

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Public Safety and Homeland Security Bureau	)	PS Docket No. 16-32
Seeks Comment on Ways to Facilitate	)	
Earthquake-Related Emergency Alerts	)	
	)	
Amendment of Part 11 of the Commission's	)	PS Docket No. 15-94
Rules Regarding the Emergency Alert System	)	
	)	
Wireless Emergency Alerts	)	PS Docket No. 15-91

**COMMENTS OF CTIA**

Thomas C. Power  
Senior Vice President, General Counsel

Scott K. Bergmann  
Vice President, Regulatory Affairs

Brian M. Josef  
Assistant Vice President, Regulatory Affairs

**CTIA®**  
1400 Sixteenth Street, NW  
Suite 600  
Washington, DC 20036  
(202) 785-0081

May 9, 2016

## TABLE OF CONTENTS

I.	INTRODUCTION AND SUMMARY.....	1
II.	THE UNIVERSE OF EMERGENCY ALERTING SYSTEMS IS DIVERSE AND MULTI-LAYERED.....	3
III.	NUMEROUS ENTITIES ARE INVOLVED IN THE DELIVERY OF EMERGENCY ALERTS OVER WIRELESS PLATFORMS. ....	4
IV.	IN REPORTING TO CONGRESS ON LATENCY ISSUES, THE COMMISSION SHOULD BE MINDFUL OF TECHNICAL LIMITATIONS AND REALITIES.....	6
V.	A VARIETY OF DEVICES AND SERVICE PLANS ENABLE RECEIPT OF WIRELESS EMERGENCY ALERTS.....	9
VI.	CONCLUSION.....	11

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Public Safety and Homeland Security Bureau	)	PS Docket No. 16-32
Seeks Comment on Ways to Facilitate	)	
Earthquake-Related Emergency Alerts	)	
	)	
Amendment of Part 11 of the Commission’s	)	PS Docket No. 15-94
Rules Regarding the Emergency Alert System	)	
	)	
Wireless Emergency Alerts	)	PS Docket No. 15-91

**COMMENTS OF CTIA**

**I. INTRODUCTION AND SUMMARY**

CTIA hereby submits these comments in response to the Public Safety and Homeland Security Bureau’s *Public Notice* seeking comment on issues related to the development and deployment of earthquake early warning (“EEW”) systems,<sup>1</sup> as well as the Commission’s *Notice of Proposed Rulemaking* (“NPRM”)<sup>2</sup> seeking comment on improvements to the nation’s existing public alert and warning systems.<sup>3</sup> CTIA and its members have played an active role in the

---

<sup>1</sup> *Public Safety and Homeland Security Bureau Seeks Comment on Ways to Facilitate Earthquake-Related Emergency Alerts*, Public Notice, DA 16-380 (April 8, 2016) (“*Public Notice*”).

<sup>2</sup> *Amendment of Part 11 of the Commission’s Rules Regarding the Emergency Alert System, Wireless Emergency Alerts*, Notice of Proposed Rulemaking, FCC 16-5 (Jan. 28, 2016) (“*NPRM*”).

<sup>3</sup> CTIA® ([www.ctia.org](http://www.ctia.org)) represents the U.S. wireless communications industry. With members from wireless carriers and their suppliers to providers and manufacturers of wireless data services and products, the association brings together a dynamic group of companies that enable consumers to lead a 21st century connected life. CTIA members benefit from its vigorous advocacy at all levels of government for policies that foster the continued innovation, investment and economic impact of America’s competitive and world-leading mobile ecosystem. The association also coordinates the industry’s voluntary best practices and initiatives and convenes

development of emergency alerting systems, and today U.S. consumers have access to a wide variety of emergency alerting services. In particular, Wireless Emergency Alerts (“WEA”) provide timely and accurate emergency alerts to consumers’ mobile devices, and the framework developed by the wireless industry for emergency alerting has resulted in the transmission of timely alerts to millions of U.S. wireless subscribers.

More recently, Congress has asked the Commission to submit a report on what regulatory and statutory changes would be necessary to ensure that earthquake-related emergency alerts using the Integrated Public Warning System (“IPAWS”) and other associated alerting systems can be delivered to and received by the public in fewer than three seconds, with the expectation that wireless providers will play a key role.<sup>4</sup> As explained herein, IPAWS helps to support a diverse and multi-layered universe of alerting systems, in which commercial wireless carriers offer one component service. While CTIA shares the Commission’s and Congress’ goal of providing consumers with an early earthquake warning system, WEA was not designed to accomplish what Congress and the Commission hope to achieve with EEW systems.

With respect to EEW alerts, in these comments CTIA provides the following guidance to the Commission:

- Mobile carriers’ ability to impact the latency of an emergency alert is relatively limited. This is because an emergency alert passes through several layers prior to a wireless carrier being able to disseminate it. The numerous steps and entities that comprise the WEA architecture preclude the three-second latency envisioned by Congress. Indeed, no nation has developed an earthquake warning system that is both integrated with mobile networks and achieves less than three-second latency.

---

the industry’s leading wireless tradeshow. CTIA was founded in 1984 and is based in Washington, D.C.

<sup>4</sup> *Public Notice* at 1.

- Moreover, the Alliance for Telecommunications Industry Solutions (“ATIS”) recently published a feasibility study affirming that WEA is not the appropriate platform for delivery of EEW. ATIS instead proposed an alternate architecture apart from WEA. Notably, ATIS concluded that even this alternative architecture could only permit warnings to be disseminated within approximately 20 seconds after the EEW notification is received by a commercial mobile provider.

For these reasons, the Commission should report to Congress that three-second latency is not achievable at this time. In addition, CTIA offers its views on a number of subsidiary issues raised by the Commission regarding the ability of certain technologies and devices to receive emergency alerts.

## **II. THE UNIVERSE OF EMERGENCY ALERTING SYSTEMS IS DIVERSE AND MULTI-LAYERED.**

The Commission’s report to Congress should reflect the fact that the IPAWS system (the focus of Congress’ inquiry) is diverse and multi-layered and that there are numerous entities involved in the transmission of each emergency alert, including those sent via WEA. As explained below, the IPAWS supports a variety of alerting platforms, including but not limited to WEA alerts.

Over the years the Commission and the communications industry have worked collaboratively to develop a wide variety of emergency alerting services. This success can be traced to the substantial efforts by the communications industry to develop standards and protocols that enable the delivery of critical information in a prompt fashion. In the instant proceeding, Congress has charged the Commission with reporting on the use of IPAWS to facilitate the delivery of EEWs. IPAWS serves as a platform for delivery of a variety of alerts, not just WEA alerts. As the Commission notes, IPAWS receives alerts from authorized Federal, state, and local sources and aggregates alerts for delivery over a variety of platforms. The Emergency Alert System (“EAS”), for example, provides alerts over broadcast platforms such as satellite, television, and radio. Meanwhile, WEA are geographically-targeted 90-character alerts

that are transmitted over commercial mobile provider networks to WEA-capable end user devices.<sup>5</sup> Separately, IPAWS provides alerts for broadcast over the National Oceanic and Atmospheric Administration Weather Radio<sup>6</sup> and for distribution over the Internet.<sup>7</sup> The IPAWS Open Platform for Emergency Networks (“IPAWS-OPEN”) receives and authenticates messages transmitted by alerting authorities using the Common Alerting Protocol and routes them to compliant public alerting systems, including state and local warning systems.<sup>8</sup> Emergency alerts delivered via IPAWS include shelter-in-place alerts, AMBER alerts, and severe weather warnings. While CTIA and its members are primarily engaged with WEA, it is important to note that WEA is one of many services available to the public and relied upon by consumers to obtain timely emergency information.<sup>9</sup>

### **III. NUMEROUS ENTITIES ARE INVOLVED IN THE DELIVERY OF EMERGENCY ALERTS OVER WIRELESS PLATFORMS.**

The journey of a WEA message from origin to delivery involves several steps, most of which are outside the control of wireless carriers. Take, for example, a shelter-in-place alert. In that situation, the relevant public safety agency must first identify the information that needs to be sent and the target area that should receive the alert. Next, the agency sends an alert using the

---

<sup>5</sup> *Id.*

<sup>6</sup> FEMA, Integrated Public Alert & Warning System, at <https://www.fema.gov/integrated-public-alert-warning-system>.

<sup>7</sup> *Public Notice* at 3.

<sup>8</sup> *Id.*

<sup>9</sup> Additionally, CTIA notes that social media platforms, including Twitter, Google and Facebook also are being increasingly used for the transmission of emergency information. *NPRM* at ¶ 11. As unregulated services, these services have evolved in response to consumer demand and are not shackled by technological dictates of regulation, but instead can adapt to meet consumer needs.

Common Alerting Protocol to a FEMA-operated Alert Aggregator.<sup>10</sup> The Alert Aggregator authenticates and validates the alert to ensure the alert is legitimate and coming from an authorized alert originator, and delivers it to FEMA's Alert Gateway.<sup>11</sup> The FEMA Alert Gateway then converts the alert to a format that is compatible with mobile devices.<sup>12</sup> These steps greatly exceed three seconds. Only then does the FEMA Alert Gateway disseminate the alert over a secure Internet-based interface to a participating mobile provider's Alert Gateway for distribution to customers.<sup>13</sup> It is at this point that the wireless carrier first gains control over distribution of the emergency alert. Up until this point, the wireless provider has no ability to control the timing associated with each step of the delivery chain. Once the wireless provider receives the alert over its Alert Gateway, the provider distributes the shelter-in-place alert to its consumers in the target area specified by the agency using cell broadcast technology, and consumers receive the warning to shelter-in-place from their mobile devices.

While as a general matter wireless carriers are extremely limited in their ability to control the latency of a WEA alert, an EEW alerting system using IPAWS would complicate latency matters even further. In the context of EEW systems, additional steps will need to be added to the process of creating and transmitting alerts that must be accounted for when predicting latency. In particular, a sensor network must detect earthquake activity, analyze the sensor input to determine whether an earthquake is occurring, and finally determine which geographic areas

---

<sup>10</sup> *NPRM* at n. 31.

<sup>11</sup> *Id.*

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*

should receive the alert.<sup>14</sup> Again, wireless carriers have no ability to influence the speed with which these initial steps are carried out. Further, these alerts will presumably be originated by the United States Geological Survey (“USGS”) an agency that has not previously been charged with originating emergency alerts and does not have an existing connection to IPAWS.<sup>15</sup> It can therefore be expected that there may be additional latency considerations at play in the context of an EEW system and, as explained further below, the Commission should consider developing a separate framework for EEW messages, rather than attempting to fit it into the existing WEA system.

In evaluating and reporting to Congress on latency issues, it is essential that the Commission recognize that mobile providers only control the transmission of an emergency alert for a portion of its journey from the origination point to the end user. Therefore, mobile service providers cannot be charged with sole control of and responsibility for latency. As explained above, there are numerous, critical steps and decisions that need to be made before a wireless carrier receives a message. The Commission’s report to Congress should reflect these logistical and technical realities.

#### **IV. IN REPORTING TO CONGRESS ON LATENCY ISSUES, THE COMMISSION SHOULD BE MINDFUL OF TECHNICAL LIMITATIONS AND REALITIES.**

The WEA platform was not designed to provide the three-second latency contemplated by Congress, nor is it capable of achieving this benchmark. In fact, there currently exists no emergency alerting platform that provides or can be expected to provide three-second latency. Only one nation has an EEW system that uses cellular networks, and it too has not achieved

---

<sup>14</sup> Alliance for Telecommunications Industry Solutions, *Feasibility Study for Earthquake Early Warning System*, at 17 (2015) (“ATIS Study”).

<sup>15</sup> *Public Notice* at 6.

three-second latency. ATIS concurs, and has concluded that WEA is not the appropriate platform for delivery of EEW. While ATIS has proposed an alternative model, this too would not be capable of three-second latency. For these reasons, the Commission should report to Congress that three-second latency is not achievable at this time.

The limitations of WEA are affirmed by other nations' experiences with deploying EEW systems. While several nations have deployed or are developing earthquake warnings at some level, only Japan's Earthquake and Tsunami Warning Service ("ETWS") has an integrated capability to broadcast EEW notifications via commercial cellular networks.<sup>16</sup> In the case of Japan, alerts are issued in two phases. First, the Japan Meteorological Agency will send an initial notification via mobile networks.<sup>17</sup> This message is broadcast within 4-10 seconds of being received by the mobile network.<sup>18</sup> A second, more detailed notification is sent later, and this secondary notification does not have as strict a latency requirement as the primary notification.<sup>19</sup> In other words, the vast majority of nations have not developed a comprehensive EEW notification system that transmits across commercial mobile networks, and the one nation that has deployed such a system (Japan) is not able to deliver alerts within the three-second latency requirement contemplated by Congress.

The ATIS Feasibility Study affirms that three-second latency is not achievable using existing technologies and that WEA is not the appropriate platform for delivery of EEW. ATIS noted that WEA typically receives and broadcasts alerts within several minutes, with latency

---

<sup>16</sup> *ATIS Study* at 14.

<sup>17</sup> *Id.* at 15.

<sup>18</sup> *Id.*

<sup>19</sup> *Id.*

potentially as long as ten minutes.<sup>20</sup> Instead, ATIS has envisioned an alternative architecture for EEW alerts. Under this framework, first an “Earthquake Alert Center” detects an earthquake event and determines whether to issue an earthquake early warning notification to wireless cell phones based on established protocols.<sup>21</sup> The Earthquake Alert Center then sends participating mobile service providers a notification request which contains the associated alert.<sup>22</sup> The mobile service provider identifies cell sites within the network – based on geo-targeting information provided by the Earthquake Alert Center – that will enable the broadcast of the EEW notification to the best approximation of the specified alert area.<sup>23</sup> The mobile service provider infrastructure then broadcasts the EEW notification from the cell sites in the broadcast area using a broadcast capability compatible with LTE networks.<sup>24</sup> And finally, under the ATIS framework, EEW-capable cell phones receive and display the notification.<sup>25</sup> ATIS concluded that EEW alerts using its recommended solution would permit warnings to be disseminated within approximately 20 seconds.<sup>26</sup> Notably, ATIS’ calculation of the latency of its proposed system does not factor in authentication or verification of the alert message through the Alert Aggregator and Alert Gateway functions, two components that are crucial to the validation and security of the WEA

---

<sup>20</sup> *Id.* at 24.

<sup>21</sup> *Id.* at 20-22.

<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

<sup>24</sup> *Id.* This differs from WEA because the alerts come from the Earthquake Alert Center, a different originator that does not exist at this time, and do not utilize the WEA architecture, which include the Alert Aggregator and Alert Gateway functions.

<sup>25</sup> *Id.*

<sup>26</sup> *Id.* at 20.

process. And, importantly, this time estimate is based upon the development and implementation of a completely new EEW system that ATIS estimates would take as long as seven years to design and begin to deploy.<sup>27</sup> Thus, further study and evaluation is needed to gauge whether even this 20 second estimate may be realistic.

Therefore, in light of the fact that WEA is not viable for delivery of EEW alerts, the ATIS-recommended solution is estimated to take 20 seconds, and no better technology currently exists, the Commission should report to Congress that three-second latency is not achievable at this time.

**V. A VARIETY OF DEVICES AND SERVICE PLANS ENABLE RECEIPT OF WIRELESS EMERGENCY ALERTS.**

Finally, CTIA takes this opportunity to provide additional information regarding the receipt of emergency alerts via a broad range of devices and service plans. In the *Public Notice* and *NPRM*, the Commission has asked a variety of questions related to the ability of users to receive emergency alerts when operating non-mobile handset devices or subscribing to alternate service plans. Specifically, in the *Public Notice* the Commission asked whether prepaid customers or Wi-Fi only customers would be able to receive alerts,<sup>28</sup> while in the *NPRM* the Commission sought comment on the ability of LTE tablets to receive alerts.<sup>29</sup> CTIA addresses each in turn.

***Prepaid Services.*** In the *Public Notice*, the Commission asked whether customers of prepaid services or services provided by resellers currently receive WEA alerts, and whether they

---

<sup>27</sup> *Id.* at 25.

<sup>28</sup> *Public Notice* at 5.

<sup>29</sup> *NPRM* at ¶ 93.

would experience greater delays in the delivery of EEWs.<sup>30</sup> CTIA's understanding is that as long as the device and network in question are compatible with WEA and/or EEW requirements, alerts should flow through to these devices without additional delay. The nature of the user's service plan alone should have no impact on their ability to receive alerts.

***Wi-Fi Only Devices.*** In the *Public Notice*, the Commission also asked whether users of Wi-Fi only devices would receive WEA alerts and/or EEW messages.<sup>31</sup> Both the WEA and ATIS' proposed EEW message architecture involve the delivery of messages over mobile carrier networks. Because Wi-Fi only devices are not connected to mobile networks and are not part of the WEA architecture, they would not receive WEA messages. Likewise, any EEW system that involved the delivery of alerts over carrier networks would not reach Wi-Fi only devices.

***LTE Tablets.*** In the *NPRM*, the Commission has asked whether LTE-enabled tablets currently support the distribution of WEA messages.<sup>32</sup> The support of WEA by LTE-enabled tablets has not been standardized nor fully developed and tested in the devices. Data-only devices do not typically support WEA capability. It is therefore premature at this time for CTIA to comment on the ability of all LTE-enabled tablets to provide WEA messaging. Additionally, even if there are LTE-enabled tablets with the capability to receive cell broadcast messages through the network infrastructure, additional mobile device behavior standards and device development are required to support the handling and presentation of WEA messages.

---

<sup>30</sup> *Public Notice* at 5.

<sup>31</sup> *Id.*

<sup>32</sup> *NPRM* at ¶ 93.

## VI. CONCLUSION.

CTIA agrees with the Commission and with Congress that EEW systems hold tremendous, life-saving potential. CTIA and its members have been among the many contributors to the development and maintenance of emergency alerting systems, and look forward to future collaboration in the EEW space. However, development of EEW is still in its inception, and the Commission should make clear to Congress that three-second latency is not currently achievable, and that the public interest may be best served by starting a new system from the ground up, rather than grafting EEW onto the existing WEA system.

Respectfully submitted,

By: /s/ Brian M. Josef

Brian M. Josef  
Assistant Vice President, Regulatory Affairs

Thomas C. Power  
Senior Vice President, General Counsel

Scott K. Bergmann  
Vice President, Regulatory Affairs

CTIA  
1400 16<sup>th</sup> Street, NW, Suite 600  
Washington, D.C. 20036  
(202) 785-0081

May 9, 2016