



FEMA

September 13, 2019

MEMORANDUM FOR: W. Nim Kidd
Chairman, National Advisory Council

FROM: Pete Gaynor 
Acting Administrator

SUBJECT: Response to February 2019 National Advisory Council
Recommendations on the Integrated Public Alert and Warning
System (IPAWS) Subcommittee

This memo outlines the Agency response to the February 15, 2019 recommendations from the National Advisory Council (NAC) on *Modernizing the Nation's Public Alert and Warning System* as required by the IPAWS Modernization Act of 2015 (Public Law 114-143). I appreciate the NAC's support of this critical lifesaving national mission. The NAC report is a collaborative effort of representatives from all levels of government and across many agencies, advocates for those with access and functional needs, private-sector leaders, and subject matter experts.

I discussed the NAC's recommendations with the IPAWS Program Management Office (PMO) to provide direction on my commitment to incorporate as many recommendations as possible with the resources we have available and with full knowledge that we will continue to adapt to meet the challenge of increasingly complex disaster threats.

The following provides our analysis of your recommendations and our plans to improve IPAWS and alert and warning capabilities nationwide.

Analysis

FEMA conducted a detailed analysis of these recommendations to consider the Subcommittee's advice and the needs of our stakeholders. We then integrated the recommendations with existing plans and highlighted current resource gaps impacting implementation.

Your insight into the program is vital to sustained improvement. The NAC did not prioritize any of the 14 recommendations, therefore we have prioritized them internally to correlate cross-cutting themes and recommendations from the subcommittee into logical concepts that align with existing IPAWS program plans to field new capabilities. This methodology allows FEMA and IPAWS PMO to continue managing IPAWS as a unique life-saving resource with the highest reliability, while taking advantage of opportunities to implement selected NAC recommendations.

The IPAWS PMO team had representatives at all Subcommittee meetings. For this reason, we are familiar with the most pressing concerns and areas for improvement. Our prioritization of recommendations is based on several factors including:

- The FEMA Strategic Plan to build a culture of preparedness, and ready the Nation for a catastrophe;
- The National Continuity Program (NCP) Strategic Plan to provide integrated services and capabilities to Federal, State, Tribal, Territorial, and Local (FSTTL) authorities that enable them to alert and warn their respective communities via multiple communications methods, and
- The IPAWS Strategic Plan to increase the awareness and understanding of IPAWS systems and technologies through strategic outreach and engagement, education, and training at all levels.

Future Plans

In discussing future plans, our **major** challenges include **development of consistent policy that aligns with the new recommendations; creation of a new paradigm and framework for alert and warning; and resource shortfalls (both personnel and funding)**. FEMA plans to elicit feedback from all stakeholders to facilitate logical grouping of concepts. The IPAWS team has begun work in relation to subcommittee recommendations that were previously included in IPAWS program plans.

We have summarized and prioritized the following recommendations based on factors listed above to inform creation of detailed requirements and seek necessary funding to implement as many as possible:

1. **Recommendation #9: Develop enforcement actions to address potential misuse and/or breach of IPAWS for consumer fraud and/or abuse with updates to policies and procedures:** This will lead to guidelines and requirements that ensure consumer protection and individual privacy.
2. **Recommendation #1: Identify, develop, promote, and provide education, guidance and best practices on modern and accessible alert/warning message content to enhance Alert Originators' (AOs) emergency messaging:** This will familiarize AOs with how to develop actionable and timely alerts for the public to take appropriate protective actions.
3. **Recommendation #5: Create a 24/7 IPAWS Help Desk:** This will lead to establishment of a 24/7 FEMA IPAWS Help Desk to support Alert Originators (AOs) nationwide in the use of the system.
4. **Recommendation #11: Enable FEMA to Issue Alerts at Alert Originator (AO) Request:** This will lead FEMA to implement existing authorities and establish the capability to issue alerts at the request of IPAWS alerting authorities.
5. **Recommendation #12: Deploy a high availability, high capacity capability to host and permit retrieval of IPAWS files:** This allows consistent retrieval of files shared by local AOs or other IPAWS stakeholders.

6. **Recommendation #6: Work with Partners to Differentiate IPAWS Alerts from non-IPAWS alerts:** This encourages FEMA to work with partners to differentiate authentic IPAWS-distributed alerts from non-IPAWS authorized originators of public alerts.
7. **Recommendation #10: Establish a Technology Solutions Laboratory:** This recommendation outlines the need for FEMA/IPAWS PMO to establish a software technology solutions laboratory to support needed advancements in the display and delivery of IPAWS messages, adapt emerging and new technology-based capabilities for alert and warning, and to insert these improvements into IPAWS.
8. **Recommendation #3: Develop a Multimedia Campaign to Increase Awareness and Knowledge of IPAWS:** This encourages FEMA to increase its level of effort with FSTTL entities to increase broad awareness of IPAWS by implementing a multi-media approach to its alert and warning publicity efforts.

Resource shortfalls required FEMA to transition the remaining recommendations to long term consideration status. FEMA will continue to track the remaining recommendations to look for opportunities to incorporate them into our plans.

The next section lists the fourteen specific recommendations and a brief discussion of IPAWS PMO's analysis for each.

Recommendation 1: [FEMA IPAWS PMO 2nd priority]

FEMA should identify, develop, promote, and provide education, guidance (including message templates and a message handbook), and best practices on modern and accessible alert/warning message content to enhance Alert Originators' (AOs) emergency messaging using IPAWS capabilities (e.g., 360-character long format for Wireless Emergency Alert (WEA) messages). Based on research into alert message effectiveness, such message guidance should stress the inclusion of source, hazard, location personalization, consequences, protective action, protective action time, how protective action reduces consequences, expiration time, style (e.g., specific, clear, and accessible), and dissemination to AOs across the nation.

FEMA Response: This recommendation is *our second priority*. The IPAWS PMO continues to review and update selected education, guidance and training courses across FEMA with alert and warning content. The IPAWS specific training courses in the EMI catalog (IS-247a, IS-251, IS-248) are being revised. New courses will be released in the fall of 2019. The new IS-247 will focus on AO procedures and tactics for sending alerts and warnings via IPAWS. The new IS-251 will focus on policy and planning needs for an alert and warning program targeted to managers and supervisory personnel. These training courses provide base level alert and warning training; however, training specific to local policies and procedures and to the alert origination tool that the AO is using should be implemented at each FSTTL agency.

FEMA continues to develop, promote and provide guidance and best practices. The IPAWS PMO is organizing a small panel of experts to conduct an Effective Alerting Workshop in the summer of 2019 to develop alerting language guidance. The intent is to develop alert and warning message templates that best encourage the public to take appropriate protective actions. This workshop is the beginning of our plans to build a resource library for use by the alert and warning community.

The first enhancement to WEA will occur in the summer 2019. The update, “WEA-2.0” will support 360-character messages, Spanish language messages, and a new WEA category for Public Safety test messages.

Recommendation 2:

FEMA should develop simple alert and warning jurisdictional and multi-jurisdictional plan templates and tools to provide guidance and best practices for emergency alerting. FEMA should also assist SLTT governments to implement and coordinate alert and warning jurisdictional and multi-jurisdictional plans. The development and adoption of clear functional plans that specify public alert triggers based on risk, recommended public action, and alert types will increase audience penetration and understanding.

FEMA Response: Development of simple alert and warning jurisdictional and multi-jurisdictional plans, templates, and tools is a challenging endeavor for FEMA due to the diversity of local governance structures and alert and warning authorities and policies across the country. Individual staff members in the PMO have developed sample plans and provided one-on-one assistance to jurisdictions regarding plans and policies. However, based on this recommendation we will pursue more creative approaches on how to implement this on a broader scale. While the IPAWS PMO does not have resources to fully implement this recommendation, we recognize the need and value to local authorities. The IPAWS PMO encourages alerting authorities to develop and implement sustainable public alert and warning programs for their communities. Although there are some common themes, state, local and tribal plans should individually consider local threats, geography, public resources, and local culture and be in alignment with regional jurisdictional agreements.

Recommendation 3: [FEMA IPAWS PMO 8th priority]

FEMA should work with the FSTTLs to increase broad awareness and knowledge of IPAWS by preparing and implementing a multi-media alert and warning campaign to target potential authorized alerting authorities.

FEMA Response: This recommendation is our *eighth priority*. Over the last three years, the IPAWS PMO has approached outreach to the FSTTLs community by attending over 200 events, both virtually and in person, to meet and educate stakeholders. We created a digital library of resources offering a broad scope of educational materials at www.fema.gov/ipaws. We frequently host training webinars for alerting authorities and software vendors addressing specific training on IPAWS and its capabilities. For public education, the IPAWS PMO created five short vignettes. Additionally, FEMA created public service announcements (PSAs) made available for radio and TV partners, in English and Spanish, to inform the public about WEA.

We continue to seek more effective, and “game changing” approaches to get the word out about IPAWS based on an internal report prepared for the IPAWS PMO. Game changing refers to drastically changing strategies to recruit more local authorities to register for IPAWS. One approach being considered is to develop IPAWS “champions” who already use the system to tell others about the benefits of the platform. As of March 2019, only one third of counties in the United States contained an agency with access to use IPAWS. FEMA has implemented a “Close the IPAWS Gap” initiative among emergency management professionals. This will assist and incentivize local organizations with public safety and alerting roles, especially local jurisdictions to become IPAWS users. This initiative aims to engage with local governments in over 2,000 counties who are not leveraging IPAWS for local public alert and warning today.

We also reviewed recommendations from *The National Academy of Science report on Emergency Alert and Warning Systems: Current Knowledge and Future Research Directions (2018)* to determine ways to encourage more IPAWS engagement.¹ We are working with DHS and other interagency partners on how such a campaign could be funded and executed.

Recommendation 4:

FEMA should provide SMEs to develop training, testing, credentialing, and re-credentialing of AOs including message writing and emergency warning planning. FEMA shall update the IPAWS Memorandum of Agreement (MOA) to require FSTTLs and AOs (credentialed individuals or system operators) to complete continual comprehensive training. Methods of instruction should include distance learning, coursework, and practical applications requiring initial credentialing and re-credentialing terms to access IPAWS systems. Such training should fit into the National Incident Management System (NIMS) framework and be accessible through existing NIMS education and training resources.

FEMA Response: Providing trained alert and warning SMEs is critical for successful effective public alert and warning operations. The IPAWS PMO is not currently resourced to provide individualized training for each current IPAWS user. Currently, we rely on the IPAWS specific and general emergency management training courses in the Emergency Management Institute training catalog, training provided by alerting software (mass notification system) vendors to their customers, and occasionally using IPAWS staff to support individual agency requests for training in person and virtually. Personnel turnover is an issue impacting public alert and warning operational readiness at all agencies. We are seeking methods and resources to incentivize career paths for public alert and warning staff. Skillsets should include a proper mix of emergency management, social science, communications, and technological knowledge capable of creating a large group of alert and warning SMEs. A credentialing program would need to include verifying individual competence, knowledge and adherence to a set of public alert and warning standards that do not currently exist. Additionally, there are currently more than 44 different versions of vendor software being used by AOs to leverage IPAWS. Vendor software conformance or certification must be considered as we continue to make plans for future credentialing of AOs at all levels.

The IPAWS user MOA is being updated to require agencies accessing IPAWS to secure comprehensive training from their alert origination software vendor at least once annually. Starting October 1, 2019, each Common Operating Group (COG) will be required to demonstrate their ability to compose and send a message through IPAWS-OPEN on a monthly basis through the training and demonstration environment.

This new monthly practice requirement combined with the FEMA initiative to enlist FEMA regional and state leadership to help “Close the IPAWS Gap” will help identify proficiency and training gaps.

Recommendation 5: [FEMA IPAWS PMO 3rd priority]

Establish 24/7 FEMA IPAWS Help Desk to support AOs in the use of the system. These resources will provide staffed support, subject matter expertise, and online content when problems or questions arise.

¹ National Academies of Sciences, Engineering, and Medicine. 2018. *Emergency Alert and Warning Systems: Current Knowledge and Future Research Directions*. The National Academies Press, Washington, DC. doi: <https://doi.org/10.17226/24935>.

FEMA Response: The 24/7 Help Desk function is *our third priority* in the list of recommendations. Presently, emergency technical help and assistance to AOs experiencing a problem when trying to send an alert is provided ad hoc by individuals in the IPAWS PMO because there is no established organization that provides this support. FEMA recognizes that this is not an effective or sustainable business practice. The IPAWS PMO is currently documenting the requirement and analyzing support models to provide a 24/7 help desk support function to IPAWS users nationwide. This will produce a program resource request to facilitate adding personnel and funding to stand up a 24/7 Help Desk function.

Recommendation 6: [FEMA IPAWS PMO 6th priority]

FEMA should work with the necessary partners including but not limited to the Federal Communications Commission, AOs and IPAWS distributors to effectively differentiate authentic IPAWS-distributed alerts from authorized originators so they stand out from other non-IPAWS distributed alerts.

FEMA Response: This recommendation is *our sixth priority* and discusses differentiating IPAWS alerts from non-IPAWS alerts. This is important so the public can trust the source providing alerts, warnings, and notifications. This recommendation is further bolstered by the National Academies of Sciences, Engineering, and Medicine report, *Emergency Alert and Warning Systems: Current Knowledge and Future Research Directions*.² It is critical that IPAWS alerts and those generated by local authorities (*i.e.* sheriff, University) can be sent with various types of vendor software and are easily distinguished. The public must trust the source of alerts and warnings, to elicit an appropriate response.

These concerns have potential to erode public trust in the alert system. As we differentiate IPAWS from non-IPAWS alerts, we must continue to work with our federal and industry partners, including the Federal Communications Commission (FCC), to protect the systems used for message dissemination.

Provided resources are obtained, the IPAWS PMO proposes to initiate a project to leverage resources at the Department of Homeland Security (DHS) Science and Technology (S&T), the FCC, National Emergency Management Association (NEMA), SAFECOM, and the National Council of Statewide Interoperability Coordinators (NCSWIC) to scope the problem and produce meaningful research on solutions. This recommendation relates to consumer privacy, protection, enforcement and user trust as core public concerns. Following an analysis of the results of this research, we plan to design an approach that uses technology and incorporates best practices for specific alert and warning practices.

Recommendation 7:

FEMA should engage and educate lawmakers on needed improvements to the Nation's emergency alerting systems by:

² National Academies of Sciences, Engineering, and Medicine. 2018. *Emergency Alert and Warning Systems: Current Knowledge and Future Research Directions*. The National Academies Press, Washington, DC. doi: <https://doi.org/10.17226/24935>.

- Clarifying the need for multiple and redundant cellular, broadcast radio and television, data-cast alerting technologies in mobile devices, vehicles, smart cities infrastructure, and future alerting devices to maximize reliability;
- Highlighting the lack of WEA access in Pacific U.S. territories and other underserved communities to encourage adoption; and
- Encouraging use of public media broadcast capabilities to expand alert, warning, and interoperable communications capabilities to fill gaps in rural and underserved areas.

FEMA Response: Implementation of this recommendation requires increased cooperative engagement in political and congressional circles to advocate for needed improvements to our Nation’s emergency alerting systems.

The Subcommittee Report was released to:

- The head of each agency represented on the Subcommittee;
- The Committee on Homeland Security and Governmental Affairs and the Committee on Commerce, Science, and Transportation of the Senate; and
- The Committee on Homeland Security and the Committee on Transportation and Infrastructure of the House of Representatives.

Our IPAWS PMO staff visited several lawmakers on May 10th to provide an update on the status of the program. Congressional leaders are very familiar with IPAWS, but technological change mandates more frequent face-to-face updates, especially given the scope of new legislation in consideration this year (*i.e.* ALERT Act and READI Act, etc.), and recent high-profile incidents of false alerts.

We plan to continue visiting lawmakers to provide relevant educational material and briefings as a follow up to this report. We plan to provide technology demonstrations to lawmakers on alert and warning, as well as host focused information sharing and/or webinar sessions in Washington DC to leverage our existing PMO staff in this area. This engagement would be far more effective if we had the resources to develop a technology solutions laboratory (see recommendation #12) to demonstrate IPAWS capabilities in a location closer than our existing IPAWS lab located in Indian Head, Maryland. A secondary advantage of this recommendation is its ability to inform Congress of the need for legislation to support implementation of subcommittee recommendations.

The report also highlighted new *datacasting, vehicle, smart cities and expanded use of interoperable communications capabilities to fill the gap in rural and underserved areas as well as the lack of WEA access in Pacific U.S. territories*. These are high priority recommendations we began working immediately following the 2017 hurricane season. We recently met with several fortune 500 companies to discuss how the IPAWS platform can be used in vehicles, highly populated events, amusement parks, concert and music venues, and streaming media platforms. The IPAWS PMO will highlight these items in their next briefing to lawmakers to ensure the issues and needs are identified for immediate action. The Government Accountability Office (GAO) report on the 2017 hurricanes will highlight challenges related to alert and warning when it is completed in the summer of 2019.

Recommendation 8:

FEMA should lead the development of a comprehensive standard set of visual symbols/pictograms, transcripts, and captioning so diverse populations receive and understand alerts.

FEMA Response: The IPAWS Stakeholder Engagement team worked with the National Alliance for Public Safety GIS Foundation to update and maintain a list of 48 symbols for alerts and warnings. The IPAWS PMO strongly believes that all people, to include those without an understanding of the English language and those with access and functional needs, should be able to understand alerts and warnings. The IPAWS team has taken the lead on development of a comprehensive standard set of symbols, pictograms, transcripts, and captioning services to better communicate with diverse populations.

Recommendation 8 leverages this existing work, as we plan to actively engage FSTTL regulatory agencies, jurisdictional entities, and standards making bodies to meet the needs of diverse populations. These milestones should be integrated into development of a multi-media campaign (Recommendation #13: Identifying and Adopting Current and Future Technologies) which includes guidance to Alert Origination Software providers, collaboration with standards development organizations, text to speech, and symbology.

This recommendation paves the way for a FEMA led effort, however, lack of funding and staffing prevents full implementation. FEMA does not have the authority to approve the final products as they cross multiple government and non-government organizations, not only nationally, but internationally. Once developed, these products would be incorporated into testing, training and exercise scenarios. This recommendation is a long term-goal as IPAWS does not currently have the resources to fulfill this recommendation.

Recommendation 9: [FEMA IPAWS PMO 1st priority]

FEMA should work with the Federal Communications Commission, Federal Trade Commission, and any other SMEs to determine guidelines and requirements to ensure consumer protection and individual privacy. FEMA, in consultation with relevant SMEs, should develop enforcement actions, informed by consultation with relevant SMEs, to address potential misuse and/or breach of IPAWS for consumer fraud and/or abuse with updates to policies and procedures.

FEMA Response: FEMA will continue to work with relevant consumer, technical, and individual privacy advocates to protect consumer information. The Smith report highlights “continued public concerns that the government or others may inappropriately track individuals using technology solutions such as these (*i.e.* cell phones).³ This is *our first priority* recommendation. Although all information is generated by alerting authorities and the information is unclassified with no personally identifiable information, it is important to determine if the information released has value beyond individual actions or identities. This concern has been raised regarding Amber alerts. The general conclusion is that because this information is already publicly available, it is not an increased threat to security.

Our team is working with interagency partners to plan another security assessment of IPAWS. The results of this assessment will be used to inform future decisions as well as discussions with the FCC, Federal Trade Commission (FTC), and other consumer protection and privacy advocates to ensure the proper steps are taken to protect information.

³ Geoffrey D. Smith, "Private Eyes Are Watching You: With the Implementation of the E911 Mandate, Who Will Watch Every Move You Make?" 57 Fed. Com. L.J. 705 (2006). Accessed May 18, 2018.
<https://www.repository.law.indiana.edu/cgi/viewcontent.cgi?article=1459&context=fclj>.

Recommendation 10: [FEMA IPAWS PMO 7th priority]

FEMA should establish a technology solutions lab and/or partner with key and non-traditional alert and warning stakeholders to support the display and delivery of IPAWS messages through as many pathways as possible, including emerging technologies.

FEMA Response: This recommendation is our *seventh priority*. A technology solutions lab supports multiple improvements to national alert and warning. A laboratory environment:

- Provides a platform for introducing new and emerging technologies;
- Facilitates a closed test environment that enhances creative thoughts on alert and warning;
- Increases training opportunities for Alerting Authorities (AAs), AOs and SMEs to validate policy, guidance and procedures;
- Supports outreach to senior interagency leadership and Congressional staff to discuss the IPAWS capability and identify gaps where additional capability is needed;
- Supports development of new standards for messaging, symbology, multiple languages and platforms (gaming, billboard, instant messaging, streaming media, autonomous vehicles, artificial intelligence, Internet of things, etc.);
- Allows our existing IPAWS laboratory to continue focusing on real-world issues;
- Offers a local Washington DC area facility to conduct research and development and conduct studies and analysis in coordination with DHS;
- Provides a platform to create, display, demonstrate, and validate proof of concepts using new and emerging alert and warning tools;
- Provides a platform for software vendors to demonstrate new capabilities and simultaneously allows the PMO to conduct market research on new technologies that could improve alert efficacy.

The PMO must conduct an analysis of resource requirements (both staffing and funding) for developing this lab. This analysis will run in parallel with research on space and information technology requirements. There are additional facility requirements (*i.e.* power, lights, etc.) that must also be documented. While this is a resource intense recommendation, the return on investment will be extremely high. This requires close coordination with all stakeholders including FSTTL AAs and appropriate leadership to execute this recommendation.

Recommendation 11: [FEMA IPAWS PMO 4th priority]

FEMA should develop the capacity and policy(s) for redundant alert origination capability to issue alerts at the request of alerting authorities or when they are unable to do so based on established standard operating procedure (SOPs) (delegation/succession of authority).

FEMA Response: Creation of a redundant alert origination capability is *our fourth priority*. This recommendation reflects a scenario whereupon FEMA would send an alert when authorized in the event an AO cannot. The PMO has the technical capability to implement this recommendation with current resources but implementation will require additional resources and policy must be written to ensure authorization is provided to implement all aspects of the solution.

The PMO is in the process of analyzing data from the IPAWS lab regarding specific requests for alert dissemination by IPAWS on an AO's behalf. This information will provide insight on how to

best implement this recommendation. The next step is to determine how FSTTL plans will need to be modified to cover this scenario. This data provides a baseline for creating this redundant capability. We must assess the impact of recommended solutions on how 24/7 help desk capabilities will be implemented, and whether a centralized or decentralized model is used to provide a redundant capability.

Recommendation 12: [FEMA IPAWS PMO 5th priority]

FEMA should deploy a high-availability, high-capacity capability to host and permit the retrieval of files containing multimedia content material or resources referred to within CAP messages provided by AOs.

FEMA Response: We support this recommendation which is *our fifth priority*. The IPAWS PMO is engaged in a phased approach to field this capability. We are creating a public-facing repository in OpenFEMA as an initial step to publish existing, historic, and archived Common Alerting Protocol (CAP) datasets from June 2012 to the present. This site pulls the live IPAWS feed (after the message has been sent), allowing the public to verify the message using a secondary source.

The OpenFEMA site can be used by the public if they did not receive the message for any reason. The dataset is not designed to replace IPAWS, but to complement the system and ensure messages are disseminated through all possible channels. When the OpenFEMA site is down, there is no backup capability (impacting availability). OpenFEMA has only been down twice in the last two years. The IPAWS PMO aims to complete phase 1 by the end of the FY19. Phase 2 will improve the user interface, search capability, and real time geospatial data display. This project is a joint IPAWS PMO and FEMA CIO initiative.

Recommendation 13:

FEMA should provide guidance, specifications, and best practices to make alert and warning more effective by doing the following:

- Provide guidance to Alert Origination Software Providers (AOSPs) to apply social science research and best practices to deliver alerts to the public, including people with disabilities and others with access and functional needs.
- Provide guidance for alerting tools to ensure tools are designed to minimize potential for unauthorized access, errors, or willful sending of errant messages.
- Engage standards-development organizations to define the range of multimedia formats for alert messages and to provide guidance on which multi-media formats are most useful, and what can be included/not included.
- Work with standards-development organizations to update standards to ensure interoperability and compatibility across devices and other channels like social media to support user experience.
- Explore how alert origination applications can use FirstNet to have a more resilient and reliable ability to send alerts to IPAWS.
- Work with dissemination systems operators, developers, and consumer device manufacturers to enable consistency and personalization of messages using the device's capabilities (*e.g.*, geo-targeting, text-to-speech, and symbology).

FEMA Response: The IPAWS PMO provided emergency alerting software vendors guidelines on critical functions in 2015 and 2017 after a review of nationwide errors to avoid recurrence of these errors. The IPAWS PMO continues to move forward in addressing specific issues with vendors as we look toward training and best practices for AOs triggered by numerous discussions since the January 2018 Hawaii false missile alert.

The IPAWS PMO is planning a workshop for the fall of 2019 to determine specific language to make alert and warning more effective. SMEs will gather to consider language best suited to motivate people to take the desired protective action. This guidance will be documented and distributed as a resource for the AOs.

We will continue to work with standards-making bodies to define and update specific alert and warning multi-media formats while still ensuring interoperability across the IPAWS platform.

We held early discussions with the FirstNet team in 2018 on how to leverage first responder experience and knowledge to further enhance alert and warning. Initial thoughts centered around ensuring IPAWS alerts were sent over the IPAWS network to demonstrate alert authenticity. Ultimately, discussion turned toward using first responder experience to provide additional lifesaving information in the aftermath of a disaster. Additionally, one professional suggested that IPAWS create an app that would allow more rapid dissemination of this detailed information that was simple and reliable. This discussion will continue in the future as we work with our DHS, SAFECOM, NEMA and other partners.

Our IPAWS PMO will continue to work with system operators, developers and consumer device manufacturers in creation of effective, consistent messaging and methods for disseminating that information.

Recommendation 14:

FEMA should continue engagement with stakeholders involved in alert and warning notification systems. These engagement efforts will include:

- Addressing topics of technology, strategic planning, standards development, research, resilience, and end to end operability.
- Seeking non-consensus input from stakeholders to apply and improve current capabilities and practices for the development and distribution of alerts reaching people with disabilities and access and functional needs.
- Exploring ways to minimize number of false or erroneous alerts, including identifying capabilities and procedures to send cancellations, corrections, and clarifications to targeted groups.
- Researching how to leverage existing public, private, and non-profit partnerships to improve outreach and awareness.
- Working with the National Weather Service (NWS) and SMEs to evaluate the costs, feasibility, and rationale of delayed dissemination of certain weather, non-weather, and non-imminent hazard alerts.

FEMA Response: This recommendation highlights the need for continued engagement with private and public stakeholders to focus on alert and warning as a key operational discipline composed of many co-dependent entities, policies, and procedures. The existing governance structure is not

effective, and we must give new thought to how this issue can be fixed. The IPAWS PMO is currently managing day-to-day challenges as the number of IPAWS software vendors increases (44 to date). Alert and warning technology continue to be fielded, while cyber threats make it more difficult to adhere to all guidelines while simultaneously keeping development schedules intact.

We have held over 15 webinars to seek input from stakeholders and improve current capabilities that are not limited to people with disabilities or AOs. Because of the feedback on our webinars, the IPAWS PMO is considering creating a blog for AOs.

The PMO is consistently engaged in the use of relevant social media and streaming media platforms (e.g., Netflix, Hulu, Amazon), however we have not yet engaged device manufacturers with plug fests (where devices are tested for interoperability) for government hosted events.

We continue to work with the National Weather Service (NWS) to improve the existing capability. This requires work and discussions on delayed dissemination of certain weather, non-weather, and non-imminent hazard alerts as we prepare to see how new public alerts will be used after the summer WEA software release.

Conclusion

We appreciate and thank the Subcommittee for their dedication and attention to detail as they composed these fourteen recommendations for the IPAWS program. We believe these recommendations greatly align with existing IPAWS program plans to field new capabilities. As we continue to implement recommendations, we look forward to working with new partners to secure greater resources in order to expand the program and allow the IPAWS PMO the ability to continue operating IPAWS as a unique life-saving resource with the highest reliability across the country.