NWS Policy on DOT Support Revisited**

National Weather Service	America's Weather Industry
Provide support on issues related to life and property	Provide comprehensive & customized services
Respond to questions or initiate contact w/ DOTs for promoting motorist safety or protecting life & property	Provide specialized support to DOTs, including customized weather info, system support, and/or consulting services
Refer DOTs to America's Weather Industry for service requests that transcend NWS' mission	Give DOTs support on customized forecast issues like specific road temperature forecasts & advice on chemical treatments

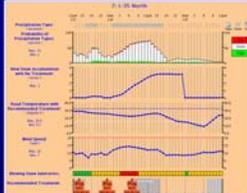
## 5. Appropriate vs. Inappropriate NWS Actions

**Instructor Notes:** The NWS provides support to state, local, and municipal DOTs because you, the forecaster, has expertise and understanding of the evolution and timing of hazardous weather events. In providing this support, it's important to remember what actions are appropriate and which are inappropriate. [show images on the left] Appropriate actions for NWS forecasters include: Contacting DOTs, or responding to their questions, regarding significant weather events where public safety is at risk; Interaction with DOTs due to non-routine situations critical to public safety (such as situations where dangerous conditions fall below issuance criteria) critical to public safety; and Informing DOTs of significant changes in previously issued products that might significantly impact motorist safety. [show images on the right] Inappropriate actions for NWS forecasters include: Providing site-specific forecasts to DOTs for road surface temperatures (RSTs) and Customized consulting services to DOTs, such as advice on which chemical treatments to use.

**Student Notes:**

AWOC Winter Weather Track

**NWS Policy on DOT Support: Appropriate vs. Inappropriate Actions**

Appropriate	Inappropriate
 <p>Contact DOTs &amp; clarify product content</p>  <p>Inform DOTs of product changes impacting motorist safety</p>	 <p>Provide site-specific RST forecasts &amp; chemical treatment advice</p> 

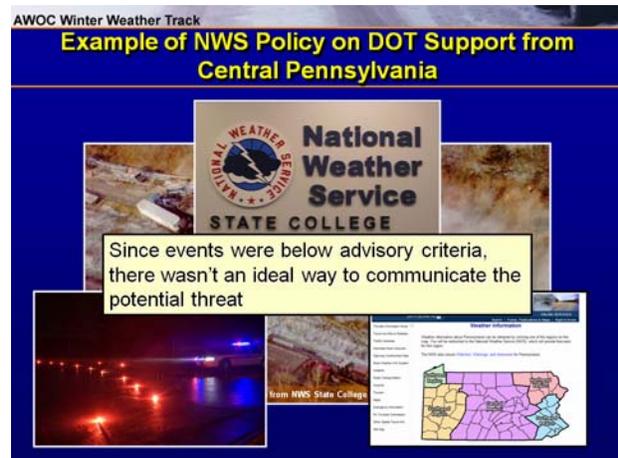
---

---

## 6. A Partnership Example: HISA Events

**Instructor Notes:** Here's an example of on-going partnership between the NWS, a local DOT, and public safety officials. During the last decade or so, there were several large-scale, multiple-vehicle pile-ups along I-80 in Central Pennsylvania during winter weather. These accidents occurred during snow events where total accumulations were on the order of 1-3". [show text box] Since the events didn't meet advisory criteria for the area, the local NWS didn't have an ideal way to communicate the potential threat to PennDOT or the Pennsylvania State Police. [show NWS & partner images] These three agencies worked together to develop a coherent process to communicate the threat that follows the NWS policy. NWS forecasters identified a solid conceptual model for when these events are most likely. When an event appears likely, and the societal impact substantial, the local office issues subjective-based products to warn their partners and the public. PennDOT and the Pennsylvania State Police then have internal processes in place to communicate the threat to local offices so that they can plan and execute their mitigation activities in a timely manner (DeVoor, 2008; DeVoor, 2009).

**Student Notes:**



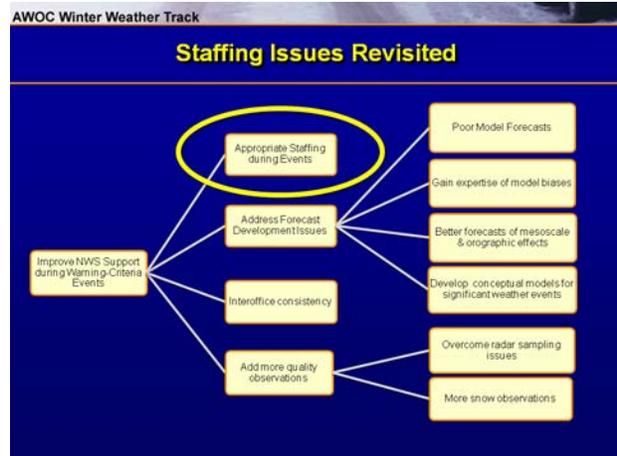
---

---

## 7. Staffing Issues Revisited

**Instructor Notes:** In the Road Weather Impacts & Management Strategies lesson, we discussed the results from AWOC Core root cause analysis (RCA) and post-mortem exercises submitted over the last few years. Several submissions mentioned that staffing issues impacted office performance during significant winter weather. This discussion isn't an attempt to change your local office's procedures. The goal is to remind you of your options, explain where problems can creep in, and what you can do about them.

**Student Notes:**



## 8. Some Impacts of Adjusting Personnel

**Instructor Notes:** [show 1st bullet] Some winter weather events in your office may require some changes to your standard office staffing. Offices handle these situations in various ways. [show sub-bullets] Common practices include pulling staff off of X-shifts, juggling responsibilities of current staff, and approving overtime for holdovers and calling staff in on their day off. [show 2nd bullet] When staff changes are required, it's usually to dedicate extra staff to product generation & issuance or for public briefings and calls for snow reports. [show 3rd bullet] The impacts of these staff changes vary, but can be significant. An example is presented on the next slide.

**Student Notes:**

## 9. Staffing Issues Example: Event Familiarity

**Instructor Notes:** [show 1st bullet] Here's a staffing issue example that comes right out of the AWOC Core assignments. When extra staff are needed to help out with a winter weather event, the amount of spin up time they need will depend on how familiar they are with the event details. Situations that will likely require the most spin up time are: [show sub-bullet #1] Bringing in a forecaster who hasn't worked in a couple of days;

## Warning Decision Training Branch

[show sub-bullet #2] If there have been significant changes in the models since their previous shift; or [show sub-bullet #3] If the forecaster was working a different desk.  
[show 2nd bullet] The impacts from this spin up time will also depend on the extra person's role. If they are working the phones, the impacts will be low. If they're authoring briefing materials or warning products, the potential for impacts increase. [show 3rd bullet] The impacts may be acute if the products are for marginal events with short lead times.

### Student Notes:

AWOC Winter Weather Track

### Staffing Issues Example: Event Familiarity



- Staff unfamiliar with event details require more spin up time
  - First shift in several days
  - Significant change in models since previous shift
  - Was working different desk
- If needed for product development, can impact lead time
- Can cause problems for marginal events w/ short lead times

---

---

## 10. Quiz Question

**Instructor Notes:** Please take a moment to complete the question shown.

**Student Notes:**

---

---

## 11. Significant Sub-Advisory Events Revisited

**Instructor Notes:** In the Road Weather Impacts & Management Strategies lesson, a major topic discussed was sub-advisory events with significant impacts. Several elements of these events were discussed, including: How event severity differs from warning-criteria events, What parameters are key to identifying event severity, and What

parameter values help differentiate mundane from significant events? A summary answer to these questions is shown on the slide. The question remains: How do we best serve our DOT partners and the traveling public in these circumstances? Let's investigate this topic over the next several slides.

**Student Notes:**

AWOC Winter Weather Track

**High Impact, Sub-Advisory Events Revisited**



Photo from NWS State College WFO

- Key parameters are:
  - RSTs: Crossing freezing in the presence of precipitation
  - Visibility: < ¼ mile – impacts start; < ¼ mile – impacts likely

---

---

## 12. Use of Subjective-Based Products

**Instructor Notes:** Since there is no specific product to address these events, the best method currently at forecaster's disposal is subjective-based product issuance. This subject is addressed in the NWS Directive on WFO Winter Weather Products Specification (aka: Directive 10-513). [show WSW text box] The text on Winter Weather Warning issuance is provided here as a reference. The highlighted text indicates that NWS forecasters have some leeway for issuing a warning for events that may not meet local criteria, but should have warning-like impacts. [show advisory text box] The text on Winter Weather Advisory issuance is also included. While the same language on forecaster discretion isn't explicit in the text, I think it's safe to assume that a sub-advisory event that "could lead to life-threatening situations" in the road environment would be an appropriate cause for issuance. [show final text] The key to implementing subjective-based products for sub-advisory events is both forecaster discretion and limited use. This sort of issuance should be rare, maybe 2-3 times a season in snow prone areas, and only occur when forecasters have a high confidence that significant impacts are likely for major thoroughfares.

**Student Notes:**

**AWOC Winter Weather Track**  
**Using Subjective-Based Products during High Impact Events**

From NWS Directive 10-513:

**Winter Weather Warning Issuance Criteria:** WFOs will issue winter weather warnings when **hazardous winter weather is occurring, imminent, or has a high probability of occurrence** over part or all of the forecast area. WFOs should issue winter weather warnings for the first, second, or occasionally third forecast period (fourth period on rare occasions), when there is an 80 percent or greater chance of a hazardous winter weather event meeting or exceeding local warning criteria, or for **high impact events which do not meet local warning criteria**. For example, a Winter Storm Warning is forecasted but accumulations are not going to be met, but will be close. If it is **early in the season or during a critical time of day such as rush hour when the impact will likely be greater**, then a Winter Storm Warning might be warranted. **The forecaster has the discretion and should not be held back from issuing what best mitigates the impending winter hazard** even if criteria may not be met in the strictest sense. WFOs will coordinate with adjacent WFOs regarding the warning type.

**Winter Weather Advisory Issuance Criteria:** WFOs will issue winter weather advisories for **hazardous winter weather that causes significant inconveniences**, and if caution is not exercised, **could lead to life-threatening situations** over part or all of the forecast area. WFOs should issue winter weather advisories for the first, second, or occasionally third forecast period, when there is an 80 percent or greater chance of a hazardous winter weather event meeting or exceeding local advisory criteria. WFOs will coordinate with adjacent WFOs regarding the advisory type.

Issue subjective-based warnings & advisories w/discretion, but don't overuse!

### 13. Conceptual Models for High Impact Events

**Instructor Notes:** [show 1st bullet] When issuing subjective-based warning or advisory products for sub-advisory events, your office's lead time for the event may take a hit. It's a legitimate concern that will come up. [show 2nd bullet] One way to offset this problem is through conceptual models. Having a sound conceptual model is critical for these meteorologically marginal or rare events that result in significant impacts. [show 3rd bullet] By applying both conceptual models and the ingredients-based methodology of which parameters impact event significance, an increase in lead times should be seen for these marginal, but significant, events.

**Student Notes:**

**AWOC Winter Weather Track**  
**Develop Conceptual Models for High Impact Events in Your CWA**

- Loss of lead time a concern
- Conceptual model helpful for these marginal or rare events w/significant impacts
- Good conceptual models should help:
  - Increase lead times
  - Improve subjective issuance decision-making

### 14. Coordinate Plans with Management

**Instructor Notes:** [show 1st bullet] It's also important to coordinate subjective-issuance products with your local supervisors. [show 2nd bullet] If significant sub-advisories are a recurring problem in your CWA, having a more formal plan may even be in order. In such instances, coordinating that plan with both local management and regional supervisors is preferred. [show 3rd bullet] The goal of this coordination is quite simple:

You have enough to worry about when you are issuing winter weather warnings & advisories. Good coordination with your supervisors should ensure that that will support your decision-making when you deem subjective issuance necessary.

**Student Notes:**

AWOC Winter Weather Track

### Coordinate Subjective Issuance Plan with Local & Regional Management

- Talk w/ local supervisors about subjective issuance
- If recurrent, have a plan in place prior to winter season & get regional HQ buy-in
- Goal: Ensure supervisors will support subjective issuance when forecasters deem it necessary

---

---

## 15. RWIS Data Quality Revisited

**Instructor Notes:** In the Tools for Monitoring Road Weather lesson, much of the discussion focused on viewing RWIS and other mesonet data both on-line and in AWIPS. Both methods for visualizing the data have downsides, but AWIPS has some specific visualization issues with road weather specific data. Regardless of which method you use, let's look at some ways to get more useful information about these data and how they might help build a closer relationship with your local DOT(s).

**Student Notes:**

AWOC Winter Weather Track

### RWIS Data Quality Revisited

RWIS site at higher elevation where snow was observed

---

---

## 16. Importance of Site Metadata

**Instructor Notes:** If you are going to use RWIS & other local mesonet data in your area, sooner or later you will want to access metadata for these sites. The site metadata, if well documented, will provide you with everything you need to know about the observa-

## Warning Decision Training Branch

tion site. Site metadata is compiled by the network owner and made available to users via several methods. [show 1st image & text] For starters, there are the AWIPS configuration files for each mesonet. These files, which contain some information about each site and the data they report, are available for FTP download, but require a user account. [show 2nd image & text] An easier way to get to the same information is to use the MADIS Surface Network Information page. Each mesonet data provider is listed with a link to their home page. [show 3rd image & text] A third option is the Clarus Initiative metadata page. Clarus have extensive metadata available primarily on RWIS sites, but also has data from other mesonet providers. Both MADIS and Clarus provide access to the actual surface observations on their respective home pages, also.

### Student Notes:

AWOC Winter Weather Track  
**RWIS Data Quality: Metadata Important for These and Other Mesonet Sites**

AWIPS Configuration files: <ftp://ftp.madis-fsl.org/>  
(requires account access)

Clarus System  
Metadata Files

Metadata Files	Last Update (UTC)
metdata01	2009-08-11 10:40
metdata02	2009-08-11 10:40
metdata03	2009-08-11 10:40
metdata04	2009-08-11 10:40
metdata05	2009-08-11 10:40
metdata06	2009-08-11 10:40
metdata07	2009-08-11 10:40
metdata08	2009-08-11 10:40
metdata09	2009-08-11 10:40
metdata10	2009-08-11 10:40
metdata11	2009-08-11 10:40
metdata12	2009-08-11 10:40
metdata13	2009-08-11 10:40
metdata14	2009-08-11 10:40
metdata15	2009-08-11 10:40
metdata16	2009-08-11 10:40
metdata17	2009-08-11 10:40
metdata18	2009-08-11 10:40
metdata19	2009-08-11 10:40
metdata20	2009-08-11 10:40

Clarus Initiative: <http://www.clarusinitiative.org/>

MADIS Surface Network Info:  
<http://www.sdd.fsl.noaa.gov/MADIS/network/info.html>

## 17. Closer Ties with DOTs through RWIS data

**Instructor Notes:** [show 1st bullet] Investigating RWIS metadata, especially if it results with direct communication with your state & local DOTs, can help lead to a closer relationship with them. [show 2nd bullet] Support of RWIS networks & data quality varies from agency to agency. Maintenance & support of these systems are quickly cut from budgets during shortfalls. However, some agencies have made RWIS upkeep a priority. [show 3rd bullet] Talking to DOTs about these issues will help you find out where they stand on this issue & give you a chance to explain how helpful their data can be. [show 4th bullet] By starting a dialogue about RWIS data quality, you can learn more about current & future RWIS activities. Of course, you may not always get good news, but at least you'll be aware. You can also talk to them about NWS product & services changes that are coming down the pike. Just a little dialogue, can go a long way.

**Student Notes:**

AWOC Winter Weather Track  
**Communication about RWIS Data Quality Can Also Lead to Closer Ties with DOT Partners**

• Learn more about local DOT maintenance practices  
 • Maintenance & support of RWIS varies greatly  
 • Talk to local DOTs to find out their practices  
 • Starting a dialogue over RWIS data quality can lead to a closer partnership in other areas

## 18. More Outreach & Education Possible

**Instructor Notes:** Developing a better partnership may open up outreach & education opportunities with DOTs. [show 1st bullet] For instance, there has been a growing interest among state, local, & municipal DOTs to better integrate weather data into their operational environment and decision-making. [show 2nd bullet] Studies done on DOT weather integration suggest that a little education will go a long way (Federal Highway Administration, 2006). Most DOT staff just want to better understand NWS products & services, how to access them quickly, and better understand how adverse weather hazards will impact what they are doing. Your WCMs probably have presentations that would achieve these goals already. It's just a question of getting the information to the audience. [show 3rd bullet] It can also help to make the education process a two-way street. Try inviting a DOT representative to come and give a talk for your office. Your staff could learn a lot from such a presentation.

**Student Notes:**

AWOC Winter Weather Track  
**A Better Partnership with DOTs Could Also Lead to More Outreach & Education Opportunities**

• More interest among DOTs to better integrate weather info  
 • A little education goes a long way:  
   – Explain details of products & services  
   – "Using weather.gov 101"  
   – How NWS staff can support DOTs  
 • Make education a two-way street

---

---

## 19. Summary

**Instructor Notes:** In summary, this lesson discussed four areas where NWS staff can work to improve the NWS-DOT partnership. Each of these topics were mentioned in previous lessons, but new details were presented here. [show 1st bullet] The first topic was the NWS policy on DOT support. The important point is that NWS forecasters should be aware of the policy so that they know what actions are appropriate and inappropriate. [show 2nd bullet] The second topic was related to staffing issues during winter weather events. When staff are pulled from other duties, or called in, the spin up time can be significant depending on their role during, and familiarity with, the event. Where the impact is most likely to be felt is during events that typically produce the shortest lead times. [show 3rd bullet] The third topic was high impact, sub-advisory events. Forecasters should consider subjective issuance of standard products if conditions warrant them, development of conceptual models for these events to help improve product lead time, and coordination with local and regional supervisors to make sure they support your actions. [show 4th bullet] The last topic was related to RWIS networks data quality. Accessing metadata for RWIS networks and other mesonet is a good idea. Contacting local DOTs about RWIS metadata may also open the door for other educational opportunities between your agency and theirs, which is a good thing.

**Student Notes:**

AWOC Winter Weather Track

**In Summary: The NWS-Ground Transportation Partnership**

- NWS policy on DOT support: Appropriate vs. in appropriate actions for NWS staff
- Staffing issues during winter weather: Impacts vary depending on "extra" staff's:
  - Past experience w/ event
  - Responsibilities
- High impact, sub-advisory events: Consider
  - Subjective issuance of standard products
  - Development of conceptual models
  - Coordinate with local and regional NWS supervisors
- RWIS data quality
  - Access RWIS metadata
  - Communicate with local DOTs