

**Before the
Federal Communications Commission
Washington, D.C. 20554**

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| In the Matter of |) | |
| |) | |
| Wireless Emergency Alerts |) | PS Docket No. 15-91 |
| |) | |
| Amendments to Part 11 of the Commission's Rules |) | PS Docket No. 15-94 |
| Regarding the Emergency Alert System |) | |

FURTHER NOTICE OF PROPOSED RULEMAKING

Adopted: April 21, 2022

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Reply Comment Date: (60 days from the date of publication in the *Federal Register*)

By the Commission: Chairwoman Rosenworcel and Commissioners Carr and Starks issuing separate statements:

I. INTRODUCTION

1. Since its launch one decade ago, Wireless Emergency Alerts (WEA) has become an essential part of America's emergency preparedness. WEA has been used more than 62,000 times to warn the public about dangerous weather, missing children, and other critical situations – through alerts on compatible cell phones and other mobile devices. Currently, 76 Commercial Mobile Service (CMS) providers have voluntarily elected to participate in WEA.¹ In the past decade, as of April 7, 2022, 639 emergency management agencies across the nation have issued 62,819 WEA alerts.² WEA is credited with 120 successful child recoveries.³ In short, WEA messages save lives, whether it is by providing

¹ See FCC, *Master WEA Registry*, <https://www.fcc.gov/files/weamasterregistry112019.xls> (last visited Mar. 25, 2022).

² See Email from Donica Allen, Stakeholder Engagement Branch Chief, IPAWS NCP, FEMA, to James Wiley, Deputy Chief, Cybersecurity and Communications Reliability Division, Public Safety and Homeland Security Bureau, Federal Communications Commission (Apr. 12, 2022) (on file with author) (stating in addition that 1,666 unique alerting authorities were authorized to use WEA as of April 7, 2022).

³ See National Center for Missing and Exploited Children, *AMBER Alerts: Get Help Now*, <https://www.missingkids.org/gethelpnow/amber> (last visited Mar. 30, 2022).

⁴ See, e.g., Ryan Prior, *During Late Night Storms, Phone Alerts Are Saving Lives in Ways TV and Radio Warnings Can't*, CNN (May 29, 2019), <https://www.cnn.com/2019/05/29/us/weather-alert-tech-saved-lives-trnd/index.html> (“A study in the journal *Weather and Forecasting* [found] that tornadoes occurring at night were 2.5 deadlier than those occurring during daytime hours. The researchers saw the fact that people were sleeping, and were therefore unwarned, as perhaps the biggest contributor to nocturnal tornado fatalities ‘We are getting alerts in time to be able to relate to our people in plenty of time to save lives,’ [LaSalle Parish sheriff Scott] Franklin told the NWS. ‘The alerts on the storm saved at least 20 lives that I know of in LaSalle Parish. You can’t put a price tag on that.’”); National Weather Service, *Johns Island, SC Tornado*, (Sept. 25, 2015), <https://www.weather.gov/chs/JohnsIslandTornado-Sep2015> (“Several people in the worst hit area got to a safe place after receiving warning on their cell phones through the wireless emergency alerts”); *Wireless Emergency Alert ‘Saved Lives, Prevented Injuries,’* WCVB5 ABC (June 24, 2015) <https://www.wcvb.com/article/wireless-emergency-alert-saved-lives-prevented-injuries/8066962> (“A Meteorologist with the National Weather Service who

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early warnings of imminent natural disasters such as tornadoes⁴ or by helping to recover children who have been abducted.⁵

2. As the Federal Communications Commission (Commission) marks WEA's tenth anniversary,⁶ the Commission seeks to build upon WEA's demonstrated record of success by improving WEA's effectiveness. Notwithstanding WEA's many successes, there is room for growth. WEAs are not always received by people for whom they are intended.⁷ WEAs may be delivered too slowly to be effective in certain important use cases,⁸ and WEAs may be delivered outside of the targeted area, resulting in consumers receiving a message that is not relevant to that geographic area.⁹ Moreover, we are not aware of any WEA stakeholder that has developed sufficient end-to-end visibility into the WEA system to measure it reliably and transparently. As a result, the record shows that emergency management agencies may be declining to use WEA in situations where it could save lives because they lack information about, and confidence in, how WEA works in practice.¹⁰ We seek to strengthen WEA's

confirmed a tornado hit parts of Wrentham Tuesday afternoon said wireless alerts that were sent to phones helped save people's lives and prevented injuries.”).

⁵ See, e.g., John Fischer, *15-Year-Old Hero with Cellphone Helps Rescue Kidnapped Infant After AMBER Alert*, ABC News (Oct. 31, 2014), <https://abcnews.go.com/US/15-year-hero-cellphone-helps-rescues-kidnapped-infant/story?id=26604395>; Florida Department of Law Enforcement, *2016 Success Story*, <https://www.fdle.state.fl.us/Amber-Plan/Documents/2016SuccessStory.aspx> (last visited Mar. 29, 2022); *'I'm just glad we found your baby': Women Find Missing Child After Receiving AMBER Alert*, WSYX ABC 6 (Feb. 9, 2021), <https://abc6onyourside.com/news/local/women-find-missing-alpha-kamara-columbus-ohio-2-9-21>.

⁶ See Warning, Alert, and Response Network Act, Pub. L. No. 109-347, 120 Stat. 1884, Title VI, §§ 601-06 (2006) (codified at 47 U.S.C. §§ 1201-05); William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. No. 116-283, 135 Stat. 3388, § 9201 (2021) (codified at 47 U.S.C. §§ 1201, 1206); PSHSB, *New Cell Phone Weather Alerts Already Protective Lives* (Aug. 30, 2012), <https://www.fcc.gov/news-events/blog/2012/08/30/new-cell-phone-weather-alerts-already-protecting-lives>.

⁷ WEA test results reported to the Commission since 2018 demonstrate that WEA fails to deliver emergency alerts to at least 1 in 10 people. See, e.g., PSHSB, Report: August 11, 2021 Nationwide WEA Test at 3 (2021), <https://docs.fcc.gov/public/attachments/DOC-378907A1.pdf> (2021 Nationwide WEA Test Report).

⁸ See ShakeAlert, *Wireless Emergency Alert System*, <https://www.shakealert.org/implementation/wea/> (last visited Jan. 26, 2022) (“For people near the epicenter [of an earthquake,] alerts will usually arrive after the shaking has been felt.”).

⁹ PSHSB has received several reports that emergency management agencies have not used WEA or have stopped using WEA because of their concerns about its inaccuracy. See, e.g., Shannon Najmabadi, *First Phone Alert for the Marshall Fire Sent 42 Minutes After I Started—And Only to 215 Contacts*, Colorado Sun (Jan. 6, 2022), <https://coloradosun.com/2022/01/06/marshall-fire-evacuation-911/> (stating that Boulder County's Office of Emergency Management had not completed their authorizations to use WEA in part because of concerns about the accuracy of WEA geotargeting); *Utah Discontinues Wireless Emergency Alerts at State Lines* (Apr. 13, 2020), <https://coronavirus.utah.gov/utah-discontinues-wireless-emergency-alerts-at-state-lines/> (stating that the Utah Division of Emergency Management discontinued the use of WEA for COVID-19 messaging near state lines because of geographic overshoot); E-mail from Simone Ramel McKay, Program Manager, Spokane County Emergency Management, to Nicole McGinnis, Deputy Chief, Public Safety and Homeland Security Bureau, FCC (Aug. 9, 2021) (on file with author) (expressing concern about the accuracy of WEA geo-targeting); see also 47 CFR 10.450(a) (“A Participating CMS Provider must deliver any Alert Message that is specified by a circle or polygon to an area that matches the specified circle or polygon. A Participating CMS Provider is considered to have matched the target area when they deliver an Alert Message to 100 percent of the target area with no more than 0.1 of a mile overshoot. If some or all of a Participating CMS Provider's network infrastructure is technically incapable of matching the specified target area, then that Participating CMS Provider must deliver the Alert Message to an area that best approximates the specified target area on and only on those aspects of its network infrastructure that are incapable of matching the target area.”).

¹⁰ Over 1,600 emergency management agencies are authorized to use WEA but only 619 have ever done so. Consumer groups, the National Center for Missing and Exploited Children, and emergency management agencies

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effectiveness through the development of performance metrics and reporting standards that will help all stakeholders understand the effectiveness of WEA in their particular area, as well as identify areas for improvement where needed. In particular, we propose that CMS providers who choose to participate in WEA (Participating CMS Providers) file public reports with the Commission on important attributes of WEA's performance on which we seek comment below: its reliability, speed, and accuracy.¹¹ We believe that gaining visibility into WEA's key performance indicators and developing a shared understanding among emergency management agencies and the public regarding the system's capabilities will help promote its use and improvement.

II. BACKGROUND

3. The Warning Alert and Response Network (WARN) Act establishes WEA as a voluntary system in which CMS providers may elect to participate and gives the Commission authority to adopt "relevant technical standards, protocols, procedures and other technical requirements . . . necessary to enable commercial mobile service alerting capability for commercial mobile service providers that voluntarily elect to transmit emergency alerts."¹² Pursuant to this authority, the Commission has adopted requirements to prescribe WEA capabilities, WEA testing, and WEA election procedures.¹³ While participation by wireless providers is voluntary, those that offer the service must adhere to the technical and operational requirements established by the Commission. WEA is a tool for authorized federal, state and local government entities to geographically target alerts and warnings to WEA-capable mobile devices of Participating CMS Providers' subscribers.

4. WEA works as follows: an alert originator¹⁴ uses Federal Emergency Management Agency (FEMA)-approved alert origination software to send a WEA Alert Message¹⁵ in the Common Alerting

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state that performance requirements and reporting are necessary to give them enough confidence to use WEA and to enable them to use WEA more adeptly. *See* APCO International, Comments, PS Docket No. 15-91, at 5 (Dec. 8, 2016); Nassau County Office of Emergency Management, Comments, PS Docket No. 15-91, at 2 (Dec. 8, 2016); Harris County, Texas Homeland Security and Emergency Management, Comment, PS Docket No. 15-91, at 1 (Sept. 7, 2018); New York City Emergency Management Department, Comments, PS Docket No. 15-91, at 15 (Dec. 8, 2016); Wireless RERC & CACP, Comments, PS Docket No. 15-91, at 14 (Dec. 8, 2016).

¹¹ *See* National Academies of Sciences, Engineering, and Medicine, *Emergency Alert and Warning Systems: Current Knowledge and Future Research Directions* at 50 (2018); *see also* California Governor's Office of Emergency Services, Comments, PS Docket No. 15-91 at 7 (Dec. 8, 2016) ("[T]he elements of geo-targeting accuracy, alert latency, and availability and reliability cover the main concerns of state and local alert originators."); *Wireless Emergency Alerts, Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket No. 15-91, PS Docket No. 15-94, Report and Order and Further Notice of Proposed Rulemaking, 13 FCC Rcd 11112 (2016) (*2016 WEA R&O and FNPRM*).

¹² Warning, Alert and Response Network (WARN) Act, Title VI of the Security and Accountability for Every Port Act of 2006, 120 Stat. 1884, § 602(a), codified at 47 U.S.C. § 1201, et seq., § 1202(a) (2006) (WARN Act); *see also* 47 U.S.C. § 1201(b)(2)(d) (instructing the Commission to establish a procedure for mobile service providers to withdraw their election to participate in WEA without penalty or forfeiture)

¹³ *See, e.g., The Commercial Mobile Alert System*, PS Docket No. 07-287, First Report and Order, 23 FCC Rcd 6144 (2008); *The Commercial Mobile Alert System*, PS Docket No. 07-287, Second Report and Order and Further Notice of Proposed Rulemaking, 23 FCC Rcd 10765 (2008); *The Commercial Mobile Alert System*, PS Docket 07-287, Third Report and Order, 23 FCC Rcd 12561 (2008) revised by Erratum (Sep. 5, 2008).

¹⁴ The term "alert originator" refers to a federal, state, territorial, tribal, or local entity authorized by FEMA to use the Integrated Public Alert and Warning System (IPAWS) to issue critical public alerts and warnings in emergency situations. *See* FEMA, *Alerting Authorities*, <https://www.fema.gov/alerting-authorities> (last visited Oct. 26, 2017). For the purposes of this proceeding, the term "alert originator" is coextensive with the terms "emergency manager" and "emergency management agency" unless otherwise specified.

Protocol (CAP) to FEMA's alert aggregator, which is named the Integrated Public Alert and Warning System (IPAWS).¹⁶ There, the alert is authenticated, validated, and delivered to FEMA's Alert Gateway for dissemination to Participating CMS Providers' Alert Gateways.¹⁷ Currently, FEMA only transmits to Participating CMS Providers information about the Alert Message that is necessary for mobile devices to present Alert Messages to subscribers (*e.g.*, message content, geographic target area coordinates if applicable, and a unique message identifier). FEMA removes all other metadata from the Alert Message (*e.g.*, the time at which the Alert Message was initiated by the alert originator).¹⁸ Participating CMS Providers are required to log all of the Alert Message data that they receive at their Alert Gateways, including the time of receipt, maintain those logs for at least 12 months, and make them available to the Commission, FEMA, and emergency management agencies that offer confidentiality protection at least equal to that provided by the federal Freedom of Information Act (FOIA) upon request.¹⁹ While the Commission's WEA rules are technologically neutral, most Participating CMS Providers currently use one-way cell broadcast technology to transmit WEA Alert Messages to their subscribers.²⁰ When the Alert Message is received by a WEA-capable mobile device, it is prominently presented to the subscriber as long as the subscriber has not opted out of receiving Alert Messages of that type.²¹ The Commission requires WEA-capable mobile devices to preserve Alert Messages in a consumer-accessible format and location for at least 24 hours or until deleted by the subscriber, but does not specifically require WEA-capable mobile devices to log information about Alert Messages that they receive.²²

5. The Commission has sought comment twice before on whether Participating CMS Providers should measure and report on the reliability, speed, and accuracy of the WEA service that they provide. In 2016, the Commission proposed to require Participating CMS Providers to annually report the

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¹⁵ See 47 CFR § 10.10(a) (defining an "Alert Message" as "a message that is intended to provide the recipient information regarding an emergency, and that meets the requirements for transmission by a Participating Commercial Mobile Service Provider under this part").

¹⁶ CAP is an open, interoperable, XML-based standard that can include multimedia such as streaming audio or video. See OASIS CAP v1.2 (IPAWS Profile for the OASIS Common Alerting Protocol IPAWS USA). CAP messages contain standardized fields that facilitate interoperability between and among devices. See *id.*

¹⁷ The WEA system, as it is deployed currently, is based on standards created by the Alliance for Telecommunications Industry Solutions (ATIS), the Telecommunications Industry Association (TIA) (jointly, ATIS/TIA), and the 3rd Generation Partnership Project (3GPP). See *CSRIC IV WEA Messaging Report* at 7.

¹⁸ Target area coordinates are only transmitted to mobile devices for Alert Messages with a target area specified by a circle or polygon, not a code describing an entire state or county.

¹⁹ See 47 CFR 10.320(g) (requiring Participating CMS Providers to provide this information to emergency management agencies only insofar as those logs pertain to alerts initiated by that emergency management agency); See 5 USC § 552 (2006), amended by OPEN Government Act of 2007, Pub. L. No. 110-175, 121 Stat. 2524.

²⁰ See CTIA, Letter from Scott Bergmann, Senior Vice President, Regulatory Affairs, to Marlene Dortch, Secretary, Federal Communications Commission, PS Docket Nos. 15-91, 15-94, at 4 (Apr. 13, 2022) (CTIA *Ex Parte*) (recommending that the draft WEA FNPRM add a detailed discussion of the cell broadcast architecture of the current WEA system); see also CSRIC V, Working Group Two, Wireless Emergency Alerts – Recommendations to Improve Geo-targeting and Offer Many-to-One Capabilities, Final Report and Recommendations at 8 (2016); but see Letter from Rebecca Murphy Thompson, EVP and General Counsel, Competitive Carriers Association, to Marlene Dortch, Secretary, Federal Communications Commission, PS Docket No. 15-91, at 2 (Oct. 6, 2017) (stating that some carriers offer WEA using a software application, rather than cell broadcast).

²¹ See ATIS, Enhanced Wireless Emergency Alert (eWEA) Mobile Device Behavior (MDB) Specification (A Revised Version of J-STD-100) at 18-19 (2018); ATIS, Joint ATIS/TIA CMAS Mobile Device Behavior Specification (ATIS-TIA-J-STD-100) (2009). Subscribers' right to opt out of WEA Alert Message receipt extends to all but the Presidential Alert. See 47 CFR § 10.280. We note that nothing in the WARN Act or the Commission's rules requires WEA to be a cell broadcast-based service.

²² See 47 CFR 10.500(h).

reliability and availability, latency, and geotargeting of their respective WEA systems.²³ The Commission also sought comment on whether Participating CMS Providers should update additional WEA network elements and mobile device software to log the receipt of WEA alerts, because performance reporting necessitates performance measurement, including at the end user device where WEAs are received.²⁴ In 2018, the Commission again sought comment on how WEA's performance should be measured and reported, how the Commission should address inconsistent WEA delivery, and why WEA alerts were not being delivered to all handsets within a targeted area.²⁵ Participating CMS Providers comment that burdensome performance requirements would be inconsistent with the voluntary nature of WEA,²⁶ and that performance measurement would be difficult because of Participating CMS Providers' lack of visibility into WEA's receipt at mobile devices.²⁷ Emergency management agencies and consumer groups, on the other hand, comment that better information about how WEA works in practice would help them to use WEA more adeptly and would promote confidence that the system will work as intended when needed.²⁸ The California Governor's Office of Emergency Services (CalOES) states that "the elements of geo-targeting accuracy, alert latency, and availability and reliability cover the main concerns of state and local alert originators."²⁹ APCO states that reporting on WEA's performance "will increase transparency and improve the system's trustworthiness and effectiveness,"³⁰ and Nassau

²³ See *WEA First R&O and FNPRM*, 31 FCC Rcd at 1120916, paras. 15974 (proposing to amend Section 10.350 to require Participating CMS Providers to submit annual reports to the Commission that demonstrate reliability and availability, latency, and geotargeting for their nationwide WEA deployment and proposing "to require that Participating CMS Providers grant emergency management agencies' requests for locality-specific versions of these performance metrics if and only if the requesting entity agrees to provide confidentiality protection at least equal to that provided by FOIA") (seeking comment on whether annual is the right frequency for reporting; the specific data elements that Participating CMS Providers would need to collect to measure reliability and availability, latency, and geotargeting; and the methodology that Participating CMS Providers would use to compile performance reports, including through State/Local WEA Tests conducted in a "representative sample of the different real-world environments in which the WEA system would be used (e.g., the dense urban, urban, suburban and rural morphologies defined by the ATIS-0500011 standard)").

²⁴ See *id.* at 11215, paras. 173-74 (seeking comment on "whether the logging requirements . . . should extend beyond the CMS Provider Alert Gateway to the [Radio Access Network (RAN)] . . . and to WEA-capable mobile devices, . . . whether requiring Participating CMS Providers to log data relevant to the accuracy of geo-targeting, the extent of alert delivery latency, and the system availability and reliability could contribute to the collection of data for Annual WEA Performance Reports," and whether the Commission should standardize the presentation of WEA performance logs for the benefit of emergency management agencies).

²⁵ See *Amendment of Part 11 of the Commission's Rules Regarding the Emergency Alert System; Wireless Emergency Alerts*, PS Docket Nos. 15-91, 15-94, Report and Order and Further Notice of Proposed Rulemaking, 33 FCC Rcd 7086, 7105-06, paras. 46-49 (2018) (*Alerting Reliability FNPRM*). The *Alerting Reliability FNPRM* did not specifically reference the *2016 WEA R&O and FNPRM* although it sought comment on the same issues of performance reporting and measurement.

²⁶ AT&T Services, Inc., Comments, PS Docket No. 15-91, at 19-21 (Dec. 8, 2016) (AT&T 2016 Comments); T-Mobile USA, Inc., Comments, PS Docket No. 15-91, at 12 (Dec. 9, 2016) (T-Mobile 2016 Comments); CTIA, Comments, PS Docket No. 15-91, at 2 (Sep. 10, 2018) (CTIA 2018 Comments); see *Alerting Reliability FNPRM*, 33 FCC Rcd 7086.

²⁷ AT&T Services, Inc., Comments, PS Docket No. 15-91, at 3 (Sep. 10, 2018) (AT&T 2018 Comments); *CTIA 2018 Comments* at 9.

²⁸ APCO International, Comments, PS Docket No. 15-91, at 5 (Dec. 8, 2016); Nassau County Office of Emergency Management, Comments, PS Docket No. 15-91, at 2 (Dec. 8, 2016); Harris County, Texas Homeland Security and Emergency Management, Comment, PS Docket No. 15-91, at 1 (Sep. 7, 2018); New York City Emergency Management Department, Comments, PS Docket No. 15-91, at 15 (Dec. 8, 2016); Wireless RERC & CACP, Comments, PS Docket No. 15-91, at 14 (Dec. 8, 2016).

²⁹ California Governor's OES Comments, PS Docket No. 15-91 at 7 (Dec. 8, 2016).

³⁰ APCO International, Comments, at 5 (Dec. 8, 2016) (APCO Comments).

County states that “[w]e feel . . . [WEA performance reporting] is important so we feel confident that the alert messages are being delivered swiftly and correctly targeted.”³¹ The Harris County Office of Homeland Security and Emergency Management states that “additional information from wireless carriers on message delivery and delivery failures is crucial to identifying what areas are being over and under alerted during an emergency.”³² Wireless RERC states that reporting on WEA’s performance “will allow for data to be collected and analyzed to set a baseline from which to measure implementation progress and effectiveness of WEA with regards to system performance.”³³

6. In 2020, the Government Accountability Office (GAO) recommended that the Commission “develop specific, measurable goals and performance measures for its efforts to monitor the performance of new WEA capabilities, such as enhanced geo-targeting and message length.”³⁴ In response, the Commission committed to “[c]omplet[ing] geo-targeting pilot testing with selected local jurisdiction partner(s)” and “[c]omplet[ing] associated rulemaking to adopt performance measures for enhanced WEA capabilities, as appropriate.”³⁵

7. In 2021, the Commission took a significant step in measuring WEA’s performance when PSHSB partnered with 11 federal, state, and local emergency management agencies to gather data about the end user’s experience with the nationwide WEA test.³⁶ The Public Safety & Homeland Security Bureau (Bureau) gathered and analyzed data from dedicated volunteer respondents across the country on performance factors that Participating CMS Providers are not required to measure under the Commission’s current rules, such as the rate of test receipt on mobile devices, how long it takes for the test to reach mobile devices, and whether the test is presented as designed. The Bureau’s Report on the 2021 Nationwide WEA Test found that approximately 90% of respondents received the test message, and that they received it within two minutes of transmission.³⁷ The Report found that WEA’s reliability was largely consistent across CMS Providers, generation of wireless network technology (i.e., 4G or 5G), mobile device manufacturer, device operating system, whether a user was indoors or outdoors, and whether the mobile device was already in use at the time of the test.³⁸ The Report also found, however, that many mobile devices erroneously received a duplicate nationwide WEA test message, and that there may be opportunities to improve WEA’s reliability.³⁹ In addition, the Report found that survey respondents attached to the networks of Mobile Virtual Network Operators (MVNOs) that had not

³¹ Nassau County Office of Emergency Management, Comments, at 2 (Dec. 8, 2016) (Nassau County Comments).

³² Harris County, Texas Homeland Security and Emergency Management, Comment, at 1 (Sep. 7, 2018) (Harris County Comments); New York City Emergency Management Department, Comments, at 15 (Dec. 8, 2016) (“NYCEM strongly supports the need for regular, CMSP-by-CMSP, reporting on WEA capability, including the elements proposed by the Commission.”).

³³ Wireless RERC & CACP, Comments, at 14 (Dec. 8, 2016) (Wireless RERC Comments).

³⁴ Government Accountability Office, Emergency Alerting: Agencies Need to Address Pending Applications and Monitor Industry Progress on System Improvements at 25-27 (2020), <https://www.gao.gov/assets/gao-20-294.pdf>.

³⁵ FCC, Emergency Alerting (103277) Corrective Action Plan at 2 (2020), <https://www.gao.gov/products/gao-20-294>.

³⁶ See News Release, FCC Acting Chairwoman Rosenworcel Announces Federal, State, and Local Partnerships to Assess Wireless Emergency Alert Test Performance (July 20, 2021), <https://www.fcc.gov/document/fcc-announces-survey-partnerships-wireless-emergency-alert-test>.

³⁷ See 2021 Nationwide WEA Test Report at 3.

³⁸ See *id.*

³⁹ See *id.*

formally submitted to the Commission letters attesting to their intent to participate in WEA nonetheless received the nationwide WEA test.⁴⁰

III. DISCUSSION

A. WEA Performance Metrics and Reporting

8. Emergency management agencies have made it clear that information about WEA performance is essential to develop confidence in WEA's ability to perform effectively during an emergency.⁴¹ The record in the underlying proceedings reflects emergency management agencies' perspective that increased transparency about WEA's reliability, speed, and accuracy in a given market will help provide necessary data to emergency managers to help them assess WEA's utility in their respective jurisdictions and with respect to specific use cases.⁴² In addition, understanding WEA's end-to-end performance will also help identify areas for improvement. We therefore seek to build upon the Commission's prior proposals and refresh the record to develop metrics for WEA performance and reporting. We clarify that we are not proposing to set minimum performance benchmarks at this time. Instead, we propose that Participating CMS Providers report on key metrics that will help stakeholders develop an understanding of WEA end-to-end performance, and we seek comment on the implementation of this proposal.

9. As an initial matter, we seek comment on how WEA's reliability, speed, and accuracy should be defined. In 2016, the Commission proposed to define "reliability" as "the annual percentage of WEA Alert Messages that the Participating CMS Provider processes successfully, and a summary of the most common errors with Alert Message transmission."⁴³ The Commission considered speed in terms of latency, and proposed to define "latency" as "[a]n end-to-end analysis of the amount of time that it takes for the Participating CMS Provider to transmit a WEA Alert Message."⁴⁴ The Commission proposed to couch accuracy in terms of geotargeting, as "[t]he accuracy with which the Participating CMS Provider can distribute WEA Alert Messages to a geographic area specified by an alert originator."⁴⁵ CalOES states that "these three parameters, appropriately presented (*e.g.*, as distributions, not just averages) appropriately support the vast majority of emergency managers and public safety officials."⁴⁶ Do these definitions best capture the reliability, speed, and accuracy of WEA? Alternatively, we seek comment on whether WEA's reliability should be defined as the proportion of devices within the targeted area while the alert is active that successfully displayed the alert. We seek comment on whether WEA's speed should be measured as the difference between the time that an alert is initiated by an authorized alert originator and the time that the alert is displayed at the mobile device. We seek comment on whether WEA's accuracy should be defined as the proportion of alert recipients that received the alert within and further than 0.1 miles from the target area. We seek comment on whether reliability, speed, and accuracy are the most pertinent measures of WEA's performance to emergency management agencies and the

⁴⁰ See *id.*; see also PSHSB, Report: October 3, 2018 Nationwide WEA and EAS Test at 6 n.24 (2019), <https://docs.fcc.gov/public/attachments/DOC-356902A1.pdf> (identifying survey respondents as receiving the nationwide WEA test on MVNO networks in 2018).

⁴¹ *Supra* at para. 5.

⁴² See *id.*

⁴³ *Wireless Emergency Alerts, Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket No. 15-91, PS Docket No. 15-94, Report and Order and Further Notice of Proposed Rulemaking, 13 FCC Rcd 11112, 11210, para. 162 (2016) (*2016 WEA R&O and FNPRM*).

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ California Governor's OES Comments, PS Docket No. 15-91 at 7 (Dec. 8, 2016).

public. What other (or additional) measures of WEA’s performance should the Commission consider as relevant to emergency management agencies and the public, if any?⁴⁷

10. We seek comment on how Participating CMS Providers should measure the performance of their WEA service for the purpose of generating WEA performance reports. We note that the Commission previously proposed to require that Participating CMS Providers submit WEA performance reports based on aggregated data from all WEA activations during the reporting period.⁴⁸ The Commission sought comment, in the alternative, on whether WEA’s performance could be measured based on the issuance of a single State/Local WEA Test, and through additional testing only as needed in light of material network upgrades.⁴⁹ NYCEM argues that WEA performance reports “should be based on an analysis of all WEA messages that were or should have been transmitted during the reporting period and NOT only limited to [discrete] State/Local WEA tests.”⁵⁰ Should the Commission allow these reports to be based on discrete WEA tests conducted by Participating CMS Providers in partnership with federal, state, or local emergency management agencies in a representative sample of dense urban, urban, suburban and rural geographic environments?⁵¹ Or, should the Commission require WEA performance reports to be based on aggregated data from real-time WEA use? If the latter, how might that be effectuated?

11. We seek comment on when and how these reports should be provided to the Commission. In 2016, the Commission proposed to require Participating CMS Providers to report on the performance of their WEA service annually or, in the alternative, to require a single report and additional reports only in response to “material” network upgrades.⁵² CalOES “recommends that performance reporting occur annually,” but NYCEM opposes less-than-annual reporting because “WEA is a mission-critical system and needs to be tested and reported on in light of routine CMSP maintenance and upgrade activity.”⁵³ Alternatively, to limit the burden of reporting while still gaining visibility into end-to-end WEA performance, should we require Participating CMS Providers to submit multiple reports, such as a series of three reports? Should the submission of those reports coincide with any particular developments or milestones? We seek comment on whether this approach would allow the Commission to track WEA performance over time and still obtain sufficient information to assess WEA performance. If we require the submission of more than one report (for example, three reports), when should each of these reports be submitted to the Commission, and what periods of time should their contents cover? How could the Commission best ensure that the information in each subsequent report could be directly compared against one another, in order to draw accurate conclusions about improvements or declines in WEA performance over time? As another alternative, noting that Emergency Alert System (EAS) Participants are required to file reports after each national test scheduled by the Commission in consultation with

⁴⁷ We do not seek comment on the potential issues that alert originators may have with rapidly issuing WEA alerts during emergencies due to issues such as lack of direct access to IPAWS or insufficient training because the Commission’s WEA authority does not extend to the federal, state, local, tribal, and territorial emergency management agencies that initiate WEA alerts. Cf. Government Accountability Office, *Emergency Alerting: Agencies Need to Address Pending Applications and Monitor Industry Progress on System Improvements*, GAO-20-294 at 9 (2020), <https://www.gao.gov/assets/gao-20-294.pdf>.

⁴⁸ See *WEA R&O and FNPRM*, 31 FCC Rcd at 11210 at paras 161-63.

⁴⁹ See *id.*

⁵⁰ NYCEM 2016 Comments at 15.

⁵¹ See ATIS, *Location Technology Performance Data - Define Topologies & Data Collection Methodology*, ATIS-0500011 (2007), <https://webstore.ansi.org/Standards/ATIS/ATIS0500011>.

⁵² *WEA R&O and FNPRM*, 31 FCC Rcd at 11210 at paras 161-63.

⁵³ California Governor’s OES Comments, PS Docket No. 15-91 at 7 (Dec. 8, 2016); NYCEM 2016 Comments at 15. We note that no other commenters have addressed the frequency of reporting in their comments.

FEMA,⁵⁴ we seek comment on whether a similar approach would be appropriate for WEA performance reporting.

12. In 2016, the Commission proposed to require that Participating CMS Providers grant emergency management agencies' requests for a locality-specific version of these performance metrics where the requesting entity agrees to provide confidentiality protection at least equal to that provided by the federal Freedom of Information Act (FOIA).⁵⁵ Commenters did not address this issue directly. We again seek comment on the extent to which locality specific WEA performance reports would be necessary for emergency management agencies and the public to understand how WEA works within their local areas as compared to Participating CMS Providers' nationwide WEA deployment. In the event that the record demonstrates there are sound public policy reasons for protecting the confidentiality of the information provided by Participating CMS Providers, could the Commission instead offer aggregated/anonymized reports, based on all WEA performance reports? Would this be sufficiently granular to help inform emergency managers regarding WEA effectiveness in their area and if not, how could that be better addressed while still protecting the confidentiality of the information as needed?

13. What information would Participating CMS Providers need to collect to assess WEA performance? Is it feasible for Participating CMS Providers to generate WEA performance reports using information that is already collected, or could be collected, based on WEA's current architecture and from WEA-capable mobile devices connected to providers' networks, including leveraging information currently logged at their Alert Gateway?⁵⁶ Should these reports reflect specific information about the actual time and location of alert receipt? In order to be useful, how granular should that information be (e.g., to the second and within 0.1 mile)? Should these reports take into account those device makes and models that cannot be updated to deliver alerts within 0.1 miles of the target area?

14. If it is not feasible for Participating CMS Providers to collect this information from WEA networks and devices as currently designed, then what network or device firmware or software changes would be needed for Participating CMS Providers to comply with the proposed reporting requirements?⁵⁷ How much time would be necessary to complete these steps? We do not envision that our proposed reporting requirements would necessarily implicate changes to the one-way cell broadcast transmission of WEA alerts currently used by many Participating CMS Providers. Rather, we envision that Participating CMS Providers – at their option – could continue to use cell broadcast to transmit WEA alerts and develop an additional mechanism to receive WEA performance data from mobile devices (e.g., through a System Information Block control channel or with a mobile device Application Programming Interface (API) that connects the WEA firmware to another mobile device application from which Participating CMS Providers already receive data).⁵⁸ We note that the Commission's Communications Security, Reliability, and Interoperability Council (CSRIC) VIII is tasked with defining an API to allow the WEA software "to pull capabilities from other mobile device applications and firmware to enhance the presentation of WEA messages."⁵⁹ While CSRIC VIII's task is specifically directed towards enabling

⁵⁴ 47 C.F.R. § 11.61(a)(3).

⁵⁵ See *WEA R&O and FNPRM*, 31 FCC Rcd at 11213-14, para. 171; see also 47 CFR § 10.320(g)(3) ("Participating CMS Providers are also required to make alert logs available to emergency management agencies that offer confidentiality protection at least equal to that provided by the federal Freedom of Information Act (FOIA) upon request, but only insofar as those logs pertain to Alert Messages initiated by that emergency management agency.").

⁵⁶ See ATIS, Wireless Emergency Alert (WEA) 3.0 Federal Alert Gateway to CMSP Gateway Interface Specification, ATIS-0600037.v002, at 16 (2019); 47 CFR § 10.320(g). We anticipate that FEMA may need to share with Participating CMS Providers the time that an Alert Message was originated in order for Participating CMS Providers to measure the WEA's speed end to end.

⁵⁷ See *CTIA Ex Parte* at 4 (recommending that the Commission "seek comment on . . . whether the Commission's proposals are technically feasible").

⁵⁸ See *id.* (recommending that the Commission "seek comment on how the proposed performance measurements and reporting would affect the system").

mapping and accessibility features, we seek comment on the extent to which this API could be used to facilitate the generation of WEA performance reports as proposed in this proceeding. Alternatively, we seek comment on how Participating CMS Providers would recommend measuring and reporting on the performance of their WEA service.⁶⁰ Are there other ways to collect this information that do not require network or device changes? We seek comment on whether information about how, when, and where alerts are being delivered to devices would be beneficial to emergency managers that are evaluating WEA's effectiveness. If so, how would emergency managers use this information to improve their emergency operations?

15. Should we also require that Participating CMS Providers offer WEA-capable mobile devices that automatically report WEA performance information back to the provider for the sole and limited purpose of being used in performance reports? If so, what steps would Participating CMS Providers, device manufacturers, and others need to take in order to enable WEA-capable mobile devices to log this information and automatically report it to a provider? How much time would be necessary to complete those steps? How should performance reports address WEA-capable mobile devices that are considered to be "end-of-life" and may not be updated with support for performance measurement? How can the end-to-end performance of WEA be accurately evaluated if a significant portion of WEA-capable devices do not support performance measurement?

16. Are there consumer privacy concerns associated with the automatic reporting of WEA performance information from WEA-capable mobile devices? The Commission does not anticipate that any personally identifiable information (PII) would be disclosed in WEA performance reports. Is it necessary for Participating CMS Providers to collect PII (*e.g.*, precise geolocation) to compile WEA performance reports? To the extent that the collection of PII would be necessary to compile WEA performance reports, what steps can be taken to mitigate any privacy concerns and ensure the collection of information only as and when necessary to generate WEA performance reports? For example, should we require Participating CMS Providers to obtain consumer opt-in or other form of consent prior to receiving or using WEA information to generate WEA performance reports? If the Commission requires some form of opt-in or other consent before a Participating CMS Provider may receive or use such information, should that consent be periodically refreshed, and if so, how frequently? What elements should be required for such consumer consent? If the logging and reporting of WEA performance information is made automatic, would it be possible to limit such logging and reporting to only consenting consumers? To the extent that any mobile device or network changes are necessary to measure WEA's performance, we seek comment on the extent to which they would implicate consumer privacy. We ask commenters weighing in on privacy considerations to keep in mind the requirements of potentially applicable statutes.⁶¹

17. *Costs.* The 2016 WEA R&O and FNPRM sought detailed comment on the costs of WEA performance reporting but the Commission received no comments responsive to this issue.⁶² We seek

(Continued from previous page) _____

⁵⁹ FCC, Communications Security, Reliability, and Interoperability Council VIII Working Groups (2021), <https://www.fcc.gov/file/21891/download>. The roman numerals following the name of the federal advisory committee, "CSRIC," enumerate the successive years during which the Commission has chartered CSRIC to provide recommendations on selected topics.

⁶⁰ See CTIA *Ex Parte* at 4 (recommending "that the Commission seek comment on how Participating CMSPs *would* measure the performance of WEA service including whether the Commission's proposals are technically feasible") (emphasis in original).

⁶¹ See, *e.g.*, 5 U.S.C. § 552a; 18 U.S.C. § 2701, *et seq.*

⁶² See WEA R&O and FNPRM, 31 FCC Rcd at 11221-24, paras. 187-90 (seeking comment on whether WEA performance reporting would require changes to WEA standards and software; how the Commission should quantify the paperwork burden of producing performance reports; and whether the cost of measuring WEA's performance through discrete tests would be comparable to the costs of establishing, analyzing, and reporting on the results of 911 location accuracy test beds).

comment on the costs associated with Participating CMS Providers' production of WEA performance reports. Regarding the cost of reporting WEA performance information to the Commission, the Office of Management and Budget has approved the Commission's estimate that the total annual cost of compliance with the Commission's WEA election requirements is \$1 million for industry.⁶³ This figure represents the total effort required by Participating CMS Providers to assess the extent of their readiness to participate in WEA and report such to new and existing subscribers and the Commission. We seek comment on whether this figure is a reasonable cost ceiling for CMS Providers to generate and submit WEA performance tests because both lines of effort entail reporting and analysis of WEA-related network infrastructure. Alternatively, we seek comment on whether the cost to establish and report on the results of E911 location accuracy testing would be a more accurate analog to the cost of reporting on WEA's performance.⁶⁴ In addition to the cost of reporting, we seek comment on whether standards revisions or software and firmware updates to CMS network equipment and mobile devices may be necessary to log WEA performance data. In the 2016 *WEA R&O and FNPRM*, the Commission concluded that the maximum reasonable cost of compliance with the new WEA requirements proposed at the time that entailed standards and software revisions (*e.g.*, an expanded alert message character limit and support for Spanish-language alerts) was approximately \$40 million as a one-time cost.⁶⁵ We seek comment on whether this figure is a reasonable ceiling for the cost of revising the standards, software, and firmware necessary to enable Participating CMS Providers to log WEA performance data.⁶⁶ In the event that Participating CMS Providers were to facilitate automatic logging and reporting of information from WEA devices, what would be the associated initial development and ongoing maintenance costs? We also seek comment on the effect of our proposals on the level of participation in WEA.

18. In addition, we seek comment on measures that the Commission could take to limit the burden of WEA performance reporting. We seek comment on the extent to which the Commission could limit the overall economic impact of WEA performance reporting by providing increased flexibility for businesses identified as small by the Small Business Administration or by limiting the applicability of the requirement to only three nationwide CMS Providers. How might the scope of this limitation be adjusted in the event that additional CMS Providers offer nationwide service at a future date?

19. *Benefits.* We seek comment on the extent to which the availability of empirical data on WEA's reliability, speed, and accuracy would promote emergency managers' use of WEA during circumstances where it could be used as life-saving tool and promote public confidence in WEA. We seek additional comment on other benefits from WEA performance reporting. Would consumers' choice of providers incentivize additional carriers to participate in the program? How would Participating CMS Providers, emergency managers, and the public benefit? What publicly-available information and data should the Commission review in order to perform a proper cost-benefit analysis, and how can the Commission best evaluate the corresponding benefits? We seek comment on any measures that the Commission could take to augment the value of WEA performance reports for emergency management

⁶³ See Election Whether to Participate in the Wireless Emergency Alert System 3060-1113, Supporting Statement (Apr. 2021).

⁶⁴ See E911 Location Accuracy Requirements, OMB 3060-1210, 80 FR 30235 (2015); see also *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Fourth Report and Order, 30 FCC Rcd 1259, para. 170 (2015) (quantifying the cost of compliance with wireless location accuracy requirements without specific reference to the costs of the test bed process).

⁶⁵ See 2016 *WEA R&O and FNPRM*, 31 FCC Rcd at 11175-79, paras. 98-110.

⁶⁶ No commenter addressed whether the Commission's cost analysis from the 2016 *WEA Order* could be reasonably applied to the performance reporting requirement on which the Commission sought comment in the accompanying Further Notice of Proposed Rulemaking.

agencies and the public. We seek comment on whether the benefits of WEA performance reporting would outweigh the costs.⁶⁷

B. Further Improvements to WEA

20. We seek comment on ways in which we can further improve WEA's consistency and the pace at which messages are received, based on findings from the 2021 nationwide WEA test.⁶⁸ While performance during the 2021 nationwide test demonstrated that, on the whole, WEA generally is performing well, the test results also showed there is room to make WEA more consistently effective.

21. The Commission does not require Participating CMS Providers to deliver WEA alerts to the public with a particular consistency or within a particular timeframe from when they receive it from the IPAWS gateway. Ten percent of WEA-capable mobile devices within the target area that had opted in to receive the nationwide WEA test nonetheless did not receive it.⁶⁹ Participating CMS Providers' responses to the nationwide WEA test, illustrate how WEA alerts currently transit the nationwide CMS Providers' networks from the alert gateway to the cell site, and how long each step in that process takes.⁷⁰ Based on responses to the Commission's nationwide WEA test survey, at least half of the WEA-capable mobile devices that received the nationwide WEA test received it within two minutes of FEMA's transmission.⁷¹

22. To help inform the Commission's approach, including in connection with the proposals above, we seek comment on measures Participating CMS Providers could take to improve WEA's consistency and the rate at which alerts are received. We seek comment on the extent to which Participating CMS Providers include network extenders, repeaters, and in-building microcells among the network components that are eligible to transmit WEA alerts as a means of ensuring that as many wireless subscribers within the targeted area as possible receive alerts intended for them.⁷² We seek comment on whether Participating CMS Providers could make WEA both faster and more effective by increasing the periodicity with which their cell broadcast facilities retransmit WEA alerts and the periodicity with which mobile devices in motion check to determine whether they are within the target area.⁷³ Would the latter significantly impact device performance or battery life? Are there technical impediments to either action?

⁶⁷ See CTIA *Ex Parte* at 5 (recommending "that the Commission also seek comment on whether the benefit of adding performance measurement reporting would outweigh the time and costs associated with potentially significant technical modifications and/or operational changes that would be necessary to meet the proposed methods of reporting").

⁶⁸ See *2021 Nationwide WEA Test Report* at 3.

⁶⁹ See *id.* at 9.

⁷⁰ See Letter from Robert Morse, Associate General Counsel, Verizon, to Lisa Fowlkes, Chief, Public Safety and Homeland Security Bureau, Federal Communications Commission, PS Docket Nos. 15-91, 15-94 (Oct. 27, 2021); Letter from Jaime (Mike) Tan, Director, Federal Regulatory, AT&T, to Lisa Fowlkes, Chief, Public Safety and Homeland Security Bureau, Federal Communications Commission, PS Docket Nos. 15-91, 15-94 (Oct. 29, 2021); Letter from Shellie Blakeney, Director, Federal Regulatory Affairs, T-Mobile, to Lisa Fowlkes, Chief, Public Safety and Homeland Security Bureau, Federal Communications Commission, PS Docket Nos. 15-91, 15-94 (Nov. 8, 2021).

⁷¹ See *2021 Nationwide WEA Test Report* at 19-20 (stating that at least 25% of these devices received the nationwide WEA test in less than one minute).

⁷² The only explanation offered in the record that could explain the non-receipt observed by the nationwide WEA test is that mobile devices "served by a network extender, repeater, or in-building microcell that is not identified by the Participating CMS Provider's network as part of an alert area" would not receive alerts. See CTIA 2018 Comments at 2.

⁷³ NYCEM 2018 Comments at 5 ("To mitigate such propagation issues, NYCEM advises the Commission to adopt rules requiring CMS providers re-broadcast WEA messages every three (3) to five (5) minutes for the entirety of the broadcast duration as specified by the alert originator or until cancelled.").

Does the geographic scope of the alert have any bearing on the speed with which the alert is delivered? To what extent should the Commission expect that WEAs will be delivered faster during non-nationwide activations? To what extent do Participating CMS Providers follow network reliability and security best practices identified by the Communications Security, Reliability and Interoperability Council (CSRIC) that are relevant to WEA's effectiveness?⁷⁴

23. We seek comment on whether there are steps that Participating CMS Providers can take to prevent the incidence of unintentional duplicate alerts that the Commission observed during the 2021 nationwide WEA test. While some duplicate alerts may have been attributable to a specific software failure in a Participating CMS Provider's network, many were not.⁷⁵ To what extent do all WEA-capable mobile devices use both a unique alert message identifier and a CMS Provider-specific serial number to suppress the presentation of duplicate alerts?⁷⁶ To what extent are some WEA-capable mobile devices programmed to present the WEA vibration cadence and attention signal a second time if the alert is not acknowledged by the user within a specified timeframe?

24. We seek comment on the extent to which MVNOs, mobile satellite service providers, or other wireless providers deliver WEA alerts to their subscribers, notwithstanding the fact that they have not elected to participate in WEA. Do MVNOs or other wireless providers receive WEA alerts directly from FEMA IPAWS? If not, where do they receive WEA alerts? On what factors does an MVNO's ability to serve their subscribers with WEA alerts depend? We seek comment on whether all wireless service providers that serve their subscribers with WEA alerts should formally elect to participate in WEA, or take other steps to notify their subscribers that they can expect to receive WEA alerts on their networks.

25. The Commission, as part of its continuing effort to advance digital equity for all,⁷⁷ including people of color, persons with disabilities, persons who live in rural or Tribal areas, and others who are or have been historically underserved, marginalized, or adversely affected by persistent poverty or inequality, invites comment on any equity-related considerations⁷⁸ and benefits (if any) that may be associated with the proposals and issues discussed herein. Specifically, we seek comment on how our proposals may promote or inhibit advances in diversity, equity, inclusion, and accessibility, as well the scope of the Commission's relevant legal authority.

⁷⁴ See, e.g., FCC, CSRIC Best Practices, <https://opendata.fcc.gov/Public-Safety/CSRIC-Best-Practices/qb45-rv2t/data> (last visited Oct. 15, 2021). For example, CSRIC network reliability best practice #12-10-0559 states that Network Operators, Service Providers, and Public Safety should consider validating upgrades, new procedures and commands in a lab or other test environment that simulates the target network and load prior to the first application in the field.

⁷⁵ See *2021 Nationwide WEA Test Report* at 22-23.

⁷⁶ See 47 CFR 10.500 (requiring mobile devices to suppress duplicate alerts).

⁷⁷ Section 1 of the Communications Act of 1934 as amended provides that the FCC "regulat[es] interstate and foreign commerce in communication by wire and radio so as to make [such service] available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex." 47 U.S.C. § 151.

⁷⁸ The term "equity" is used here consistent with Executive Order 13985 as the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality. See Exec. Order No. 13985, 86 Fed. Reg. 7009, Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (Jan. 20, 2021).

IV. PROCEDURAL MATTERS

A. Accessible Formats

26. To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

B. Ex Parte Rules

27. The proceeding this *Further Notice of Proposed Rulemaking* initiates shall be treated as a “permit-but-disclose” proceeding in accordance with the Commission’s *ex parte* rules.⁷⁹ Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must: (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made; and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter’s written comments, memoranda, or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (*e.g.*, .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission’s *ex parte* rules.

C. Comment Filing Procedures

28. Pursuant to Sections 1.415 and 1.419 of the Commission’s rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments in response to this *Notice* on or before the dates indicated on the first page of this document. Comments may be filed using the Commission’s Electronic Comment Filing System (ECFS). See *Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: <http://apps.fcc.gov/ecfs/>.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing.
- Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission’s Secretary, Office of the Secretary, Federal Communications Commission.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701. U.S. Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street NE, Washington, DC 20554.
- Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19. See FCC Announces

⁷⁹ 47 C.F.R. §§ 1.1200 *et seq.*

Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy, Public Notice, DA 20-304 (March 19, 2020). <https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy>.

People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

V. REGULATORY FLEXIBILITY ACT

29. The Regulatory Flexibility Act of 1980, as amended (RFA),⁸⁰ requires that an agency prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that “the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.”⁸¹ Accordingly, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) on the potential impact of the rule and policy changes contained in this *Further Notice of Proposed Rulemaking*, on small entities. The IRFA is set forth in Appendix A.

A. Initial Paperwork Reduction Analysis

30. This document contains proposed new and modified information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (OMB) to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4), we seek specific comment on how we might further reduce the information collection burden for small business concerns with fewer than 25 employees.

VI. FURTHER INFORMATION

31. For further information regarding this *Further Notice of Proposed Rulemaking*, please contact James Wiley, Cybersecurity and Communications Reliability Division, Public Safety and Homeland Security Bureau, (202) 418-1678, or by email to james.wiley@fcc.gov, or David Kirschner, Cybersecurity and Communications Reliability Division, Public Safety and Homeland Security Bureau, (202) 418-0695, or by email to david.kirschner@fcc.gov.

VII. ORDERING CLAUSES

32. Accordingly, IT IS ORDERED, pursuant to Sections 1, 2, 4(i), 4(o), 301, 303(r), 303(v), 307, 309, 335, 403, 624(g), 706, and 715 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 154(o), 301, 301(r), 303(v), 307, 309, 335, 403, 544(g), 606, and 615, as well as by sections 602(a),(b),(c), (f), 603, 604, 605, and 606 of the WARN Act, as amended, 47 U.S.C. §§ 1202(a),(b),(c), (f), 1203, 1204, 1205, and 1206, that the *Further Notice of Proposed Rulemaking* in PS Docket No. 15-91 and 15-94 IS HEREBY ADOPTED.

33. IT IS FURTHER ORDERED that the Commission’s Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Further Notice of Proposed Rulemaking*, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

⁸⁰ *See* 5 U.S.C. § 603. The RFA, 5 U.S.C. §§ 601–612, was amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

⁸¹ *Id.* § 605(b).

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Initial Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in the Further Notice of Proposed Rulemaking (*Further Notice*). Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Further Notice*. The Commission will send a copy of the *Further Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).² In addition, the *Further Notice* and IRFA (or summaries thereof) will be published in the Federal Register.³

A. Need for, and Objectives of, the Proposed Rules

2. In the *Further Notice*, the Commission seeks to improve the effectiveness of WEA by building upon and refreshing the record on the Commission's prior proposals to require commercial mobile service (CMS) providers participating in WEA (Participating CMS Providers)⁴ to file with the Commission, public reports on WEA's reliability, speed, and accuracy.⁵ Further, we seek to strengthen WEA's effectiveness through the development of performance metrics and reporting standards that will help emergency management and other stakeholders understand the effectiveness of WEA in their particular area, and identify areas where improvement is needed. More specifically, in the *Further Notice* we propose that CMS providers who choose to participate in WEA file public reports with the Commission on important attributes of WEA's performance and comment on (1) how WEA's reliability, speed, and accuracy should be defined, and whether these are the most pertinent measures of WEA's performance; (2) how Participating CMS Providers should measure performance of WEA for the purpose of generating WEA performance reports; (3) how and when WEA performance reports should be provided to the Commission; (4) whether WEA performance reports should include information collected at the consumer's device, including information about the actual time and location of alert receipt, and whether consumer devices should automatically report this information to Participating CMS Providers; and, (5) how the Commission can further improve WEA's speed and reliability based on the findings of the 2021 nationwide WEA test. We believe that having empirical data on WEA's reliability, speed, and accuracy, and developing a shared understanding among emergency management agencies and the public regarding the system's capabilities will help promote and increase emergency managers' use of WEA during emergencies and other critical situations which will save lives. We also believe that our actions will help increase public confidence in WEA.

B. Legal Basis

3. The proposed action is taken pursuant to Sections 1, 2, 4(i), 4(o), 301, 303(r), 303(v), 307, 309, 335, 403, 624(g), 706, and 715 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151,

¹ See 5 U.S.C. § 603. The RFA, 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

² See 5 U.S.C. § 603(a).

³ See *id.*

⁴ To date, 76 Commercial Mobile Service (CMS) providers have voluntarily elected to participate in WEA. See FCC, *Master WEA Registry*, <https://www.fcc.gov/files/weamasterregistry112019.xls> (last visited Mar. 25, 2022).

⁵ See *Wireless Emergency Alerts, Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket No. 15-91, PS Docket No. 15-94, Report and Order and Further Notice of Proposed Rulemaking, 13 FCC Rcd 11112 (2016) (*2016 WEA R&O and FNPRM*); see also *Amendment of Part 11 of the Commission's Rules Regarding the Emergency Alert System; Wireless Emergency Alerts*, PS Docket Nos. 15-91, 15-94, Report and Order and Further Notice of Proposed Rulemaking, 33 FCC Rcd 7086, 7105-06, paras. 46-49 (2018) (*Alerting Reliability FNPRM*).

152, 154(i), 154(o), 301, 301(r), 303(v), 307, 309, 335, 403, 544(g), 606, and 615, as well as by sections 602(a),(b),(c), (f), 603, 604, 605 and 606 of the WARN Act, 47 U.S.C. §§ 1202(a),(b),(c), (f), 1203, 1204, 1205 and 1206.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

4. The RFA directs agencies to provide a description of and, where feasible, an estimate of, the number of small entities that may be affected by the proposed rules, if adopted.⁶ The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”⁷ In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.⁸ A “small business concern” is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.⁹

5. *Small Businesses, Small Organizations, Small Governmental Jurisdictions.* Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three broad groups of small entities that could be directly affected herein.¹⁰ First, while there are industry specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the Small Business Administration’s (SBA) Office of Advocacy, in general a small business is an independent business having fewer than 500 employees.¹¹ These types of small businesses represent 99.9% of all businesses in the United States, which translates to 32.5 million businesses.¹²

6. Next, the type of small entity described as a “small organization” is generally “any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.”¹³ The Internal Revenue Service (IRS) uses a revenue benchmark of \$50,000 or less to delineate its annual electronic filing requirements for small exempt organizations.¹⁴ Nationwide, for tax year 2020, there

⁶ 5 U.S.C. § 603(b)(3).

⁷ 5 U.S.C. § 601(6).

⁸ 5 U.S.C. § 601(3) (incorporating by reference the definition of “small-business concern” in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies “unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register.”

⁹ 15 U.S.C. § 632.

¹⁰ See 5 U.S.C. § 601(3)-(6).

¹¹ See SBA, Office of Advocacy, Frequently Asked Questions, “What is a small business?,” <https://cdn.advocacy.sba.gov/wp-content/uploads/2021/11/03093005/Small-Business-FAQ-2021.pdf>. (Nov 2021).

¹² *Id.*

¹³ See 5 U.S.C. § 601(4).

¹⁴ The IRS benchmark is similar to the population of less than 50,000 benchmark in 5 U.S.C § 601(5) that is used to define a small governmental jurisdiction. Therefore, the IRS benchmark has been used to estimate the number small organizations in this small entity description. See Annual Electronic Filing Requirement for Small Exempt Organizations — Form 990-N (e-Postcard), “Who must file,”

<https://www.irs.gov/charities-non-profits/annual-electronic-filing-requirement-for-small-exempt-organizations-form-990-n-e-postcard>. We note that the IRS data does not provide information on whether a small exempt organization is independently owned and operated or dominant in its field.

were approximately 447,689 small exempt organizations in the U.S. reporting revenues of \$50,000 or less according to the registration and tax data for exempt organizations available from the IRS.¹⁵

7. Finally, the small entity described as a “small governmental jurisdiction” is defined generally as “governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.”¹⁶ U.S. Census Bureau data from the 2017 Census of Governments¹⁷ indicate that there were 90,075 local governmental jurisdictions consisting of general purpose governments and special purpose governments in the United States.¹⁸ Of this number there were 36,931 general purpose governments (county¹⁹, municipal and town or township²⁰) with populations of less than 50,000 and 12,040 special purpose governments - independent school districts²¹ with enrollment populations of less than 50,000.²² Accordingly, based on the 2017 U.S. Census of Governments data, we estimate that at least 48,971 entities fall into the category of “small governmental jurisdictions.”²³

¹⁵ See Exempt Organizations Business Master File Extract (EO BMF), "CSV Files by Region," <https://www.irs.gov/charities-non-profits/exempt-organizations-business-master-file-extract-ao-bmf>. The IRS Exempt Organization Business Master File (EO BMF) Extract provides information on all registered tax-exempt/non-profit organizations. The data utilized for purposes of this description was extracted from the IRS EO BMF data for businesses for the tax year 2020 with revenue less than or equal to \$50,000, for Region 1-Northeast Area (58,577), Region 2-Mid-Atlantic and Great Lakes Areas (175,272), and Region 3-Gulf Coast and Pacific Coast Areas (213,840) which includes the continental U.S., Alaska, and Hawaii. This data does not include information for Puerto Rico.

¹⁶ See 5 U.S.C. § 601(5).

¹⁷ See 13 U.S.C. § 161. The Census of Governments survey is conducted every five (5) years compiling data for years ending with “2” and “7”. See also Census of Governments, <https://www.census.gov/programs-surveys/cog/about.html>.

¹⁸ See U.S. Census Bureau, 2017 Census of Governments – Organization Table 2. Local Governments by Type and State: 2017 [CG1700ORG02], <https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html>. Local governmental jurisdictions are made up of general purpose governments (county, municipal and town or township) and special purpose governments (special districts and independent school districts). See also tbl.2. CG1700ORG02 Table Notes_Local Governments by Type and State_2017.

¹⁹ See *id.* at tbl.5. County Governments by Population-Size Group and State: 2017 [CG1700ORG05], <https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html>. There were 2,105 county governments with populations less than 50,000. This category does not include subcounty (municipal and township) governments.

²⁰ See *id.* at tbl.6. Subcounty General-Purpose Governments by Population-Size Group and State: 2017 [CG1700ORG06], <https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html>. There were 18,729 municipal and 16,097 town and township governments with populations less than 50,000.

²¹ See *id.* at tbl.10. Elementary and Secondary School Systems by Enrollment-Size Group and State: 2017 [CG1700ORG10], <https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html>. There were 12,040 independent school districts with enrollment populations less than 50,000. See also tbl.4. Special-Purpose Local Governments by State Census Years 1942 to 2017 [CG1700ORG04], CG1700ORG04 Table Notes_Special Purpose Local Governments by State_Census Years 1942 to 2017.

²² While the special purpose governments category also includes local special district governments, the 2017 Census of Governments data does not provide data aggregated based on population size for the special purpose governments category. Therefore, only data from independent school districts is included in the special purpose governments category.

²³ This total is derived from the sum of the number of general purpose governments (county, municipal and town or township) with populations of less than 50,000 (36,931) and the number of special purpose governments - independent school districts with enrollment populations of less than 50,000 (12,040), from the 2017 Census of Governments - Organizations tbls.5, 6 & 10.

8. *Wireless Telecommunications Carriers (except Satellite)*. This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves.²⁴ Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless internet access, and wireless video services.²⁵ The SBA size standard for this industry classifies a business as small if it has 1,500 or fewer employees.²⁶ U.S. Census Bureau data for 2017 show that there were 2,893 firms in this industry that operated for the entire year.²⁷ Of that number, 2,837 firms employed fewer than 250 employees.²⁸ Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 797 providers that reported they were engaged in the provision of wireless services.²⁹ Of these providers, the Commission estimates that 715 providers have 1,500 or fewer employees.³⁰ Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

9. *Broadband Personal Communications Service*. The broadband personal communications services (PCS) spectrum encompasses services in the 1850-1910 and 1930-1990 MHz bands.³¹ The closest industry with a SBA small business size standard applicable to these services is Wireless Telecommunications Carriers (except Satellite).³² The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.³³ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.³⁴ Of this number, 2,837 firms employed fewer than 250 employees.³⁵ Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

²⁴ See U.S. Census Bureau, *2017 NAICS Definition*, "517312 Wireless Telecommunications Carriers (except Satellite)," <https://www.census.gov/naics/?input=517312&year=2017&details=517312>.

²⁵ *Id.*

²⁶ See 13 CFR § 121.201, NAICS Code 517312.

²⁷ See U.S. Census Bureau, *2017 Economic Census of the United States, Employment Size of Firms for the U.S.: 2017*, Table ID: EC1700SIZEEMPfirm, NAICS Code 517312, <https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPfirm&hidePreview=false>.

²⁸ *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

²⁹ Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), <https://docs.fcc.gov/pub/Id.lic/attachments/DOC-379181A1.pdf>.

³⁰ *Id.*

³¹ See 47 CFR § 24.200.

³² See U.S. Census Bureau, *2017 NAICS Definition*, "517312 Wireless Telecommunications Carriers (except Satellite)," <https://www.census.gov/naics/?input=517312&year=2017&details=517312>.

³³ See 13 CFR § 121.201, NAICS Code 517312.

³⁴ See U.S. Census Bureau, *2017 Economic Census of the United States, Employment Size of Firms for the U.S.: 2017*, Table ID: EC1700SIZEEMPfirm, NAICS Code 517312, <https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPfirm&hidePreview=false>.

³⁵ *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

10. Based on Commission data as of November 2021, there were approximately 5,060 active licenses in the Broadband PCS service.³⁶ The Commission's small business size standards with respect to Broadband PCS involve eligibility for bidding credits and installment payments in the auction of licenses for these services. In auctions for these licenses, the Commission defined "small business" as an entity that, together with its affiliates and controlling interests, has average gross revenues not exceeding \$40 million for the preceding three years, and a "very small business" as an entity that, together with its affiliates and controlling interests, has had average annual gross revenues not exceeding \$15 million for the preceding three years.³⁷ Winning bidders claiming small business credits won Broadband PCS licenses in C, D, E, and F Blocks.³⁸

11. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

12. *Narrowband Personal Communications Services.* Narrowband Personal Communications Services (*Narrowband PCS*) are PCS services operating in the 901-902 MHz, 930-931 MHz, and 940-941 MHz bands.³⁹ PCS services are radio communications that encompass mobile and ancillary fixed communication that provide services to individuals and businesses and can be integrated with a variety of competing networks.⁴⁰ Wireless Telecommunications Carriers (*except Satellite*)⁴¹ is the closest industry with a SBA small business size standard applicable to these services. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.⁴² U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.⁴³ Of this number, 2,837 firms employed fewer than 250 employees.⁴⁴ Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

³⁶ Based on a FCC Universal Licensing System search on November 16, 2021, <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = CW; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

³⁷ See 47 CFR § 24.720(b).

³⁸ See Federal Communications Commission, Office of Economics and Analytics, Auctions, Auctions 4, 5, 10, 11, 22, 35, 58, 71 and 78, <https://www.fcc.gov/auctions>.

³⁹ See 47 CFR § 24.5.

⁴⁰ *Id.*

⁴¹ See U.S. Census Bureau, 2017 NAICS Definition, "517312 Wireless Telecommunications Carriers (*except Satellite*)," <https://www.census.gov/naics/?input=517312&year=2017&details=517312>.

⁴² See 13 CFR § 121.201, NAICS Code 517312.

⁴³ See U.S. Census Bureau, 2017 Economic Census of the United States, Employment Size of Firms for the U.S.: 2017, Table ID: EC1700SIZEEMPFIEM, NAICS Code 517312, <https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePreview=false>.

⁴⁴ *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

13. According to Commission data as of December 2021, there were approximately 4,211 active *Narrowband PCS* licenses.⁴⁵ The Commission's small business size standards with respect to *Narrowband PCS* involve eligibility for bidding credits and installment payments in the auction of licenses for these services. For the auction of these licenses, the Commission defined a "small business" as an entity that, together with affiliates and controlling interests, has average gross revenues for the three preceding years of not more than \$40 million.⁴⁶ A "very small business" is defined as an entity that, together with affiliates and controlling interests, has average gross revenues for the three preceding years of not more than \$15 million.⁴⁷ Pursuant to these definitions, 7 winning bidders claiming small and very small bidding credits won approximately 359 licenses.⁴⁸ One of the winning bidders claiming a small business status classification in these *Narrowband PCS* license auctions had an active license as of December 2021.⁴⁹

14. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

15. *Wireless Communications Services*. Wireless Communications Services (WCS) can be used for a variety of fixed, mobile, radiolocation, and digital audio broadcasting satellite services. Wireless spectrum is made available and licensed for the provision of wireless communications services in several frequency bands subject to Part 27 of the Commission's rules.⁵⁰ Wireless Telecommunications Carriers (*except* Satellite)⁵¹ is the closest industry with a SBA small business size standard applicable to these services. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.⁵² U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.⁵³ Of this number, 2,837 firms employed fewer than 250

⁴⁵ Based on a FCC Universal Licensing System search on December 10, 2021, <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = CN; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

⁴⁶ See 47 CFR § 24.321(a)(1)-(2).

⁴⁷ *Id.*

⁴⁸ See Federal Communications Commission, Economics and Analytics, Auctions, Auction 41: Narrowband PCS, Summary, Closing Charts, License By Bidder, <https://www.fcc.gov/sites/default/files/wireless/auctions/41/charts/41cls2.pdf>; Auction 50: Narrowband PCS, Summary, Closing Charts, License By Bidder, <https://www.fcc.gov/sites/default/files/wireless/auctions/50/charts/50cls2.pdf>.

⁴⁹ Based on a FCC Universal Licensing System search on December 10, 2021, <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = CN; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

⁵⁰ See 47 CFR §§ 27.1 – 27.1607.

⁵¹ See U.S. Census Bureau, 2017 NAICS Definition, "517312 Wireless Telecommunications Carriers (*except* Satellite)," <https://www.census.gov/naics/?input=517312&year=2017&details=517312>.

⁵² See 13 CFR § 121.201, NAICS Code 517312.

⁵³ See U.S. Census Bureau, 2017 Economic Census of the United States, Employment Size of Firms for the U.S.: 2017, Table ID: EC1700SIZEEMPFI, NAICS Code 517312,

(continued....)

employees.⁵⁴ Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

16. The Commission's small business size standards with respect to WCS involve eligibility for bidding credits and installment payments in the auction of licenses for the various frequency bands included in WCS. When bidding credits are adopted for the auction of licenses in WCS frequency bands, such credits may be available to several types of small businesses based average gross revenues (small, very small and entrepreneur) pursuant to the competitive bidding rules adopted in conjunction with the requirements for the auction and/or as identified in the designated entities section in Part 27 of the Commission's rules for the specific WCS frequency bands.⁵⁵

17. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

18. *700 MHz Guard Band Licensees.* The 700 MHz Guard Band encompasses spectrum in 746-747/776-777 MHz and 762-764/792-794 MHz frequency bands. Wireless Telecommunications Carriers (*except* Satellite)⁵⁶ is the closest industry with a SBA small business size standard applicable to licenses providing services in these bands. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.⁵⁷ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.⁵⁸ Of this number, 2,837 firms employed fewer than 250 employees.⁵⁹ Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

19. According to Commission data as of December 2021, there were approximately 224 active 700 MHz Guard Band licenses.⁶⁰ The Commission's small business size standards with respect to

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<https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPfirm&hidePreview=false>.

⁵⁴ *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

⁵⁵ See 47 CFR §§ 27.201 – 27.1601. The Designated entities sections in Subparts D – Q each contain the small business size standards adopted for the auction of the frequency band covered by that subpart.

⁵⁶ See U.S. Census Bureau, *2017 NAICS Definition*, "517312 Wireless Telecommunications Carriers (*except* Satellite)," <https://www.census.gov/naics/?input=517312&year=2017&details=517312>.

⁵⁷ See 13 CFR § 121.201, NAICS Code 517312.

⁵⁸ See U.S. Census Bureau, *2017 Economic Census of the United States, Employment Size of Firms for the U.S.: 2017*, Table ID: EC1700SIZEEMPfirm, NAICS Code 517312, <https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPfirm&hidePreview=false>.

⁵⁹ *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

⁶⁰ Based on a FCC Universal Licensing System search on December 14, 2021, <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = WX; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

700 MHz Guard Band licensees involve eligibility for bidding credits and installment payments in the auction of licenses. For the auction of these licenses, the Commission defined a “small business” as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$40 million for the preceding three years, and a “very small business” an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$15 million for the preceding three years.⁶¹ Pursuant to these definitions, five winning bidders claiming one of the small business status classifications won 26 licenses, and one winning bidder claiming small business won two licenses.⁶² None of the winning bidders claiming a small business status classification in these 700 MHz Guard Band license auctions had an active license as of December 2021.⁶³

20. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA’s small business size standard.

21. *Lower 700 MHz Band Licenses.* The lower 700 MHz band encompasses spectrum in the 698-746 MHz frequency bands. Permissible operations in these bands include flexible fixed, mobile, and broadcast uses, including mobile and other digital new broadcast operation; fixed and mobile wireless commercial services (including FDD- and TDD-based services); as well as fixed and mobile wireless uses for private, internal radio needs, two-way interactive, cellular, and mobile television broadcasting services.⁶⁴ Wireless Telecommunications Carriers (*except* Satellite)⁶⁵ is the closest industry with a SBA small business size standard applicable to licenses providing services in these bands. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.⁶⁶ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.⁶⁷ Of this number, 2,837 firms employed fewer than 250 employees.⁶⁸ Thus under the SBA

⁶¹ See 47 CFR § 27.502(a).

⁶² See Federal Communications Commission, Economics and Analytics, Auctions, Auction 33: Upper 700 MHz Guard Bands, Summary, Closing Charts, Licenses by Bidder, <https://www.fcc.gov/sites/default/files/wireless/auctions/33/charts/33cls2.pdf>, Auction 38: Upper 700 MHz Guard Bands, Summary, Closing Charts, Licenses by Bidder, <https://www.fcc.gov/sites/default/files/wireless/auctions/38/charts/38cls2.pdf>.

⁶³ Based on a FCC Universal Licensing System search on December 14, 2021, <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, “Match only the following radio service(s)”, Radio Service = WX; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

⁶⁴ See Federal Communications Commission, Economics and Analytics, Auctions, Auctions 44, 49, 60: Lower 700 MHz Band, Fact Sheet, Permissible Operations, <https://www.fcc.gov/auction/44/factsheet>, <https://www.fcc.gov/auction/49/factsheet>, <https://www.fcc.gov/auction/60/factsheet>.

⁶⁵ See U.S. Census Bureau, 2017 NAICS Definition, “517312 Wireless Telecommunications Carriers (*except* Satellite),” <https://www.census.gov/naics/?input=517312&year=2017&details=517312>.

⁶⁶ See 13 CFR § 121.201, NAICS Code 517312.

⁶⁷ See U.S. Census Bureau, 2017 Economic Census of the United States, Employment Size of Firms for the U.S.: 2017, Table ID: EC1700SIZEEMPFIEM, NAICS Code 517312, <https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePreview=false>.

⁶⁸ *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

22. According to Commission data as of December 2021, there were approximately 2,824 active Lower 700 MHz Band licenses.⁶⁹ The Commission's small business size standards with respect to Lower 700 MHz Band licensees involve eligibility for bidding credits and installment payments in the auction of licenses. For auctions of Lower 700 MHz Band licenses the Commission adopted criteria for three groups of small businesses. A very small business was defined as an entity that, together with its affiliates and controlling interests, has average annual gross revenues not exceeding \$15 million for the preceding three years, a small business was defined as an entity that, together with its affiliates and controlling interests, has average gross revenues not exceeding \$40 million for the preceding three years, and an entrepreneur was defined as an entity that, together with its affiliates and controlling interests, has average gross revenues not exceeding \$3 million for the preceding three years.⁷⁰ In auctions for Lower 700 MHz Band licenses seventy-two winning bidders claiming a small business classification won 329 licenses,⁷¹ twenty-six winning bidders claiming a small business classification won 214 licenses,⁷² and three winning bidders claiming a small business classification won all five auctioned licenses.⁷³

23. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

24. *Upper 700 MHz Band Licenses.* The upper 700 MHz band encompasses spectrum in the 746-806 MHz bands. Upper 700 MHz D Block licenses are nationwide licenses associated with the 758-763 MHz and 788-793 MHz bands.⁷⁴ Permissible operations in these bands include flexible fixed, mobile, and broadcast uses, including mobile and other digital new broadcast operation; fixed and mobile wireless commercial services (including FDD- and TDD-based services); as well as fixed and mobile wireless uses for private, internal radio needs, two-way interactive, cellular, and mobile television broadcasting services.⁷⁵ Wireless Telecommunications Carriers (*except* Satellite)⁷⁶ is the closest industry

⁶⁹ Based on a FCC Universal Licensing System search on December 14, 2021, <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = WY, WZ; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

⁷⁰ See 47 CFR § 27.702(a)(1)-(3).

⁷¹ See Federal Communications Commission, Economics and Analytics, Auctions, Auction 44: Lower 700 MHz Guard Bands, Summary, Closing Charts, Licenses by Bidder, <https://www.fcc.gov/sites/default/files/wireless/auctions/44/charts/44cls2.pdf>.

⁷² See Federal Communications Commission, Economics and Analytics, Auctions, Auction 49: Lower 700 MHz Guard Bands, Summary, Closing Charts, Licenses by Bidder, <https://www.fcc.gov/sites/default/files/wireless/auctions/49/charts/49cls2.pdf>.

⁷³ See Federal Communications Commission, Economics and Analytics, Auctions, Auction 60: Lower 700 MHz Guard Bands, Summary, Closing Charts, Licenses by Bidder, <https://www.fcc.gov/sites/default/files/wireless/auctions/60/charts/60cls2.pdf>.

⁷⁴ See 47 CFR § 27.4.

with a SBA small business size standard applicable to licenses providing services in these bands. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.⁷⁷ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.⁷⁸ Of that number, 2,837 firms employed fewer than 250 employees.⁷⁹ Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

25. According to Commission data as of December 2021, there were approximately 152 active Upper 700 MHz Band licenses.⁸⁰ The Commission's small business size standards with respect to Upper 700 MHz Band licensees involve eligibility for bidding credits and installment payments in the auction of licenses. For the auction of these licenses, the Commission defined a "small business" as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$40 million for the preceding three years, and a "very small business" an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$15 million for the preceding three years.⁸¹ Pursuant to these definitions, three winning bidders claiming very small business status won five of the twelve available licenses.⁸²

26. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

27. *Advanced Wireless Services (AWS) - (1710–1755 MHz and 2110–2155 MHz bands (AWS-1); 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz bands (AWS-2); 2155–2175 MHz band (AWS-3); 2000-2020 MHz and 2180-2200 MHz (AWS-4)).* Spectrum is made

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⁷⁵ See Federal Communications Commission, Economics and Analytics, Auctions, Auction 73: 700 MHz Band, Fact Sheet, Permissible Operations, <https://www.fcc.gov/auction/73/factsheet>. We note that in Auction 73, Upper 700 MHz Band C and D Blocks as well as Lower 700 MHz Band A, B, and E Blocks were auctioned.

⁷⁶ See U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers (except Satellite),"* <https://www.census.gov/naics/?input=517312&year=2017&details=517312>.

⁷⁷ See 13 CFR § 121.201, NAICS Code 517312.

⁷⁸ See U.S. Census Bureau, *2017 Economic Census of the United States, Employment Size of Firms for the U.S.: 2017*, Table ID: EC1700SIZEEMPFIEM, NAICS Code 517312, <https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePreview=false>.

⁷⁹ *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

⁸⁰ Based on a FCC Universal Licensing System search on December 14, 2021, <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = WP, WU; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

⁸¹ See 47 CFR § 27.502(a).

⁸² See *Auction of 700 MHz Band Licenses Closes; Winning Bidders Announced for Auction 73*, Public Notice, DA-08-595, Attachment A, Report No. AUC-08-73-I (Auction 73) (March 20, 2008). The results for Upper 700 MHz Band C Block can be found on pp. 62-63.

available and licensed in these bands for the provision of various wireless communications services.⁸³ Wireless Telecommunications Carriers (*except* Satellite)⁸⁴ is the closest industry with a SBA small business size standard applicable to these services. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.⁸⁵ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.⁸⁶ Of this number, 2,837 firms employed fewer than 250 employees.⁸⁷ Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

28. According to Commission data as December 2021, there were approximately 4,472 active AWS licenses.⁸⁸ The Commission's small business size standards with respect to AWS involve eligibility for bidding credits and installment payments in the auction of licenses for these services. For the auction of AWS licenses, the Commission defined a "small business" as an entity with average annual gross revenues for the preceding three years not exceeding \$40 million, and a "very small business" as an entity with average annual gross revenues for the preceding three years not exceeding \$15 million.⁸⁹ Pursuant to these definitions, 57 winning bidders claiming status as small or very small businesses won 215 of 1,087 licenses.⁹⁰ In the most recent auction of AWS licenses 15 of 37 bidders qualifying for status as small or very small businesses won licenses.⁹¹

29. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

30. *Broadband Radio Service and Educational Broadband Service.* Broadband Radio Service systems, previously referred to as Multipoint Distribution Service (MDS) and Multichannel Multipoint Distribution Service (MMDS) systems, and "wireless cable,"⁹² transmit video programming to

⁸³ See 47 CFR § 27.1(b).

⁸⁴ See U.S. Census Bureau, *2017 NAICS Definition*, "517312 Wireless Telecommunications Carriers (*except* Satellite)," <https://www.census.gov/naics/?input=517312&year=2017&details=517312>.

⁸⁵ See 13 CFR § 121.201, NAICS Code 517312.

⁸⁶ See U.S. Census Bureau, *2017 Economic Census of the United States, Employment Size of Firms for the U.S.: 2017*, Table ID: EC1700SIZEEMPFIEM, NAICS Code 517312, <https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePreview=false>.

⁸⁷ *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

⁸⁸ Based on a FCC Universal Licensing System search on December 10, 2021, <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = AD, AH, AT, AW; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

⁸⁹ See 47 CFR §§ 27.1002, 27.1102, 27.1104, 27.1106.

⁹⁰ See Federal Communications Commission, Economics and Analytics, Auctions, Auction 66: Advanced Wireless Services (AWS-1), Summary, Spreadsheets, <https://www.fcc.gov/sites/default/files/wireless/auctions/66/charts/66cls2.pdf>.

⁹¹ See *Auction of Advanced Wireless Services (AWS-3) Licenses Closes; Winning Bidders Announced for Auction 97*, Public Notice, DA-15-131, Attachments A-B, (Auction No. 97) (January 30, 2015).

subscribers and provide two-way high speed data operations using the microwave frequencies of the Broadband Radio Service (BRS) and Educational Broadband Service (EBS) (previously referred to as the Instructional Television Fixed Service (ITFS)).⁹³ Wireless cable operators that use spectrum in the BRS often supplemented with leased channels from the EBS, provide a competitive alternative to wired cable and other multichannel video programming distributors. Wireless cable programming to subscribers resembles cable television, but instead of coaxial cable, wireless cable uses microwave channels.⁹⁴

31. In light of the use of wireless frequencies by BRS and EBS services, the closest industry with a SBA small business size standard applicable to these services is Wireless Telecommunications Carriers (*except* Satellite).⁹⁵ The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.⁹⁶ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.⁹⁷ Of this number, 2,837 firms employed fewer than 250 employees.⁹⁸ Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

32. According to Commission data as December 2021, there were approximately 5,869 active BRS and EBS licenses.⁹⁹ The Commission's small business size standards with respect to BRS involves eligibility for bidding credits and installment payments in the auction of licenses for these services. For the auction of BRS licenses, the Commission adopted criteria for three groups of small businesses. A very small business is an entity that, together with its affiliates and controlling interests, has average annual gross revenues exceed \$3 million and did not exceed \$15 million for the preceding three years, a small business is an entity that, together with its affiliates and controlling interests, has average gross revenues exceed \$15 million and did not exceed \$40 million for the preceding three years, and an entrepreneur is an entity that, together with its affiliates and controlling interests, has average gross revenues not exceeding \$3 million for the preceding three years.¹⁰⁰ Of the ten winning bidders for BRS

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⁹² The use of the term "wireless cable" does not imply that it constitutes cable television for statutory or regulatory purposes.

⁹³ See 47 CFR § 27.4; see also *Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service and Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, Report and Order, 10 FCC Rcd 9589, 9593, para. 7 (1995).

⁹⁴ Generally, a wireless cable system may be described as a microwave station transmitting on a combination of BRS and EBS channels to numerous receivers with antennas, such as single-family residences, apartment complexes, hotels, educational institutions, business entities and governmental offices. The range of the transmission depends upon the transmitter power, the type of receiving antenna and the existence of a line-of-sight path between the transmitter or signal booster and the receiving antenna.

⁹⁵ See U.S. Census Bureau, *2017 NAICS Definition*, "517312 Wireless Telecommunications Carriers (*except* Satellite)," <https://www.census.gov/naics/?input=517312&year=2017&details=517312>.

⁹⁶ See 13 CFR § 121.201, NAICS Code 517312.

⁹⁷ See U.S. Census Bureau, *2017 Economic Census of the United States, Employment Size of Firms for the U.S.: 2017*, Table ID: EC1700SIZEEMPfirm, NAICS Code 517312, <https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPfirm&hidePreview=false>.

⁹⁸ *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

⁹⁹ Based on a FCC Universal Licensing System search on December 10, 2021, <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = BR, ED; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

licenses, two bidders claiming the small business status won 4 licenses, one bidder claiming the very small business status won three licenses and two bidders claiming entrepreneur status won six licenses.¹⁰¹ One of the winning bidders claiming a small business status classification in the BRS license auction has an active licenses as of December 2021.¹⁰²

33. The Commission's small business size standards for EBS define a small business as an entity that, together with its affiliates, its controlling interests and the affiliates of its controlling interests, has average gross revenues that are not more than \$55 million for the preceding five (5) years, and a very small business is an entity that, together with its affiliates, its controlling interests and the affiliates of its controlling interests, has average gross revenues that are not more than \$20 million for the preceding five (5) years.¹⁰³ In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

34. *The Educational Broadcasting Services.* Cable-based educational broadcasting services fall under the broad category of the Wired Telecommunications Carriers industry.¹⁰⁴ The Wired Telecommunications Carriers industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks.¹⁰⁵ Transmission facilities may be based on a single technology or a combination of technologies.¹⁰⁶ Establishments in this industry use the wired telecommunications network facilities that they operate to provide a variety of services, such as wired telephony services, including VoIP services; wired (cable) audio and video programming distribution; and wired broadband Internet services."¹⁰⁷

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¹⁰⁰ See 47 CFR § 27.1218(a).

¹⁰¹ See Federal Communications Commission, Economics and Analytics, Auctions, Auction 86: Broadband Radio Service, Summary, Reports, All Bidders, <https://www.fcc.gov/sites/default/files/wireless/auctions/86/charts/86bidder.xls>.

¹⁰² Based on a FCC Universal Licensing System search on December 10, 2021, <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = BR; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

¹⁰³ See 47 CFR § 27.1219(a).

¹⁰⁴ See U.S. Census Bureau, *2017 NAICS Definition*, "517311 Wired Telecommunications Carriers," <https://www.census.gov/naics/?input=517311&year=2017&details=517311>. Examples of this category are: broadband Internet service providers (e.g., cable, DSL); local telephone carriers (wired); cable television distribution services; long-distance telephone carriers (wired); closed circuit television (CCTV) services; VoIP service providers, using owner operated wired telecommunications infrastructure; direct-to-home satellite system (DTH) services; telecommunications carriers (wired); satellite television distribution systems; and multichannel multipoint distribution services (MMDS).

¹⁰⁵ *Id.*

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

35. The SBA small business size standard for this industry classifies businesses having 1,500 or fewer employees as small.¹⁰⁸ U.S. Census Bureau data for 2017 show that there were 3,054 firms in this industry that operated for the entire year.¹⁰⁹ Of this total, 2,964 firms operated with fewer than 250 employees.¹¹⁰ Thus, under this size standard, the majority of firms in this industry can be considered small. Additionally, according to Commission data as of December 2021, there were 4,477 active EBS licenses.¹¹¹ The Commission estimates that the majority of these licenses are held by non-profit educational institutions and school districts and are likely small entities.

36. *Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing.* This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment.¹¹² Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.¹¹³ The SBA small business size standard for this industry classifies businesses having 1,250 employees or less as small.¹¹⁴ U.S. Census Bureau data for 2017 show that there were 656 firms in this industry that operated for the entire year.¹¹⁵ Of this number, 624 firms had fewer than 250 employees.¹¹⁶ Thus, under the SBA size standard, the majority of firms in this industry can be considered small.

37. *Software Publishers.* This industry comprises establishments primarily engaged in computer software publishing or publishing and reproduction.¹¹⁷ Establishments in this industry carry out operations necessary for producing and distributing computer software, such as designing, providing documentation, assisting in installation, and providing support services to software purchasers.¹¹⁸ These establishments may design, develop, and publish, or publish only.¹¹⁹ The SBA small business size

¹⁰⁸ See 13 CFR § 121.201, NAICS Code 517311.

¹⁰⁹ See U.S. Census Bureau, *2017 Economic Census of the United States, Selected Sectors: Employment Size of Firms for the U.S.: 2017*, Table ID: EC1700SIZEEMPfirm, NAICS Code 517311, <https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPfirm&hidePreview=false>.

¹¹⁰ *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

¹¹¹ Based on a FCC Universal Licensing System search on December 17, 2021. <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = ED; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

¹¹² See U.S. Census Bureau, *2017 NAICS Definition, "334220 Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing,"* <https://www.census.gov/naics/?input=334220&year=2017&details=334220>.

¹¹³ *Id.*

¹¹⁴ See 13 CFR § 121.201, NAICS Code 334220.

¹¹⁵ See U.S. Census Bureau, *2017 Economic Census of the United States, Employment Size of Firms for the U.S.: 2017*, Table ID: EC1700SIZEEMPfirm, NAICS Code 334220, <https://data.census.gov/cedsci/table?y=2017&n=334220&tid=ECNSIZE2017.EC1700SIZEEMPfirm&hidePreview=false>.

¹¹⁶ *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

¹¹⁷ See U.S. Census Bureau, *2017 NAICS Definition, "511210 Software Publishers,"* <https://www.census.gov/naics/?input=511210&year=2017&details=511210>.

¹¹⁸ *Id.*

standard for this industry classifies businesses having annual receipts of \$41.5 million or less as small.¹²⁰ U.S. Census Bureau data for 2017 indicate that 7,842 firms in this industry operated for the entire year.¹²¹ Of this number 7,226 firms had revenue of less than \$25 million.¹²² Based on this data, we conclude that a majority of firms in this industry are small.

38. *Noncommercial Educational (NCE) and Public Broadcast Stations.* Noncommercial educational broadcast stations and public broadcast stations are television or radio broadcast stations which under the Commission's rules are eligible to be licensed by the Commission as a noncommercial educational radio or television broadcast station and are owned and operated by a public agency or nonprofit private foundation, corporation, or association; or are owned and operated by a municipality which transmits only noncommercial programs for education purposes.

39. The SBA small business size standards and U.S. Census Bureau data classify radio stations¹²³ and television broadcasting¹²⁴ separately and both categories may include both noncommercial and commercial stations. The SBA small business size standard for both radio stations and television broadcasting classify firms having \$41.5 million or less in annual receipts as small.¹²⁵ For Radio Stations, U.S. Census Bureau data for 2017 show that 1,879 of the 2,963 firms that operated during that year had revenue of less than \$25 million per year.¹²⁶ For Television Broadcasting, U.S. Census Bureau data for 2017 show that 657 of the 744 firms that operated for the entire year had revenue of less than \$25,000,000.¹²⁷ While the U.S. Census Bureau data does not indicate the number of non-commercial

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¹¹⁹ *Id.*

¹²⁰ See 13 CFR § 121.201, NAICS Code 511210.

¹²¹ See U.S. Census Bureau, *2017 Economic Census of the United States, Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017*, Table ID: EC1700SIZEREVFIRM, NAICS Code 511210, <https://data.census.gov/cedsci/table?y=2017&n=511210&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false>.

¹²² *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, see https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

¹²³ See U.S. Census Bureau, *2017 NAICS Definition, "515112 Radio Stations,"* <https://www.census.gov/naics/?input=515112&year=2017&details=515112>.

¹²⁴ See U.S. Census Bureau, *2017 NAICS Definition, "515120 Television Broadcasting,"* <https://www.census.gov/naics/?input=515120&year=2017&details=515120>.

¹²⁵ See 13 CFR § 121.201, NAICS Code 515112 (Radio Stations); NAICS Code 515120 (Television Broadcasting).

¹²⁶ See U.S. Census Bureau, *2017 Economic Census of the United States, Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017*, Table ID: EC1700SIZEREVFIRM, NAICS Code 515112, <https://data.census.gov/cedsci/table?y=2017&n=515112&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false>. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We note that the U.S. Census Bureau withheld publication of the number of firms that operated for the entire year. We also note that the U.S. Census Bureau withheld publication of the number of firms that operated with sales/value of shipments/revenue in the individual categories for less than \$100,000, and \$100,000 to \$249,999 to avoid disclosing data for individual companies (see Cell Notes for the sales/value of shipments/revenue in these categories). Therefore, the number of firms with revenue that meet the SBA size standard would be higher than noted herein. We further note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, see https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

¹²⁷ See U.S. Census Bureau, *2017 Economic Census of the United States, Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017*, Table ID: EC1700SIZEREVFIRM, NAICS Code 515120, <https://data.census.gov/cedsci/table?y=2017&n=515120&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false>. The available U.S. Census Bureau data does not provide a more precise estimate of the number

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stations, we estimate that under the applicable SBA size standard the majority of noncommercial educational broadcast stations and public broadcast stations are small entities.

40. According to Commission data as of September 2021, there were 4,595 licensed noncommercial educational radio and television stations.¹²⁸ There were also 2,276 low power television stations, including Class A stations (LPTV) and 3,106 TV translator stations.¹²⁹ The Commission does not compile and otherwise does not have access to financial information for these stations that permit it to determine how many stations qualify as small entities under the SBA small business size standards. However, given the nature of these services, we will presume that all noncommercial educational and public broadcast stations qualify as small entities under the above SBA small business size standards.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

41. We expect the actions proposed in the *Further Notice*, if adopted, will impose additional reporting, recordkeeping and/or other compliance obligations on small as well as other entities who report to the Commission on the performance of their WEA service. The *Further Notice* seeks to refresh the record to develop metrics for WEA performance and reporting. Specifically, we seek comment on whether Participating CMS Providers should report to the Commission on the reliability, speed, and accuracy of their WEA service, and if so, on when and how the reports should be provided to the Commission, on how Participating CMS Providers should gather that data necessary to compile those performance reports, and on how WEA reports should quantify these key performance metrics. We also inquire whether there are other or additional measures of WEA's performance that are relevant to emergency management agencies and the public that the Commission should consider as a reporting requirement.

42. In assessing the cost of compliance for small entities, at this time the Commission cannot quantify the cost of compliance for small entities and is not in a position to determine whether, if adopted, compliance with any WEA performance reporting or other requirements will require small entities to hire professionals. The Commission sought detailed comment on the costs of WEA performance reporting in the *2016 WEA R&O and FNPRM*, but did not receive any responsive comments on this issue. However, in 2021, the Commission estimated that the total annual cost of compliance with its WEA election requirements for the industry would be \$1 million, which was approved by the Office of Management and Budget.¹³⁰ This cost estimate included the total effort required by Participating CMS Providers to assess the extent of their readiness to participate in WEA and report such to new and existing subscribers and the Commission. Accordingly regarding costs, the *Further Notice* seeks comment on: (1) the costs associated with Participating CMS Providers' production of WEA performance reports, (2) whether its prior \$1 million estimate is a reasonable cost ceiling for CMS Providers to generate and submit WEA performance tests because both lines of effort entail reporting and analysis of WEA-related network infrastructure, (3) whether in the alternative, the cost to establish and report on the results of E911 location accuracy testing would be a more accurate analog to the cost of reporting on WEA's performance,¹³¹ and (4) whether

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of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see*

https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

¹²⁸ Broadcast Station Totals as of September 30, 2021 Press Release (MB Oct. 4, 2021) (September 30, 2021 Broadcast Station Totals), <https://docs.fcc.gov/public/attachments/DOC-376230A1.pdf>.

¹²⁹ *Id.*

¹³⁰ *See* Election Whether to Participate in the Wireless Emergency Alert System 3060-1113, Supporting Statement (April 2021).

¹³¹ *See* E911 Location Accuracy Requirements, OMB 3060-1210, 80 FR 30235 (2015); *see also* *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Fourth Report and Order, 30 FCC Rcd 1259, para. 170

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standards revisions or software and firmware updates to CMS network equipment and mobile devices may be necessary to log WEA performance data. We expect the comments we receive to include information addressing costs which will help the Commission identify and evaluate relevant issues for small entities, including compliance costs and other burdens that may result from any WEA performance reporting requirements that may be adopted in this proceeding, before adopting final rules.

E. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

43. The RFA requires an agency to describe any significant, specifically small business alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): “(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for such small entities; (3) the use of performance, rather than design, standards; and (4) and exemption from coverage of the rule, or any part thereof, for such small entities.”¹³²

44. The Commission seeks comment on steps that it could take to limit the burden of WEA performance reporting. It seeks comment on the extent to which the Commission could limit the overall economic impact of WEA performance reporting by providing increased flexibility for businesses identified as small by the Small Business Administration or by limiting the applicability of the requirement to only the three nationwide CMS Providers.

45. Building on the Commission’s prior proposals and its objective to refresh the record to develop metrics for WEA performance and reporting, in the *Further Notice* the Commission does not propose to set minimum performance benchmarks which could adversely affect small entities. Instead, we seek to identify key reporting metrics that will help stakeholders develop an understanding of WEA end-to-end performance. The Commission also seeks comment on steps that it could take to limit the burden of WEA performance reporting as a general matter, which could help minimize the economic impact of any adopted WEA performance reporting requirements on small entities. Further, specifically targeting small entities, we seek comment on the extent to which the Commission could limit the overall economic impact of WEA performance reporting by providing increased flexibility for businesses identified as small by the SBA, or by limiting the applicability of the requirement to only the three nationwide CMS Providers.

46. In the *Further Notice*, the Commission also identifies alternative approaches on several matters that might minimize the economic impact for small entities. While seeking comment on how to define reliability, speed, and accuracy for WEA, the Commission inquires whether the definitions it proposed in the *2016 WEA R&O and FNPRM* best capture the definitions for reliability, speed, and accuracy of WEA. As part of this inquiry, in the alternative we seek comment on: (1) whether WEA’s reliability should be defined as the proportion of devices within the targeted area while the alert is active that successfully displayed the alert, (2) whether WEA’s speed should be measured as the difference between the time that an alert is initiated by an authorized alert originator and the time that the alert is displayed at the mobile device, (3) whether WEA’s accuracy should be defined as the proportion of alert recipients that received the alert within and further than 0.1 miles from the target area, and (4) whether reliability, speed, and accuracy are the most pertinent measures of WEA’s performance to emergency management agencies and the public.

47. Similarly, the Commission seeks comment in the *Further Notice* on how Participating CMS Providers should measure the performance of their WEA service for the purpose of generating

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(2015) (quantifying the cost of compliance with wireless location accuracy requirements without specific reference to the costs of the test bed process).

¹³² 5 U.S.C. §§ 603(c)(1)-(4).

WEA performance reports noting that in the *2016 WEA R&O and FNPRM* we previously proposed that Participating CMS Providers be required to submit WEA performance reports based on aggregated data from all WEA activations during the reporting period.¹³³ In the alternative, we inquire whether the Commission should: (1) allow performance reports to be based on discrete WEA tests conducted by Participating CMS Providers in partnership with federal, state, or local emergency management agencies in a representative sample of dense urban, urban, suburban and rural geographic environments,¹³⁴ or (2) require WEA performance reports to be based on aggregated data from real-time WEA use and how this would be implemented. Regarding how and when performance reports should be provided to the Commission, as an alternative to our 2016 proposal to require Participating CMS Providers to report on the performance of their WEA service annually, or to require a single report and additional reports only in response to “material” network upgrades,¹³⁵ in the *Further Notice* as a step to limit the burden of reporting while still gaining visibility into end-to-end WEA performance, we inquire whether to require Participating CMS Providers to submit multiple reports, such as a series of three reports, and whether the submission of performance reports should coincide with any particular developments or milestones. The Commission expects to more fully consider the economic impact and alternatives for small entities following the review of comments filed in response to the *Further Notice*.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

48. None.

¹³³ See *2016 WEA R&O and FNPRM*, 31 FCC Rcd at 11210 at paras 161-63.

¹³⁴ See ATIS, Location Technology Performance Data - Define Topologies & Data Collection Methodology, ATIS-0500011 (2007), <https://webstore.ansi.org/Standards/ATIS/ATIS0500011>.

¹³⁵ See *2016 WEA R&O and FNPRM*, 31 FCC Rcd at 11210 at paras 161-63.