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Operations and Services

Impact-Based Decision Support Services, NWSI 10-24

APPLIED IDSS - SURFACE TRANSPORTATION

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Date

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1 Introduction

Hazardous weather conditions can negatively impact surface transportation. Local, tribal, municipal and state Departments of Transportation (DOTs) are at the forefront of mitigating the impacts of weather-related hazards through proper planning, deployment of critical resources, treatment and necessary road closure operations to reduce impacts to the traveling public and commercial transportation organizations. As part of the Impact-based Decision Support Services (IDSS) directive series, DOTs are core partners as defined within NWS directives and are provided government-to-government services.

This Instruction focuses specifically on National Weather Service (NWS) IDSS as applied to supporting interactions and decision making to DOTs, and interactions with America's Weather and Climate Industry¹ (AWCI) providers that support DOTs.

Various inclement weather and environmental situations may expose motorists to potentially hazardous travel conditions which can result in heightened threats to safety, life, and/or property. Additionally, disruptions to surface transportation may have a significant impact on commerce. DOTs require dependable, clear, and understandable communication of rapidly evolving hazardous weather² and hydrologic situations that impact public safety.

In addition to partnering with DOTs, the NWS has a commitment to work with entities within AWCI to provide the Nation with optimum weather services, including information in support of safe travel on the nation's surface transportation system.

NWS support of DOTs focuses on our expertise and understanding of the evolution, timing, and severity of hazardous weather events. *The NWS does not have the resources or specialized expertise to forecast the surface/pavement conditions of roads, or to provide guidance on road treatment options.* These types of comprehensive services, (e.g., supporting winter road maintenance decisions) are available from within the DOTs or via contract to AWCI. They include customized consulting services to provide value-added information or, in other words, information that goes beyond the strict provision of information related to expected weather conditions as it relates to travel safety.

2 Guiding Principles

The NWS role in support of DOTs is based on IDSS policies outlined in NWS Policy Directive 10-24. NWS time and expertise are best spent meeting with local and state DOT officials in advance of inclement conditions to educate and exercise with them, and to share best practices that would be most helpful to their mission. The Pathfinder Program, see below in section 4, is an ideal venue to establish or increase collaboration between local NWS Weather Forecast Offices and their partners in the local DOT. Upon DOT request/direction, IDSS interaction is permitted with

¹ America's Weather and Climate Industry (AWCI) includes all elements of the private sector (including media, consultants, equipment providers, etc.) which provide services to the public in the areas of climate, water, and weather. The term does not exclude foreign-owned companies which provide services to the American public.

² In this document, "weather" is used generally to mean all service areas which the NWS supports, including hydrology, space weather, tsunamis, aviation, fire, marine, etc.

weather service providers which are contracted to DOTs under the purview of supporting the DOT mission. The focus of this collaboration is ensuring DOT and NWS messaging to the traveling public is consistent regarding timing, evolution, and types of impacts.

In providing IDSS to DOTs, NWS staff should provide information regarding impacts of an event, including timing, confidence, and general meteorological and hydrologic information based on our current suite of operational products. It is important to maintain consistency in providing one NWS forecast. NWS support will also occur in certain non-routine situations that may be critical to public safety, such as dense smoke from wildfires, hazardous material incidents, heavy fog, and hazardous conditions that fall below the criteria for issuance of, or are not well covered by, standard NWS products. *The NWS shall not provide DOTs with specialized weather support and customized consulting services beyond the agency's expertise, such as forecast road/pavement conditions or decision assistance for road treatment options.* NWS is not responsible for, and shall not release, output from the modeling of road surface conditions to the public, DOT partners, or the AWCI. Information from road temperature models is strictly for internal use.

Standard NWS dissemination mechanisms such as NOAA Weather Radio All Hazards, NOAA Weather Wire, NWS web services, social media platforms, and other commonly used dissemination systems, may satisfy some needs of DOTs for text-based, graphical, and/or GIS-based information. DOT officials should be referred to those sources for standard NWS information. In addition to their own specialized support, AWCI can assist DOTs by delivering information sourced from the NWS.

NWS personnel should respond according to NWS policy guidelines with respect to requests for forecasting support from DOTs. Responsibility for following policy with regard to providing services to DOTs rests with NWS management at all levels.

Summary of Appropriate DOT-NWS IDSS Related Actions

1. NWS staff may provide standard services and IDSS, as described above to DOTs and their AWCI support providers. Under this arrangement, it will be the individual DOT's AWCI support that provides more specialized services such as pavement condition information and support for road maintenance decisions.
2. NWS offices may respond to questions from (or initiate contact with) local, tribal, municipal and/or state DOTs and their AWCI support providers for the purpose of ensuring consistent messaging, and ultimately motorist safety and protecting lives and property.
3. Interaction among NWS, DOTs, and AWCI entities working under the direction of a DOT is encouraged on both a routine and an episodic basis for the purpose of public safety and protecting property.

Further clarification of appropriate NWS roles and responsibilities, with detailed examples, are provided in section 3.

3 Roles and Responsibilities

This section provides more detailed examples of appropriate roles for NWS staff interactions

with DOTs, and clarifies what is both within and outside the agency's scope of activities. DOTs should be directed to AWCI for requests that are outside of the scope of NWS responsibilities.

3.1 Roles within the Scope of NWS Personnel

3.1.1 Forecast and IDSS Provision

- a. Provide IDSS focusing on meteorological and hydrologic conditions and hazards that would affect travel on roadways, including timing, uncertainty, snowfall and rainfall amounts, flooding, and the general potential for adverse travel conditions. NWS support will also occur in certain non-routine situations that may be critical to public safety, such as dense smoke from wildfires, hazardous material incidents, heavy fog, and dangerous conditions that fall below the criteria for issuance of, or are not well covered by, standard NWS products.
- b. Road temperatures models may be run internally by the NWS, but it is not encouraged. Output should only be utilized internally to help assess potential general road impacts, improved situational awareness and for crafting IDSS and call-to-action messaging for both support to DOTs and the overall public weather program.
- c. On rare occasions, and in accordance with NWS Instruction 10-401, NWS personnel may provide a site-specific forecast upon request of any local, tribal, municipal or state DOT official who legitimately indicates that the forecast is essential to public safety.

3.1.2 Forecast and Messaging Collaboration

- a. Initiate or respond to routine or episodic contact with DOTs and their contracted private weather service providers, and respond to questions regarding weather events. These interactions should focus on helping to ensure an understanding by DOTs of our forecasts and their impacts and of the evolution and timing of hazardous weather conditions.
- b. Collaboration and coordination through NWSChat, telephone conference calls, and webinars is encouraged.
- c. If offered from DOT employed meteorologists or DOT-contracted private sector providers of weather services, utilize their forecast expertise on expected road conditions to help craft general impact messaging for NWS products and IDSS, without relaying overly specific road condition forecasts. If publicly available, NWS may pass along these road conditions forecasts (with attribution) or direct the public to DOT sources.
- d. Collaborate with DOTs and their contracted private sector providers to ensure consistent, effective, and actionable messaging related to anticipated impacts.
- e. Call-to-action statements in NWS watch/warning/advisory products should be coordinated for consistency with DOT messaging systems, such as social media, or 511 systems. DOTs can assist with getting out consistent messaging by putting NWS information on highway variable message signs.

- f. When multiple DOT support providers (including AWCI) are present, NWS will be flexible in the level and/or type of IDSS provided, seeking input from core partners as to what support is needed and what level of coordination is required.

3.1.3 Relationship Building/Outreach

- a. Interact with DOTs via meetings, training exercises and workshops such as Pathfinder, Integrated Warning Teams, pre and post season reviews, office seminars, after action reviews, and other in person meeting opportunities.
- b. Participate in efforts to structure and enhance consistent messaging on social media and web sites.
- c. NWS may work to help DOTs understand how to access or interpret existing products for use in local 511 (traveler information) systems. Creation of specialized products for local 511 systems would be left to the DOT and their weather support.
- d. Participate in efforts to structure and enhance the use of Variable Messaging Signs to communicate NWS Watch/Warning/Advisory products and other coordinated messaging to promote appropriate action by the public to mitigate their exposure to hazardous driving conditions.
- e. Collaborate on research efforts, including sharing of information via publications and presentations.
- f. NWS may provide DOTs with basic weather and SKYWARN training, including training on how to access and use standard NWS products of all types (e.g., observations, warnings, forecasts, hydrologic and climatological information, and seasonal forecasts).

3.1.4 Observational Cooperation is Permitted and Encouraged

- a. Initiate calls with DOTs to validate actual observations with available automated observations and to obtain severe weather and storm verification (e.g., via downed tree reports, snow accumulation amounts, and road closures from flooding).
- b. Coordinate siting and placement of DOT Automated weather stations (e.g., Road Weather Information System). Ultimately, it is the responsibility and decision of the DOT where to site sensors.
- c. Interact with DOTs to obtain and share observed weather conditions (e.g., weather spotter reports, Citizen Weather Observer Program, plow driver reports, connected vehicle information, Cooperative Observer Program, hydrologic/river stage reports, etc.).

3.2 Beyond the Scope of NWS Personnel

If DOTs request any specialized services (outlined below) beyond the scope of NWS activities, they should be referred to AWCI³.

³ Unless required to uphold federal laws in supporting “National Special Security Events” and other National Response Framework activities or when urgently required for public safety.

America's Weather and Climate Industry often provides specialized weather support to DOTs including, but not limited to, customized road weather and pavement information, alerting services, radar and communication devices, and consulting services. The NWS webpages at <http://weather.gov/im> and weather.gov/enterprise list America's Weather and Climate Industry resources for those that wish to use these sites.

NWS personnel will not provide certain types of specialized services including, but are not limited to, the following, which may be available from AWCI:

1. Site-specific forecasts or direct forecasting support to local, tribal, municipal, or state DOT officials when the support is **not** related to the immediate promotion of public safety and/or the protection of life and property.
2. Specialized roadway surface conditions or customized consulting services to DOTs (e.g., forecasts of road surface temperatures, guidance on road treatment options, direct forecast support to DOT Operations such as a plow driver).
3. Dissemination of specialized road temperature modeling output to either the public or core partners.
4. Provision of public facing roadway surface condition hazard mapping that implies a forecast of road or travel conditions.
5. Customized products (e.g., customized seasonal forecasts) for the purpose of supporting DOTs with their business planning. (e.g., optimizing pre-season salt purchases).

4 Pathfinder Program

Pathfinder is a collaborative effort among NWS, state DOTs, and state DOT support contractors who provide road weather information to share and translate weather forecasts into consistent transportation impact statements for the public.

Detailed information regarding the Pathfinder Program is provided by the Federal Highway Administration (FHWA) at:

https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/roadweather.cfm

DOT participation in the Pathfinder Program varies from state to state and is coordinated among the FHWA and state-level DOTs. However, NWS Weather Forecast Offices are encouraged to meet with their local DOT Road Weather Managers, regardless of whether their state is officially signed up for Pathfinder. Face-to-face meetings at the state level DOT Traffic Management Centers TMC are often the best way to identify the individuals who can serve as the most direct point of contact in your state's DOT. Some state DOTs employ their own meteorologists, in which case that would be your best starting point.

For the latest Pathfinder-related resources from the Federal Highway Administration, visit:

<https://collaboration.fhwa.dot.gov/dot/fhwa/RWMX/SiteAssets/home.aspx>