

**TESTIMONY OF  
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before the

**COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION  
SUBCOMMITTEE ON OCEANS, ATMOSPHERE, FISHERIES AND  
COAST GUARD  
UNITED STATES SENATE**

December 12, 2013

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Chairman Begich, Ranking Member Rubio, and Members of the Subcommittee, thank you for inviting me to present the views of the National Weather Service Employees Organization and the 3,600 National Weather Service employees it represents. Our members include the forecasters, hydrologists, technicians and other scientific and support personnel employed at 122 Forecast Offices; 13 River Forecast Centers; the various NWS national forecasting centers such as the National Hurricane Center in Miami and the Severe Storms Prediction Center in Norman, Oklahoma; the tsunami warning centers in Alaska and Hawaii; and at the NWS headquarters in Silver Spring, Maryland.

NWSEO is proud to say that the operational Weather Service employees in the field have been the primary source of most of the innovation in forecasting and service delivery undertaken by the NWS in recent years, and the primary goal of our union is to enhance the employment security of our members by developing and urging management to adopt new and better ways to protect the American public from the vicissitudes of severe weather. Regrettably, however, the agency has been disinvesting in its human capital by drastic workforce reductions and the elimination of virtually all training. In so doing, the agency is placing the American people at risk and cutting off the source of future innovation. No new satellite, supercomputer, forecast model or private sector partner will reduce the need for a highly trained and fully staffed NWS workforce.

Let me provide one recent and vivid example of how the creativity and initiative of NWS employees in the field saves lives. On Sunday, November 17, six states in the Midwest experienced a dramatic late-season tornado outbreak, involving more than 40 tornados, including several EF4 rated tornados. However, casualties remained remarkably low due to the life-saving warnings issued by the men and women from at least nine forecast offices. While the national press

praised the work of the National Weather Service, what they didn't know and didn't report was that the NWS was at the time suffering from a wide-scale communications and internet failure that began several days before. Forecasters were only able to communicate with emergency managers, media and the public during this event because NWS employees in the field improvised emergency communications channels. As the Acting Director of the NWS Central Region explained in a congratulatory email message to employees:

The excellence of your work has been attributed to directly saving many lives that day. . . I also know that this was accomplished despite challenges of communications circuit problems which impeded our ability to communicate with Emergency Management and Media Partners. In response, NWS employees took the appropriate steps to improvise other measures, such as other internet sources, WiFi cards or telephones, to create makeshift backup communications techniques to ensure that the NWS message got out.<sup>1</sup>

NWS Director Uccellini also sent a congratulatory email to employees after the tornado outbreak. In this message, Dr. Uccellini noted that:

This event was another example of the important role that social media is playing in getting the message out. According to the social media tracking firm Measured Voice, 47 of the top 50 tweets sent by Federal Government Twitter accounts on Sunday were warnings from NWS on severe weather. Your embrace of social media is a growing success story.

However, NWS field employees haven't just "embraced" the use of social media to broadcast warnings – they pioneered it.

Employees at the Chicago Forecast Offices and at other local forecast offices started creating weather-related Facebook pages for their offices on their own several years ago, but NWS headquarters made them take the pages down for about a year before realizing their potential. Now all of the nation's 122 Forecast Offices and 13 River Forecast Centers have operational Facebook pages through which they communicate with the public. Similarly, only after employees in the

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<sup>1</sup> Although the Acting Central Region Director admitted to employees that "communications circuit problems which impeded our ability to communicate with Emergency Management," existed, employees were issued official "talking points" from NWS management advising them to mislead to the press: "If asked about internal communications network issues, 'Internal communication issues did not affect provision of warning services during the outbreak.'"

field started “tweeting” weather warnings did the NWS formally embrace and sanction Twitter accounts.

Another employee initiative involving social media has transformed the way the NWS communicates with emergency management officials and the media. Beginning around 2000, several Forecast Offices began using instant messaging to communicate with emergency managers. In 2004, employees at the Des Moines Forecast Office, working with Iowa State University’s Environmental Mesonet, began using commercial instant messaging and chat room software to communicate with Iowa television stations. By 2005, seven forecast offices and 21 media outlets adopted use of this software. By 2009, the NWS assumed full control of this service, and it is now known as NWSChat. Forecasters now use NWSChat to exchange information with emergency managers and the media in real-time during severe weather events. By the summer of 2012, 3,500 members of the emergency management community had registered for an NWSChat account, as well as over 2,000 members of the media.

In 2011, the NWS implemented six pilot projects that were an NWSEO initiative, originally proposed to the Deputy Under Secretary at a meeting with the NWSEO National Council in San Francisco the year before. The plans for individual projects were then developed by a joint labor-management committee based on proposals solicited from the field. These pilot projects are now underway at NWS headquarters, at the Southern Region headquarters, and at Forecast Offices in Tampa, New Orleans, Sterling, Virginia and Charleston, West Virginia. The pilots are developing and testing new service delivery models, such as integrating environmental data from other NOAA agencies into NWS products; providing enhanced, face-to-face decision support to state and local emergency management personnel; and developing new mesoscale forecasting models and techniques that may enable the NWS to provide pinpoint, highly localized warnings of severe weather outbreaks hours in advance. As part of these pilot projects, the NWS created new positions called “Emergency Response Meteorologists” that assist local emergency managers by providing “impact-based decision support services.” In other words, NWS employees will not just predict the weather and provide raw weather information, but they will assist the emergency management community in understanding how to use this information and what impact the predicted weather is likely to have on their communities in practical terms.

Hurricane Isaac provided the first real-time test of the value of the new positions. Before and during the storm, these new “ER-Mets” were deployed from the new Southern Regional Operations Center and the Tampa and New Orleans Forecast Offices to 16 different FEMA, state and local Emergency Operations Centers, as well as to the Multi-agency Communications Center at the 2012

Republican National Convention, to supply face-to-face decision support service. An official from the Secret Service Intelligence Division wrote to the NWS that:

I found it very helpful to have someone on hand from the NWS to provide up to date information regarding the hurricane . . . It was invaluable to have you on the scene, when we all received a tornado warning on our Blackberries. You were able to say that we were in fact not in any danger because that particular storm was to the north of us.

These pilot projects build on the success of an aviation weather pilot project recently tested at New York, Chicago and Atlanta. By adding three additional forecasters at each location (one per shift) who were dedicated to providing additional weather support to the FAA, weather-related air traffic delays were reduced by 50% immediately.

NWSEO agreed to alter traditional staffing models in order to conduct these pilot projects. But if these pilots are successful, the NWS will require more, not fewer, forecasters to provide these enhanced services nationwide. But unfortunately, over the past several years, even before sequestration, the NWS has been shedding staff.

The National Academy of Public Administration reported earlier this year that “[w]hile staffing levels have been relatively constant over the past decade, in the last three years, the NWS has realized personnel losses at a greater rate than it has been hiring.” NATIONAL ACADEMY OF PUBLIC ADMINISTRATION, FORECAST FOR THE FUTURE: ASSURING THE CAPACITY OF THE NATIONAL WEATHER SERVICE., 39 (2013). The Senate Appropriations Committee noted earlier this year that “[s]ince 2010, NWS has seen a reduction of 290 positions, or approximately 6 percent of its workforce, with many forecaster and other positions left vacant across the country.” S.REP. No. 113-78, 113 Cong. 1<sup>st</sup> Sess. 38 (2013). According to NAPA, the vacancy rate reached 8 percent by the second quarter of 2013, and warned that “[i]f this trend continues, the NWS is in danger of losing a significant segment of the workforce and will not be able to renew itself at sustainable levels unless it revises staff functions and allocations across programs and offices.” FORECAST FOR THE FUTURE, at 38, 39. This problem was exacerbated when the NWS imposed a freeze on hiring on March 27, 2013. ***Between July 2008 and August 2013, the NWS eliminated 331 non-managerial employees – almost all of who are classified as “emergency/essential.”***

Even with a full complement, Forecast Offices are only staffed for “fair weather.” The 122 Forecast Offices operate 24/7, and most of the time have just two forecasters on duty. These two forecasters are responsible for issuing forecasts

and severe weather warnings for an average of nearly three million people. For example, the two forecasters at the Forecast Office in Sterling, Virginia near Dulles Airport are responsible for the welfare of more than nine million people who live in DC, Maryland, Delaware and Northern Virginia. The two forecasters on duty at the Miami Forecast Office have the responsibility to protect nearly six million people, and the two forecasters on duty at the Tampa Forecast Office are responsible for protecting more than five million people in central Florida.

Thus, there is usually only the minimal number of staff on duty to be alert for severe weather and to call in the rest of the staff when it occurs. According to the National Academy of Sciences, the ability of the NWS to protect the public from the hazards of severe weather is highly dependent on the availability of this additional staff:

The quality of the NWS's warning capability corresponds with its capacity to muster an ample, fully trained local staff at its WFOs [Weather Forecast Offices] as severe weather unfolds. With current staff levels, there are always two people working each shift, 24 hours a day, seven days a week. Though this works well in fair weather, it can become problematic in severe weather, particularly when events develop rapidly under seemingly benign conditions. While managers at individual WFOs generally plan ahead to add sufficient staff to cover forecasted dangerous weather situations, more innocuous weather scenarios that suddenly and unexpectedly "blow up" often lead to shortcomings that are directly attributed to having insufficient manpower. Several recent Service Assessments (e.g., NWS, 2003, 2009, 2010) illustrate the critical role that adequately enhanced staffing (or lack thereof) plays in the success (or weakness) of NWS performance during major events. Appropriate levels of staffing, beyond normal fair weather staffing, during major weather events, are critical for fulfilling the NWS's "protection of life" mission.

NATIONAL RESEARCH COUNCIL OF THE NATIONAL ACADEMIES, THE NATIONAL WEATHER SERVICE MODERNIZATION AND ASSOCIATED RESTRUCTURING: A RETROSPECTIVE ASSESSMENT, 60-61 (2012).

The Service Assessments to which the NRC refers are conducted by the NWS after major storm events where there are multiple fatalities or a major economic impact, in order to evaluate its performance. Assessment teams, composed of experts from within and outside the NWS, generate a report that serves as an evaluative tool to identify and share best practices in operations and procedures, and to identify and address service deficiencies. *Service assessments*

*conducted following eight major storms that occurred between 2008 and 2011 found that the ability of the NWS to protect lives during these major events was compromised due to inadequate staffing at Forecast Offices or River Forecast Centers.<sup>2</sup>*

In May 2013, the NWS issued the Service Assessment on its performance last October during Hurricane/Post-Tropical Storm Sandy. The agency concluded that its performance during this event was hampered by vacancies in critical positions. Eight vacancies at the NWS's Eastern Region Headquarters "limited the ability of the Acting ERH Director to help offices provide DSS [Decision Support Services] and to staff the Regional Operations Center." This assessment revealed that the Upton, NY, Forecast Office (which services New York City and Northern New Jersey) could not provide numerous forecast products, such as tropical storm wind speeds at skyscraper heights, because the Information Technology Officer position was (and still is) vacant. The assessment also noted that there was a "severe staffing shortage" in the branch of the National Hurricane Center that maintains the computer systems, communication support, and software development for the Center. The Assessment made the following recommendation:

NWS should identify and fill critical positions at operational facilities. If these positions cannot be filled, NWS should ensure awareness at higher levels in NOAA that these vacancies may result in reduced levels of service, including constraints and potential failure on the delivery of products and services during the next significant weather event.

U.S. DEPARTMENT OF COMMERCE, SERVICE ASSESSMENT: HURRICANE/POST-TROPICAL CYCLONE SANDY, OCTOBER 22-29, 2012, 43-44 (May 2013).

Although the agency has focused much attention on the development of more sophisticated global weather modeling and the acquisition of supercomputers to run them, investment in the refinement of global models will soon face diminishing returns. Refinement of "mesoscale" models, which predict smaller

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<sup>2</sup> Central U.S. Flooding of June 2008; Southeast U.S. Floods, September 18-23, 2009; Record Floods of Greater Nashville: Including Flooding in Middle Tennessee and Western Kentucky, May 1-4, 2010; Historic Tornadoes of April 2011; Missouri/Souris River Floods of May-August 2011; Middle and Lower Mississippi River Valley Floods of Spring 2011; Remnant of Tropical Storm Lee and the Susquehanna River Basin Flooding of September 6-1-, 2011; Hurricane/Post Tropical Storm Sandy, October 22-29, 2012. These reports can be found at: <http://www.nws.noaa.gov/om/assessments/index.shtml> .

weather phenomena (such as particular storms), has both the greater potential for improvement and the greater societal pay-off. Improved mesoscale models, covering smaller geographic areas, run and interpreted by forecasters and staff at the weather forecast offices, could provide more precise (in both temporal and geographic terms) forecasts of storms as well as more benign weather phenomena. Local forecasts will be more precise and certain – that is to say, more deterministic – rather than being couched in probabilities. It is well and good to know there is a 40 percent chance of rain and for day 5 or 6 of the forecast that is great information. However, if you are pouring concrete in your back yard or landing a plane at Dulles airport tomorrow afternoon you will want to know what time it will rain, how hard it will rain and whether there will be strong winds and lightning. To accomplish this, the NWS will not only need new mesoscale models, but also technicians stationed at local forecast offices who know how and where to site the observational equipment needed to obtain mesoscale model input, and forecasters who know the local and regional micro-climates to interpret and modify model output and communicate that to local authorities.

Congress directed an outside study on the management of the NWS as part of the 2012 Commerce Department Appropriations Act. The study was conducted by the National Academy of Public Administration. Its final report released in May contained many recommendations concerning the agency's human capital assets. Unfortunately, the NWS has failed to yet act upon many of NAPA's findings and recommendations.

For example, NAPA found that the NWS has cut the amount it spends on training by more than half since 2000, and that it now spends less than 1 percent of its budget on training. Almost all training that involves travel, such as on-site training at the National Weather Service Training Center in Kansas City, has since been terminated. Advanced Warning Operations Courses for FY 14 conducted by the Warning Decisions Training Branch in Norman, Oklahoma have been defunded. These courses address science, technology, and human factors (situation awareness, decision making, team communications, and much more). The Advanced Warning Operations Course for winter weather has not been funded for three years. Follow-on training for the new dual polarization radar upgrade has also been defunded. NWS "Incident Meteorologists" who are dispatched to assist wildland firefighting crews are no longer sent to safety training at the National Interagency Fire Center in Boise, Idaho.

One of the major training programs for NWS forecasters is the COMET program run by the University Corporation for Atmospheric Research. The National Weather Service has reduced funding for the COMET Program by over \$2.5M annually since FY 2010.

NAPA recommended that the NWS reexamine its entire training strategy if it hopes to successfully establish a “Weather-Ready Nation.” Without increased investments in training for the National Weather Service in the very near future, the new systems resulting from the Sandy Supplemental Appropriations and the ongoing advancements in satellites, probability prediction and new decision support tools will be limited in providing improvements in national forecast and warning capabilities. These limitations will stem from a forecast staff that lacks advanced knowledge in the optimum application of the advanced technologies.

NAPA also found that a review of the NWS’s current staffing model is warranted, but that “it is important to include the National Weather Service Employees Organization in this analysis process.” FORECAST FOR THE FUTURE at 42. We understand from unofficial sources that this review is well underway at NWS headquarters, but we regret to report that NWSEO has been shut out of this process. This poses a significant risk to the success of whatever plans the agency might develop, and it is not the first time that the NWS has developed plans to change field staffing and operations without the input from employees and outside user groups that is needed for success. As NAPA found:

In reviewing the NWS’s past attempts at change, many required the NWS to spend considerable staff time and resources on a proposal’s development only to see that proposal challenged by an outside force. The Panel notes that many of these efforts did not justify the need for specific change or address mitigation of the impact of such change.

FORECAST FOR THE FUTURE at 33.

The NAPA Panel also found “that the NWS needs to re-frame the labor-management relationship starting at the national level.” The Panel noted that:

NWSEO involvement was crucial to the success of the MAR [Modernization and Associated Restructuring during the 1990s], and continued involvement will be crucial to future NWS successes. . . This will be accomplished by communicating early and often with union officials and ensuring that the union understands they will be viewed as a partner in change.

FORECAST FOR THE FUTURE at 48, 49.

Unfortunately, communications between NWS and NWSEO have grown even less frequent since the NAPA report was issued. Nevertheless, NWSEO and the employees it represents stand ready and willing to assist the agency in re-engineering the NWS for the future.