Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Public Safety And Homeland Security	)	
Bureau Seeks Comment On Ways To	)	PS Docket No. 16-32
Facilitate Earthquake-Related	)	
Emergency Alerts	)	
	)	

REPLY COMMENTS OF MONROE ELECTRONICS, INC.

Monroe Electronics hereby submits these reply comments in response to the Public Safety and Homeland Security Bureau's Public Notice ("Public Notice") seeking comment on issues related to the development and deployment of an earthquake early warning system ("EEWS").

Discussion

The Public Notice sought commentary to assist the Commission in generating a report to Congress that describes possibilities for delivering of earthquake-related emergency alerts using FEMA's Integrated Public Alert and Warning System (IPAWS). Specifically, the Commission's task was framed as seeking input on:

> "technical aspects of IPAWS and its associated alerting systems, as well as other alerting schemes with which the Commission has not previously been involved, in order to build a robust record on potential models for delivering earthquake early warning (EEW) to the entire public in fewer than three seconds." [1]

Monroe Electronics, founded in 1954, has been at the forefront of numerous developments in EAS and public warning, introducing some of the first emergency alert

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[1] Public Safety and Homeland Security Bureau Seeks Comment on Ways to Facilitate Earthquake Related Emergency Alerts, DA 16-380 (April 8, 2016) ("Public Notice").

switching capabilities in the cable industry in the 1970s, and introducing the first integrated CAP EAS encoder/decoder in 2004, a full decade before CAP was operationally initiated in the IPAWS OPEN system. With solutions for EAS, accessible emergency public information, multilingual alerting, integrated solutions for public safety agencies, Monroe Electronics has striven to collaborate with its government and private sector partners in advancing the Nation's public warning capabilities, including the Emergency Alert System (EAS) and the Wireless Emergency Alert (WEA) system.

Key staff currently at Monroe Electronics has been extensively involved in the development and evolution of the EAS, IPAWS and WEA systems. Monroe staff has participated in Commission working groups (including the Commercial Mobile Service Alert Advisory Committee - CMSAAC - and the Communications Security, Reliability and Interoperability Council - CSRIC) and proceedings that created the regulatory environment for the EAS systems. Via its involvement in groups like the EAS-CAP Industry Group (ECIG), Advanced Television Standards Committee (ATSC), SCTE/CEA and other entities, Monroe Electronics has taken an active leadership role in industry standard-setting processes related to these systems, as well as new systems that will be deployed in the near future.

Monroe Electronics would desire to collaborate with industry in the examination of the feasibility of various options in the development of an effective EEWS capability. Monroe Electronics provides the significant majority of EAS equipment at broadcast television and cable operations in those states registering the greatest earthquake activity.[2] Further, Monroe Electronics provides CAP and EAS message origination solutions for numerous states and counties in these same areas. These types of EAS solutions could potentially contribute to a separate EEWS mission, either for EEW message transmission or transmission of complementary EAS messaging before or after a seismic event.

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[2] http://earthquake.usgs.gov/earthquakes/states/top_states.php

1 While both WEA and EAS provide an invaluable service to the American public, these systems may not be well suited in the specific role of an EEWS, with the ultra-low latency and other performance requirements stated by the Commission.

Reflecting on the comments of CTIA, Monroe does not feel that either the WEA system or the EAS frameworks are suited for the highly specialized type of mass notification application needed for an effective Earthquake Early Warning System.[3] Both EAS and WEA have proved tremendously useful in helping Americans better respond to a wide range of emergencies, from AMBER alerts to tornado warnings.

Arguably, most of the public warning use cases presented for both EAS and WEA do not require the type of ultra high-response capability an EEWS would require. EEWS may be considered a different capability and mission set than EAS and WEA, with separate requirements and technological responses.

Monroe Electronics supports the Commission's objective of providing Americans with an early earthquake warning system. While the nation's Emergency Alert System provides an invaluable service supported by the voluntary cooperation of broadcast and cable operators, we concur with CTIA that WEA – nor EAS, for that matter – were designed to accomplish what Congress and the Commission may hope to achieve with an EEWS.[4]

- The EAS broadcast system involves built-in latency that may be acceptable for many public warning use cases. In the case of broadcast EAS, the higher latency can be considered to be offset by a very high resilience, which may be an essential attribute in a post-earthquake recovery environment, where IP-based systems may be temporarily disrupted.
- The IPAWS-OPEN CAP architecture relies on a polling mechanism that may be acceptable for many public warning use cases, but is likely not suited to a low-latency objective of 3 seconds or under. It would be inefficient and burdensome

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[3] *Comments of CTIA*, (PS Docket 16-32).

[4] *Comments of CTIA*.

to EAS Participants, for example, to set their CAP EAS equipment to poll the IPAWS-OPEN system with a frequency of 3 seconds or less.

The Emergency Alert System, whether broadcast or CAP based, was designed with certain parameters and requirements (including header tones, attention signals and audio/voice messaging) that make it uniquely powerful for certain public warning scenarios, but conversely may not be well suited for an EEW system with minimal latency as a core design criteria.

- The broadcast EAS relay will not support this three-second objective, since the mechanism of activating EAS from station to station involves a built-in latency of least 8 seconds per hop. This relay system is euphemistically referred to as the "daisy chain".
- The current IPAWS-OPEN system will not easily support this three second objective, since the polling mechanism for EAS devices at EAS participants sites is typically set at 30 seconds as a convention.

While the broadcast FSK-based EAS has certain limitations in regard to the kind of extremely rapid dissemination sought in an EEWS, both the broadcast EAS and CAP EAS may have an important supporting role in tandem to EEWS. In fact, if IP networks are disrupted during a seismic event, even temporarily, the EAS may play an indispensable role in the dissemination of public warning information in a post-event and recovery scenario.

Further, while an EEWS alert may be by nature brief, with very specific and limited information, a subsequent EAS broadcast could be used to follow up with additional information and instructions.

While EAS and WEA are invaluable for their respective missions, an EEWS represents a somewhat separate capability and mission set, potentially characterized by:

- Fully automated machine-to-machine communications in an EEWS, compared with EAS with a relatively higher degree of human involvement
- Much narrower mission set for EEWS, focused on seismic events and tsunamis, compared with a broader public warning role for EAS and WEA.
- Potentially shorter but more directed EEWS messaging compared to longer and

more informative messages in EAS.

- Least latency capabilities in EEWS, compared to greater latency but potentially greater resilience in EAS.

2 A different push-based mechanism may be required for an EEWS, whether part a system administered by a Federal agency, individual state agencies, or collectively on a regional basis. Further exploration of this may be appropriate via the FEMA IPAWS lab.

An EEWS will entail specific design requirements at the alert "aggregator" or server, and the devices intended to consume messaging from the EEWS aggregator. Monroe Electronics concurs with the comments of Art Botterell that push mechanism would generally be preferable over polling techniques, as a means to minimize latencies in alert message delivery. However, Monroe does not suggest any particular technical path for a push-based model of EEW delivery, but does recommend that any such discussion be conducted by the relevant stakeholders.

Monroe Electronics also concurs with Mr. Botterell's suggestion that the FEMA IPAWS Lab maintained by the Joint Interoperability Test Command (JTIC) may be a proper resource in examining configurations for a CAP-based EEWS.[5] Optimally, further analysis of requirements and technical options for an EEWS for a report to Congress would be conducted jointly through a workshop or committee of interested stakeholders, along with technical input form the FEMA IPAWS lab.

While the Commission's inquiry is focused on the IPAWS-OPEN system, which is administered by FEMA, the Commission should not overlook or rule out the possibility of state or regional level efforts to create their own EWS aggregation and dissemination services. The potential for such collaborative and the possibility of state or regional level efforts should not omitted in the Commission's report to Congress.

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[5] Comments of Art Botterell (PS Docket 16-32).

3 The actual experience of EEWS in Japan may not support the delivery of earthquake early warning to the entire public in fewer than three seconds, since different delivery paths entail different delivery times. Further, the Japanese EEWS practice may potentially point towards a complementary – but separate – capability between a U.S. EEWS on the one hand and EAS/WEA on the other.

The operational procedures of the Japanese Meteorological Agency (JMA) and Japanese broadcast and cable operators may provide some reference point in a report to Congress, though the operational, technical, regulatory, and market factors for a U.S. EEWS are likely to be distinct from the Japanese experience in numerous areas.

JMA sends advance warnings, and updated warnings within 60 seconds of the first warning as new data is collected.[6]

- The first warning only includes the names of all forecast regions with a seismic intensity of 3 or more.
- Successive warnings are updated with the location of the earthquake's epicenter, estimated magnitude, and the names of all regions with a predicted seismic intensity of 4 or greater.

This relationship between advance warnings and updated warnings could be analogous to a scenario in the U.S. of an advance warning EEWS, and potential follow-up EAS messaging with additional information (via CAP and broadcast-based EAS, providing redundant survivable paths).

JMA uses media such as outdoor loudspeakers, television and radio networks as well as cellular broadcasting to relay earthquake warnings. Warnings apparently may be disseminated to the general public within 3 to 20 seconds, *depending on dissemination technology*. The general goal of delivering EEWS messaging in 3 seconds, as stated in the Commission's *Public* Notice, may be a variable that should be reexamined in respect to how that goal may apply to different dissemination technologies. That is, the

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[6] Erika Yamasaki: "What We Can Learn From Japan's Early Earthquake Warning System," Scholarly Commons, 2012.

actual experience of EEWS in Japan may not itself indicate a model for delivering earthquake early warning (EEW) to the entire public in fewer than three seconds, since different delivery paths entail different delivery times.

4 The attributes of the current IPAWS-OPEN CAP based system, as well as the current broadcast EAS, make these systems and imperfect fit for the more specialized objectives and rigorous requirements of an EEWS.

Most EAS Participants tend to set their CAP EAS equipment to poll FEMA's IPAWS-OPEN system every 30 seconds to receive a CAP-formatted alerts. This is a convention, rather than the product of a specific requirement or rule. A 30 second polling interval is, parenthetically, a default setting on Monroe Electronics' DASDEC and One-Net emergency content platforms, however this may readily be adjusted by the EAS Participant to poll more or less frequently.

The question of how long it takes an EAS Participant to deliver a CAP-formatted alert received from IPAWS to the public can be deceptively complex to answer.

- The entire process of retrieving a CAP XML message, extracting the audio (if embedded mimeType), and preparing for playout or forwarding to downstream systems can be accomplished within approximately 2-3 seconds.
- The process of retrieving a CAP message and rendering text-to-speech (if no audio is provided) may take up to 2-4 seconds, depending on the length of the message to be converted to speech.
- The process of retrieving a CAP message and downloading an audio file from an external resource (web server) is dependent on file size and any downloading latencies.
- The Commission's Part 11 rules allow EAS Participants up to 15 minutes to transmit an EAS message after receipt. Within that 15 minute window:
    - Participants may transmit that message automatically, if they have configured their EAS device to do so.
    - Participants may manually "hold" such a message until they release it.
    - Some participants may utilize scheduling software to "fit" the EAS alert into a programming window within that allowable time period.

    - Some participants may utilize other forms of middleware or control software that may add some latency in the transmission of the alert.
- The actual transmission of the alert, per FCC rules, consists of the EAS header, attention signal, and then audio of the alert (accompanied by the visual/textual display).

As to the question of how long it may take an EAS Participant to transmit an EAS Protocol-formatted alert to the public through the broadcast-based "daisy chain" architecture, many of the same parameters above apply to the daisy chain. The daisy chain may consist of multiple "hops" from relay point to relay point. Each "hop" will involve a latency of the length of the EAS header and attention signal (approximately 14-16 seconds in length per hop for message receipt and validation). A multiple hop EAS relay involves latency that is inconsistent with the 3-second goal posited in an EEWS.

For the public to receive earthquake-related alerts in less than three seconds, all steps in the IPAWS alerting process tree would need to be accomplished via machine-to-machine communication, with little to no human intervention required. For instance, an EEW – while presumably still a voluntary activity among dissemination channels – may need to be automatically and immediately forwarded (not manually).[7]

Regarding geo-targeting, and the specific question of whether circle-based geo-targeting may be appropriate and feasible for EAS, a very significant portion of the nation's broadcast, cable and IPTV infrastructure is based on the processing of FIPS codes, and not circle- or polygon-based coordinates. The requirement for FIPS based processing is also enshrined in a range of existing international standards and technical specifications[8], and any move to change the basis of geo-targeting in the EAS area

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[7] The Emergency Alert System involves the voluntary collaboration of EAS Participants. The participation of organizations in an EEWS should also be framed in terms of voluntary collaboration among dissemination channels, with appropriate support for voluntary participation.

[8] One example of such a standard is the CEA/SCTE Standard Emergency Alert Messaging

would present the prospect of the inability of some systems to support such a change, while other systems incurring costly and technically challenging upgrades and replacements to embedded plant. That is, regardless of whether or not EAS equipment could be configured to accept and process geo-targeting information other than FIPS, embedded downstream plant may not be capable of accepting such information, meaning that the alternative geo-location data would need to be converted back to FIPS. Such conversion from one geo-location schema to another (circle/polygons into FIPS, specifically) would require standardized approaches and rule sets that do not currently exist. For this reason, the Commission's current geo-targeting rules should not be amended, but that any EEW messaging should contain both granular geo-targeting data (such as circle or polygon information) as well as conventional FIPS geolocation information.

The inclusion of more granular circle and polygon information may be of significant value to other dissemination technologies and receivers, and in the near future, may also be of use for future broadcast alerting capabilities to be provided by ATSC 3.0. Though ATSC 3.0 is still developmental, the emergency of "location-aware" ATSC 3.0 receivers may be a future possibility. These next-generation ATSC receivers may be able to act on both FIPS and polygon/circle geo-targeting info. However, these advanced technologies have not been as yet deployed, and the standards process is – as of the time of writing – still underway.

5 The highly specialized nature of an EEWS raises questions about whether it can fit within the framework of rules governing either the Emergency Alert System or "emergency public information," and whether an EEWS would need to be something outside that framework.

The rules governing the EAS establish certain operational requirements that may limit

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for Cable, J-STD-42-B (also known as CEA-814-B and SCTE 18:2012), October 2013. The CEA/SCTE standard is but one example of a specification that relies on FIPS. Monroe Electronics' EAS equipment (DASDEC and One-Net) support over 50 IP based interfaces (public and proprietary) many of which similarly rely on FIPS for geo-targeting.

the utility of the EAS as part of the initial EEWS. An EEWS may need to be separate from the Commission's Part 11 rules, which – for example - afford most alerts a 15 minute window for retransmission, require the retransmission of a relatively lengthy FSK header and attention signal, and set forth certain textual and audio requirements. The EEW may need to be considered a highly specialized alert, and may need to be exempt from the EAS requirement to retransmit the header and 8 second attention signal, so as to present the core alerting information as rapidly as possible to the public (possibly utilizing different specialized and shorter EEW alert tone).[9]

Conversely, this EEW may need to be considered as something separate from "emergency public information" (EPI) as well, as such emergency information carries the requirement for conversion to audio and insertion into the secondary audio stream, with audible signals in both the primary and secondary audio. The entire process of conforming to the requirements of the 21st Century Video Accessibility Act may run counter to the goal of disseminating alert information to the public within 3 seconds, due to the additional time required to process audio and insert into the secondary audio channel.[10] For this reason, the Commission may wish to consider the extent to which EEW messaging should be considered highly specialized, separate and exempt from the so-called CVAA requirements for emergency public information.

There may be other differences between an EEWS and EAS. For example, in an EEWS, it may be desirable for the audio information for the alert to be pre-recorded and pre-positioned at the edge of the network (for instance in an EAS device that can support EEWS, or other EEWS solution), rather than provided by the originator or

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[9] These EAS requirements are specified at 47 CFR Part 11, at §11.51 (EAS code and Attention Signal Transmission requirements).

[10] In the Matter of Accessible Emergency Information, and Apparatus Requirements for Emergency Information and Video Description: Implementation of the Twenty-First Century Communications and Video Accessibility Act of 2010 (MB Docket No. 12-107), and Video Description: Implementation of the Twenty-First Century Communications and Video Accessibility Act of 2010 (MB Docket No. 11-43).

compiled at the edge as text-to-speech. This may additionally speed up the alerting process.[11]

The question of whether and how EAS can support an EEWS is one that should be addressed in a collaborative manner, with representatives of the broadcast and cable communities, equipment manufacturers, Federal and state agencies, As with EAS, an EEWS would need to involve a consensus-based set of voluntary best practices for dissemination of EEW messaging.

6 An EEWS may be something other than EAS, but an EEWS may be able to leverage some existing components of the EAS system to do "dual duty." Some EAS devices may be provisioned to simultaneously support a push-based low-latency EEWS, while also maintaining their current support for the polling-based IPAWS-OPEN system and the broadcast EAS.

Given the discussion above, an EEW system may by its nature need to be something *other* than the EAS protocol and decoding requirements specified in 47 CFR Part 11. However, some of the same modern equipment used at EAS Participant sites for EAS could potentially be leveraged for an additional EEW mission; enabling users to provide emergency information to the communities they serve on a voluntary basis.

Whether or not currently deployed EAS equipment can fulfill the distinction missions of EAS and EEWS requires additional examination. However, Monroe Electronics' DASDEC and One-Net equipment has the following existing and potential capabilities

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[11] The Japanese EEWS provides an example of short alert messaging, brief tones, and pre-positioned or short standardized audio messaging. Some Japanese TV channels (such as NHK) provides a message display announcing the alert and areas effected, accompanied by two sets of tones (or chimes) and a recorded audio message stating (in Japanese): "*Earthquake early warning. Expect strong tremors*." Some Japanese broadcasters provide an even shorter audio message of: "*Earthquake early warning*." Other Japanese broadcasters do not provide any voice audio announcement, simply alert tones and a text display.

to simultaneously support EAS and certain EEWS functions:

- Can currently support messaging transmitted to this equipment via a number of methodologies, simultaneous to polling services like IPAWS-OPEN, as well as monitoring over-the-air EAS.
- Can be potentially configured to produce a modified alerting output for an EEW mission, whether that includes a specialized alerting tone, pre-positioned EEW text notifications and related information,
- Can host pre-positioned audio and textual messages for automatic playout.
- Could be potentially be updated to support additional USGS alerting information that may not be included in the current IPAWS CAP Profile.
- Could be configured to allow the transmission of EEW alerts immediately upon receipt.[12]

Further analysis of the applicability (and ability to upgrade) certain existing EAS equipment could be conducted voluntarily by manufacturers, pending the further definition of EEWS system requirements.

7 Whether or not an EEWS is eventually deployed, the existing EAS system continues to provide emergency public communications capabilities that may be critical, particularly in a post-event and recovery scenario, where conventional IP communications may be disrupted in part or whole.

To ensure that critical public alerts and warnings still arrive where in the aftermath of a seismic or tsunami event, where IP-based networks may be unavailable for a period, the FSK-based EAS relay should remain a backup line of defense as part of a multiple-

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[12] However, various types of EAS Participants have vastly different response capabilities to such changes. For example, a broadcast radio or most television systems may be able to more easily accommodate immediate transmission of alerts upon receipt, compared to cable and IPTV systems. The latter may present additional challenges in accommodating such immediate, since the embedded plant – and the international standards behind this equipment – was not designed to accommodate this type of alerting capability.

source system. The very nature of the basic EAS system makes it potentially more survivable and usable in the aftermath of such a disaster.

8 Broadcast television may be able to contribute supplementary data transmission capabilities to an EEWS both via today's technologies, as well as in a near-future ATSC 3.0 environment.

As discussed in a OETS, Monroe Electronics and Triveni Digital, via a filing in a separate proceeding on EAS, alternative IP dissemination methods, such as today's ATSC IP data broadcasting ("datacasting"), which can add significant resiliency and reliability to the dissemination of IP based alert messaging.[13] The ability to push IP-based EEWS and EAS messaging over digital television IP data transmission networks may provide yet an additional layer of capability for station-to-station data relay, or station to end user transmission. The Commission's report to Congress may wish to take note of such capabilities. These capabilities, however, would involve the voluntary support of participating broadcasters, and would also likely require some additional funding to implement.

The Commission's report to Congress may wish to consider that, in the near future, ATSC 3.0 next generation digital television may provide the additional benefit of TV set "wake up" functionality, more informative emergency information displays, and the ability to present a range of information and response instructions to the consumer. Monroe does not disagree with the comments of AT&T Services, Inc., which notes that an ATIS study that found the delivery of Japanese EEW alerts may be subject to congestion delays in the wireless networks and that system latency can result in the alerts arriving late.[14] On the other hand, the AWARN Alliance notes the potential to

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[13] *Joint Comments of Ohio Educational Television Stations, Inc., Monroe Electronics, Inc. and Triveni Digital, Inc. on Improvements to EAS Capabilities Using Advanced ATSC Data Broadcasting Capabilities*, PS Docket 15-94, (http://apps.fcc.gov/ecfs/document/view?id=60001886173)

[14] *Comments of AT&T Services, Inc.*, PS Docket 16-32, p.2.

deliver emergency communications via near future ATSC 3.0 transmission systems without similar latency constraints.[15]

Even today, ATSC data transmission can furnish data transmission capabilities. Monroe Electronics' DASDEC is already a core part of a current ATSC 1.0 based CAP data broadcasting system[16], as well as being integral to the ATSC 3.0 advanced alerting ecosystem[17]. Monroe Electronics' equipment is already being integrated into initial ATSC 3.0 environments, providing the stepping-off point to leverage the enhanced public warning capabilities of next-generation digital television. As ATSC 3.0 presents a hybrid or combined broadcast IP environment, the supporting role this technology may play in both an EEWS and EAS environment deserves further exploration.

9 The Commission should include in its report to Congress a realistic assessment of the technical and financial requirements for an EEWS, and the level of government funding that may be required to support the development of such capabilities by industry.

While certain concepts, such as those suggested by the AWARN Alliance, may present viable near future capabilities, we urge the Commission to realistically assess of the costs and funding requirements to develop and deploy an EEWS. We further suggest that the Commission's report to Congress should be realistic about the likely requirement for Federal financial assistance to both public and private sector entities for the development and deployment of an EEWS, lest such an undertaking emerge as an unfunded initiative, or worse an unfunded mandate imposed by the federal government upon industry, and upon state and local governments, even if indirectly.

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[15] AWARN Comments.

[16] Joint Comments of Ohio Educational Television Systems, etc. al.

[17] "*NAB 2016: Seven Vendors Team Up on ATSC 3.0: Digital Alert Systems, Dolby, GatesAir, Harmonic, LG, Triveni and Zenith,"* TV Technology, April 17, 2016.

10 We concur with the suggestion of the AWARN Alliance that a separate working group or committee may be the proper venue for an exploration of the feasibility, requirements and potential options for an EEWS.

Monroe Electronics is a member of the Advanced Warning and Response Network (AWARN) Alliance, and also notes the future potential of advanced standards-based systems, such as those enabled by the ATSC 3.0 ("Next Generation TV") standard, which could potentially contribute to low-latency public notifications for EEWs. We concur with AWARNs suggestion that reducing or eliminating latency in current systems to achieve the congressional goal of three-seconds for distribution and receipt of EEWs in fewer than three seconds – if possible – would require a coordinated exploration among stakeholders to determine the feasibility and overall requirements for such a system.[18]

However, there are a significant number of factors to be examined in conceptualization of an EEW, including a broad range of technical, operational, regulatory and budgetary considerations. The complex nature of these variables cannot be adequately addressed in a single Public Notice or its resultant report. Rather, the development of a report on the feasibility and requirements of an EEWS should involve an interactive dialogue across a range of stakeholders – including state/local government officials, communications service providers, equipment and systems manufacturers, and others. While respectful of the Commission's processes in this matter, the task of adequately framing the challenges and identify the feasibility of an EEWS in a report would better be accomplished through a working group or advisory committee consisting of qualified stakeholders.

11 Conclusion

Monroe Electronics supports the suggestion to convene working groups and/or an advisory committee to assist the Commission in completing its report to Congress, as outlined in the *Public Notice*, or for the purposes of further investigating the feasibility

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[18] *Comments of the AWARN Alliance,* (PS Docket 16-32).

of an EEWS. As discussed in this filing, it may be the case that neither the regulations governing nor the approaches implementing EAS nor WEA are a fit for the highly specialized requirement of an EEWS. However, at least in the case of EAS, these systems may provide a supporting role providing supplemental public warnings to an EEW message, or critical public warning EAS capabilities in the aftermath and recovery phases of an emergency, beyond the narrow scope of an EEWS. Further, it deserves consideration in the Commission's report to Congress whether certain core EAS assets, such as EAS equipment, could be upgraded to perform dual duty for both EAS and EEWS mission sets.

The significant majority of EAS equipment at broadcast television and cable operations in those states registering the greatest earthquake activity is provided by Monroe Electronics. Monroe Electronics' systems are also currently in use at numerous government, campus, and enterprise sites in these same states. Monroe Electronics would be prepared to participate in any dialogue about the feasibility and requirements of an EEWS, and the practicality of leveraging EAS assets in support of such a system.

Monroe Electronics thanks the Commission for its public consultation and urge the careful consideration of the positions offered herein as the agency proceeds in its efforts prepare its report to Congress on EEWS.

Respectfully submitted,

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