

FCC FACT SHEET*
Facilitating Implementation of Next Generation 911 Services (NG911)
Report and Order – PS Docket Nos. 21-479 and 18-64

Background: Every year, people in need of emergency assistance make more than 200 million calls to 911 across the United States. With the transition to Next Generation 911 (NG911), state and local 911 authorities are replacing legacy 911 technology with Internet Protocol (IP)-based infrastructure that will support new 911 capabilities, including text, video, and data, and that will improve 911 interoperability, security, and system resilience. As 911 authorities have begun to invest significantly in NG911, some originating service providers (OSPs) have delayed connecting to these IP-based networks. This prolongs the NG911 transition and increases costs for public safety. In this Report and Order, the Commission would adopt the first nationwide NG911 transition rules that define the responsibilities and set deadlines for OSPs to implement NG911 capabilities on their networks and deliver 911 calls to NG911 systems established by 911 authorities. This will expedite the nationwide transition to NG911, lead to faster call delivery and improved service reliability, and save lives.

What the Report and Order Would Do:

- Require OSPs (specifically (1) wireline providers; (2) commercial mobile radio service (CMRS) providers; (3) covered text providers; (4) interconnected Voice over Internet Protocol (VoIP) providers; and (5) Internet-based Telecommunications Relay Service (TRS) providers) to transition to NG911 in two phases in response to a request by a state or local 911 authority:
 - Phase 1. OSPs must deliver 911 traffic in IP-based Session Initiation Protocol (SIP) format to delivery points designated by the 911 authority.
 - Phase 2. OSPs must deliver 911 traffic to designated delivery points in an IP-based SIP format that supports routing, caller location, and transmission of emergency information in accordance with NG911 commonly accepted standards.
- Establish timelines for OSPs to implement Phase 1 and Phase 2 following a 911 authority’s valid request.
- In the absence of alternative cost recovery mechanisms established by state or local 911 authorities, require OSPs to be responsible for the costs of delivering 911 traffic in the required format to designated NG911 delivery points within the state.
- Preserve the authority of state and local government to adopt alternative approaches to the configuration, timing, and cost responsibility for NG911 implementation within their jurisdictions.

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

In the Matter of
Facilitating Implementation of Next Generation
911 Services (NG911)
Location-Based Routing for Wireless 911 Calls
PS Docket No. 21-479
PS Docket No. 18-64

REPORT AND ORDER*

ADOPTED: []

RELEASED: []

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* This document has been circulated for tentative consideration by the Commission at its July 18, 2024 open meeting. The issues referenced in this document and the Commission’s ultimate resolution of those issues remain under consideration and subject to change. This document does not constitute any official action by the Commission. However, the Chairwoman has determined that, in the interest of promoting the public’s ability to understand the nature and scope of issues under consideration, the public interest would be served by making this document publicly available. The Commission’s ex parte rules apply and presentations are subject to “permit-but-disclose” ex parte rules. See, e.g., 47 CFR §§ 1.1206, 1.1200(a). Participants in this proceeding should familiarize themselves with the Commission’s ex parte rules, including the general prohibition on presentations (written and oral) on matters listed on the Sunshine Agenda, which is typically released a week prior to the Commission’s meeting. See 47 CFR §§ 1.1200(a), 1.1203.

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I. INTRODUCTION

1. In this Report and Order (*Order*), we take steps that will advance the nationwide transition to Next Generation 911 (NG911). Like communications networks generally, dedicated 911 networks are evolving from Time Division Multiplexing (TDM)-based circuit-switched architectures to Internet Protocol (IP)-based architectures. With the transition to NG911, legacy 911 networks will be replaced by IP-based technologies and applications, which provide new capabilities and improved interoperability and system resilience. Most states have begun to invest significantly in NG911, but some have experienced delays in communications providers connecting to these IP-based networks. As a result of these delays, state and local 911 authorities incur prolonged costs because of the need to maintain both legacy and IP networks during the transition. Managing 911 traffic on both legacy and IP networks at the same time may also result in increased vulnerability and risk of 911 outages.

2. To facilitate the NG911 transition, we adopt rules that will require wireline providers, Commercial Mobile Radio Service (CMRS) providers, covered text providers, providers of interconnected Voice over Internet Protocol (VoIP) services, and providers of Internet-based

Telecommunications Relay Service (Internet-based TRS) (collectively “originating service providers” or “OSPs”)¹ to take actions to start or continue the transition to NG911 in coordination with 911 Authorities.² The rules we adopt today create a consistent NG911 transition framework at the national level, while also affording flexibility to 911 Authorities to modify the transition framework at the state, regional, local, territorial, or Tribal level.

3. We implement a two-phased approach to guide the transition to NG911. Each phase is initiated by a 911 Authority submitting a valid request to OSPs within the jurisdiction where the 911 Authority is located for the OSPs to comply with NG911 requirements, including:

- **Phase 1:** Upon receiving a valid Phase 1 request from a 911 Authority, an OSP must commence delivery of 911 traffic in IP-based Session Initiation Protocol (SIP) format to one or more in-state NG911 Delivery Points designated by the 911 Authority.³ Phase 1 will enable 911 Authorities to deploy Emergency Services IP Networks (ESInets) in a cost-effective manner by selecting convenient delivery points to receive 911 traffic; will improve 911 reliability by using an IP-based format, rather than legacy format, to deliver 911 traffic; and will establish the transmission platforms necessary for upgrading to Phase 2.
- **Phase 2:** Upon receiving a valid Phase 2 request from a 911 Authority, an OSP must commence delivery of 911 traffic to the designated in-state NG911 Delivery Point(s) in an IP-based SIP format that complies with NG911 commonly accepted standards identified by the 911 Authority, including having location information embedded in the call signaling using Presence Information Data Format—Location Object (PIDF-LO)⁴ or the functional equivalent.⁵ In Phase 2, the OSP must install and put into operation all equipment, software applications, and other infrastructure, or acquire all services, necessary to use a Location Information Server (LIS) or its functional equivalent for the verification of its customer location information and records.⁶ Phase 2 will facilitate use of the functional elements of Next Generation 911 Core Services (NGCS), which can deliver dynamic information to Public Safety Answering Points (PSAPs), enabling them to use policy routing functions to dynamically re-route 911 traffic to avoid network disruptions, thus reducing the impact of outages on 911 continuity.

4. For both Phase 1 and Phase 2, 911 Authorities must meet specific readiness criteria in order to make a valid request for OSP delivery of NG911 traffic. For Phase 1, the 911 Authority must certify that it has all the necessary infrastructure installed and operational to receive 911 traffic in SIP

¹ See *infra* Appendix A at § 9.27(b). For purposes of this *Order* and the rules we adopt today, “wireline provider” means “[a] local exchange carrier (as defined in 47 U.S.C. [§] 153(32)) that provides service using wire communication (as defined in 47 U.S.C. [§] 153(59)),” and “covered text provider” has the meaning given such term under 47 CFR § 9.10(q)(1). See *infra* Appendix A at § 9.28. The terms “CMRS,” “interconnected VoIP service,” and “Internet-based TRS” have the meanings identified in 47 CFR § 9.3.

² “911 Authority” means “[a] state, territorial, regional, Tribal, or local governmental entity that operates or oversees a communications network for the receipt of 911 traffic at NG911 Delivery Points and for the transmission of such traffic from that point to PSAPs.” See *infra* Appendix A at § 9.28.

³ Additional Phase 1 requirements are discussed in section III.C.1.b; see also Appendix A at § 9.29(a).

⁴ See Internet Engineering Task Force (IETF), Dynamic Extensions to the Presence Information Data Format Location Object (PIDF-LO) (Sept. 2010), <https://datatracker.ietf.org/doc/html/rfc5962> (RFC 4119).

⁵ Additional Phase 2 requirements are discussed in section III.C.1.c; see also Appendix A at § 9.29(b).

⁶ “Location Information Server (LIS)” means “[a] Functional Element that provides locations of endpoints. A LIS can provide Location-by-Reference or Location-by-Value, and, if the latter, in geodetic or civic forms. A LIS can be queried by an endpoint for its own location, or by another entity for the location of an endpoint.” See *infra* Appendix A at § 9.28.

format and to transmit such traffic to the PSAPs connected to it. The 911 Authority must also identify the NG911 Delivery Points that it has designated and notify the OSP(s) of these delivery points via a registry or direct written notification. For Phase 2, the 911 Authority must certify: (1) that it has all of the necessary infrastructure installed and operational to receive 911 traffic in SIP format that complies with NG911 commonly accepted standards and to transmit such traffic to the PSAPs connected to it; and (2) that its ESInet is connected to a fully functioning NGCS network that can provide access to a Location Validation Function (LVF) and interface with the LIS or functional equivalent provided by the OSP.⁷

5. Nationwide CMRS providers,⁸ covered text providers,⁹ interconnected VoIP providers, and wireline providers other than rural incumbent local exchange carriers (RLECs) will have six months following a 911 Authority's valid Phase 1 request to comply with Phase 1 requirements, and six months following a valid Phase 2 request to comply with Phase 2 requirements. RLECs,¹⁰ non-nationwide CMRS providers,¹¹ and Internet-based TRS providers will have one year following a 911 Authority's valid Phase 1 request to comply with Phase 1 requirements, and one year following a valid Phase 2 request to comply with Phase 2 requirements. Completion of Phase 1 is a prerequisite to commencement of Phase 2; however, if Phase 1 has already been achieved or an OSP completes Phase 1 in less than the allotted six-month or one-year period, the Phase 2 implementation period can commence immediately, provided the 911 Authority has met the Phase 2 readiness criteria. To facilitate collaboration between 911 Authorities and OSPs, we also permit 911 Authorities and OSPs to enter into mutual agreements that modify the Phase 1/Phase 2 terms and timelines, and our rules presumptively do not alter or invalidate such agreements that already exist.

6. The rules we adopt today presumptively address cost allocation between OSPs and 911 Authorities for implementation of NG911. In the absence of an alternative cost arrangement implemented by a 911 Authority at the state or local level, OSPs will be financially responsible for the costs of transmitting 911 traffic to the NG911 Delivery Points designated by 911 Authorities starting at Phase 1. Thus, by default, our rules establish NG911 Delivery Points as the demarcation points where the OSP's responsibility for the cost of transmitting 911 traffic ends and the 911 Authority's responsibility begins. In addition, in both Phase 1 and Phase 2, OSPs will be presumptively responsible for the costs associated with translating 911 traffic into the required IP-based format, including associated routing and location information.

⁷ In the NG911 environment, a LVF works with the LIS to validate the location of a civic address prior to a call being placed to 911. See, e.g., NENA: The 9-1-1 Association (NENA), *The Next Generation 9-1-1 Guide for 9-1-1 Authorities* at 38 (Apr. 21, 2020) https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/nena-ref-005.1-2020_ng911_gu.pdf (*NENA NG911 Guide for 911 Authorities*). The functionality of the LVF within NG911 replaces the E911 master street address guide (MSAG) validation in legacy 911 environments. *Id.* In this *Order*, we define "Location Validation Function" (LVF) as "[a] Functional Element in an NG911 Core Services (NGCS) consisting of a server where civic location information is validated against the authoritative Geographic Information System (GIS) database information. A civic address is considered valid if it can be located within the database uniquely, is suitable to provide an accurate route for an emergency call, and is adequate and specific enough to direct responders to the right location." See *infra* section III.C.1.c.ii; Appendix A at § 9.28.

⁸ The term "nationwide CMRS provider" has the meaning given such term under 47 CFR § 9.10(i)(1)(iv). See *infra* Appendix A at § 9.28.

⁹ The term "covered text provider" has the meaning given such term under 47 CFR § 9.10(q)(1). See *infra* Appendix A at § 9.28.

¹⁰ "Rural incumbent local exchange carrier (RLEC)" has the meaning given such term under 47 CFR § 54.5. See *infra* Appendix A at § 9.28.

¹¹ A "non-nationwide CMRS provider" has the meaning given such term under 47 CFR § 9.10(i)(1)(v). See *infra* Appendix A at § 9.28.

7. The rules we adopt today are intended to expedite the NG911 transition and help ensure that the nation's 911 system functions effectively and reliably, with advanced capabilities. In addition, the rules respond to the petition filed in 2021 by the National Association of State 911 Administrators (NASNA),¹² which urged the Commission to take actions to resolve uncertainty and disputes between OSPs and state 911 Authorities regarding the NG911 transition. Today's rules create a consistent framework for ensuring that OSPs take the necessary steps to implement the transition to NG911 capabilities in coordination with 911 Authorities. At the same time, we recognize and do not preempt the long-standing authority of state and local government over the provision of 911 service. Thus, 911 Authorities at the state and local level remain free to establish alternative provisions within their jurisdictions for the implementation of NG911, definition of demarcation points, and allocation and recovery of costs.

II. BACKGROUND

8. 911 service is a vital part of our nation's emergency response and disaster preparedness system. Since the first 911 call was placed in 1968,¹³ the American public has increasingly come to depend on 911 service. The National Emergency Number Association (NENA) estimates that some form of 911 service is available to over 98 percent of the population and to over 97 percent of the counties in the United States,¹⁴ and data collected in our annual 911 fee report indicate that over 217 million calls are made to 911 in the United States each year.¹⁵ The availability of this critical service is due largely to the dedicated efforts of state, local, territorial, and Tribal authorities and providers, who have used the 911 dialing code to provide access to increasingly advanced and effective emergency service capabilities.¹⁶

A. 911 Implementation

9. *The Universal Emergency Number.* In 1999, Congress amended section 251(e) of the Communications Act of 1934, as amended (the Act), and directed the Commission to designate "911" as the nationwide abbreviated dialing code for wireline and wireless voice services in order to obtain public safety and emergency services.¹⁷ In 2000, the Commission designated 911 as the national emergency telephone number to be used for reporting emergencies and requesting emergency assistance.¹⁸ In 2001,

¹² Petition for Rulemaking; Alternatively, Petition for Notice of Inquiry, CC Docket No. 94-102, PS Docket Nos. 18-64, 18-261, 11-153, and 10-255 (filed Oct. 19, 2021), <https://www.fcc.gov/ecfs/document/1019188969473/1> (NASNA Petition).

¹³ Federal Communications Commission (FCC), *911 and E911 Services*, <https://www.fcc.gov/general/9-1-1-and-e9-1-1-services> (May 15, 2024).

¹⁴ NENA, *9-1-1 Statistics*, <https://www.nena.org/page/911Statistics> (last visited May 29, 2024).

¹⁵ FCC, *Fifteenth Annual Report to Congress on State Collection and Distribution of 911 and Enhanced 911 Fees and Charges* at 16, tbl.3 (2023), <https://www.fcc.gov/sites/default/files/15th-annual-911-fee-report-2023.pdf> (Fifteenth Annual 911 Fee Report).

¹⁶ *See Implementation of 911 Act; The Use of N11 Codes and Other Abbreviated Dialing Arrangements*, WT Docket No. 00-110, CC Docket No. 92-105, Fourth Report and Order and Third Notice of Proposed Rulemaking, and Notice of Proposed Rulemaking, 15 FCC Rcd 17079, 17084, para. 9 (2000) (*911 Implementation Notice*).

¹⁷ Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, § 3(a), 113 Stat. 1286, 1287 (911 Act) (codified at 47 U.S.C. § 251(e)(3)). The purpose of the 911 Act is to enhance public safety by encouraging and facilitating the prompt deployment of a nationwide, seamless communications infrastructure for emergency services that includes wireless communications. *911 Implementation Notice*, 15 FCC Rcd at 17081, para. 1 (citing 911 Act § 2(b)). The 911 Act further directs the Commission to encourage and support the states in developing comprehensive emergency communications throughout the United States so that all jurisdictions offer seamless networks for prompt emergency service. *Id.*

¹⁸ *911 Implementation Notice*, 15 FCC Rcd at 17084-85, para. 11.

the Commission established a period for wireline and wireless carriers to transition to routing 911 calls to a PSAP in areas where one had been designated or, in areas where a PSAP had not yet been designated, either to an existing statewide default point or to an appropriate local emergency authority.¹⁹

10. *Legacy 911 Call Routing.* In legacy E911 systems, 911 calls are routed through the use of a wireline network element—called a selective router—to a geographically appropriate PSAP based on the caller’s location.²⁰ The selective router serves as the entry point for wireline 911 calls originated from competitive and incumbent Local Exchange Carrier (LEC) central offices over dedicated trunks,²¹ as well as 911 calls originated by wireless²² and interconnected VoIP²³ callers that are delivered by wireless and interconnected VoIP networks to the selective router. In legacy architectures, PSAPs are connected to telephone switches in the selective router by dedicated trunk lines.²⁴ Historically, the selective router and connecting trunk lines have been implemented, operated, and maintained by a subset of incumbent LECs and largely paid for by state or local 911 authorities through state tariffs or contracts.²⁵ Network implementation has varied from carrier to carrier and jurisdiction to jurisdiction, but legacy E911 has typically been based on traditional circuit-switched architecture and implemented with legacy components that place significant limitations on the functions that can be performed over the network.²⁶ Below is a simplified diagram that demonstrates legacy 911 architecture.

¹⁹ See *Implementation of 911 Act; The Use of N11 Codes and Other Abbreviated Dialing Arrangements*, WT Docket No. 00-110, CC Docket No. 92-105, Fifth Report and Order, First Report and Order, and Memorandum Opinion and Order on Reconsideration, 16 FCC Rcd 22264, 22293-95, Appendix B (2001). The Commission codified in former section 64.3001 the obligation of telecommunications carriers to transmit all 911 calls to a PSAP, to a designated statewide default answering point, or to an appropriate local emergency authority. *Id.* In addition, the Commission codified in former section 64.3002 the periods for transition to 911 as the universal emergency telephone number. *Id.* The Commission subsequently renumbered sections 64.3001 and 64.3002 as current sections 9.4 and 9.5, respectively. *Implementing Kari’s Law and Section 506 of RAY BAUM’S Act; Inquiry Concerning 911 Access, Routing, and Location in Enterprise Communications Systems; Amending the Definition of Interconnected VoIP Service in Section 9.3 of the Commission’s Rules*, PS Docket Nos. 18-261 and 17-239, GN Docket No. 11-117, Report and Order, 34 FCC Rcd 6607, 6742, Appendix B (2019) (*Kari’s Law/RAY BAUM’S Act Order*), corrected by Erratum, 34 FCC Rcd 11073 (PSHSB 2019), also corrected by Second Erratum, 37 FCC Rcd 10274 (PSHSB 2022), 87 Fed. Reg. 60104 (Oct. 4, 2022); see 47 CFR §§ 9.4, 9.5.

²⁰ See *IP-Enabled Services; E911 Requirements for IP-Enabled Service Providers*, WC Docket Nos. 04-36 and 05-196, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 10245, 10251, 10252, paras. 13, 15 (2005) (*VoIP 911 Order*), *aff’d sub nom. Nuvio Corp. v. FCC*, 473 F.3d 302 (D.C. Cir. 2006).

²¹ *Id.* at 10252, para. 15.

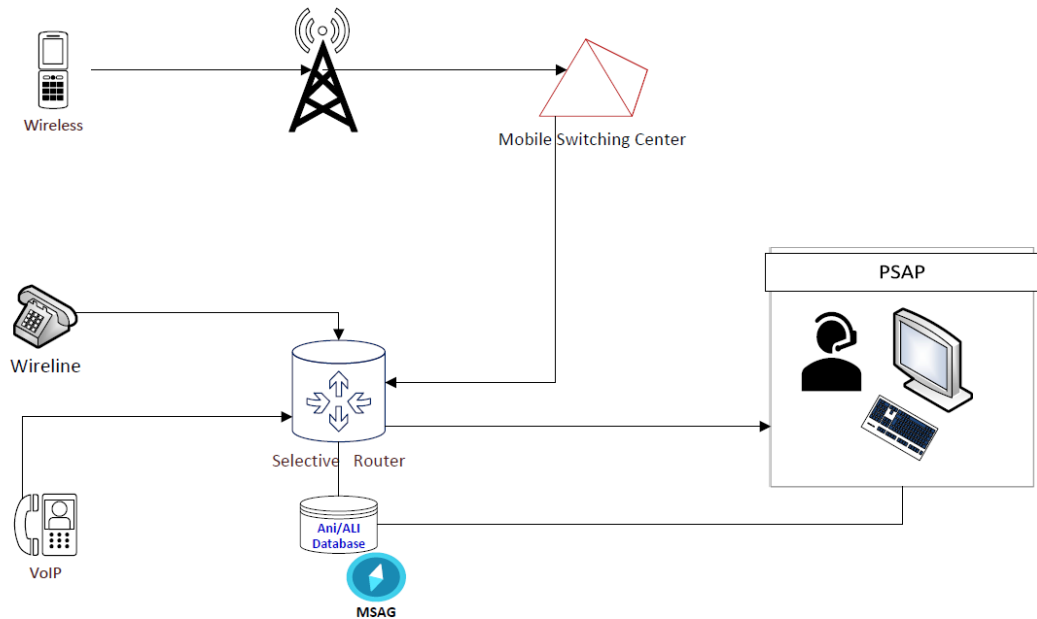
²² See *id.* at 10252-53, para. 17.

²³ See *id.* at 10269, paras. 40-41.

²⁴ See *id.* at 10250-51, para. 12.

²⁵ *Id.* at 10251, para. 14.

²⁶ *Id.* at 10252, para. 14.



11. *Legacy Demarcation Point.* Although the Commission has not previously set a cost demarcation point for wireline, interconnected VoIP, or Internet-based TRS providers in the E911 environment, the Commission has set a demarcation point for purposes of the wireless transition to E911. Early in the implementation of E911 Phase I by wireless carriers, King County, Washington sought clarification of the demarcation point for costs in wireless E911 Phase I implementation.²⁷ In 2001, the Wireless Telecommunications Bureau (WTB) issued a decision (*King County Letter*) identifying the input to the 911 selective router maintained by the incumbent LEC as the “proper demarcation point” for allocating wireless E911 Phase I information delivery responsibilities and costs in instances when CMRS providers and 911 authorities could not agree on an appropriate demarcation point.²⁸ In 2002, the Commission issued an Order on Reconsideration (*King County Order on Reconsideration*) affirming WTB’s decision.²⁹ The Commission affirmed that for a wireless carrier to satisfy its obligation to provide E911 Phase I information to the PSAP under section 20.18(d) (now section 9.10(d)), the wireless carrier must deliver and bear the costs to deliver E911 Phase I information to the equipment in the existing 911 system that “analyzes and distributes it,” i.e., the 911 selective router.³⁰ The Commission also affirmed

²⁷ Letter from Marlys R. Davis, E911 Program Manager, King County E-911 Program Office, Department of Information and Administrative Services, to Thomas J. Sugrue, Chief, Wireless Telecommunications Bureau, Federal Communications Commission (May 25, 2000).

²⁸ Letter from Thomas J. Sugrue, Chief, Wireless Telecommunications Bureau, FCC, to Marlys R. Davis, E911 Program Manager, King County E-911 Program Office, Department of Information and Administrative Services, King County, Washington, 2001 WL 491934, at *1 (WTB May 7, 2001) (*King County Letter*) (clarifying that “wireless carriers are responsible for the costs of all hardware and software components and functionalities that precede the 911 Selective Router” and that “PSAPs . . . must bear the costs of maintaining and/or upgrading the E911 components and functionalities beyond the input to the 911 Selective Router”).

²⁹ *Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems; Request of King County, Washington*, CC Docket No. 94-102, Order on Reconsideration, 17 FCC Rcd 14789, 14789, 14793, paras. 1, 9-10 (2002) (*King County Order on Reconsideration*) (affirming the *King County Letter* on reconsideration and extending WTB’s analysis to E911 Phase II service).

³⁰ *King County Order on Reconsideration*, 17 FCC Rcd at 14790, 14792-93, paras. 4, 7-8.

that PSAPs were required to bear E911 Phase I costs for delivery beyond the 911 selective router.³¹ Finally, the Commission extended this determination to apply to CMRS providers' delivery of wireless E911 Phase II information to selective routers.³² Together, these decisions provided guidance to facilitate implementation of E911 in TDM networks. However, the Commission has not previously sought to address the demarcation of service providers' cost responsibilities in the NG911 environment.

12. *Interconnected Voice Over Internet Protocol (VoIP)*. Regarding interconnected VoIP, the Commission has recognized that consumers expect certain types of emerging voice technology to have the same ability to reach emergency services when dialing 911 as traditional wireline and wireless services.³³ This recognition resulted in the 2005 *VoIP 911 Order*, in which the Commission imposed 911 service obligations on providers of interconnected VoIP.³⁴ The Commission declined to establish an E911 demarcation point for interconnected VoIP service, but it stated that “[t]o the extent that it becomes a concern, we believe that the demarcation point that the Commission established for wireless E911 cost allocation would be equally appropriate for VoIP.”³⁵

13. *911 Parity*. By 2008, Congress recognized that the nation's 911 system was “evolving from its origins in the circuit-switched world into an IP-based network”³⁶ and that for interconnected VoIP providers to fulfill their 911 service obligations to subscribers, they must have access to the same emergency services capabilities and infrastructure as other voice providers.³⁷ Congress passed the New and Emerging Technologies Improvement Act of 2008 (NET 911 Act) to facilitate the rapid deployment of VoIP 911 services and encourage the transition to a national IP-enabled emergency network.³⁸ The NET 911 Act extended critical 911 service-related rights, protections, and obligations to VoIP service providers,³⁹ and mandated parity for VoIP providers vis-à-vis other voice providers subject to 911 obligations with respect to the rates, terms, and conditions applicable to exercising their rights and

³¹ See *id.* at 14790-91, 14792-93, paras. 4, 7-8.

³² *Id.* at 14793, paras. 9-10.

³³ See, e.g., *VoIP 911 Order*, 20 FCC Rcd at 10247-48, paras. 4-5.

³⁴ *Id.* at 10246, 10256, paras. 1, 22; see also 47 CFR §§ 9.3 (defining *interconnected VoIP service*), 9.11-9.12 (giving interconnected VoIP providers duties and rights with respect to provision of 911 service). The Commission later clarified that the 911 VoIP requirements extended to “outbound only” interconnected VoIP providers, that is, VoIP providers that permit users to initiate calls that terminate to the PSTN even if they do not also allow users to receive calls from the PSTN. *Kari's Law/RAY BAUM'S Act Order*, 34 FCC Rcd at 6670-71, 6675, paras. 174, 183. While section 615b uses the term “IP-enabled voice service,” it defines this term as having the same meaning as “interconnected VoIP” in section 9.3 of the Commission's rules. 47 U.S.C. § 615b(8). We refer to both of these terms in this *Notice of Proposed Rulemaking* as “interconnected VoIP service” (and to providers of such a service as “interconnected VoIP providers”) and in doing so intend to encompass all VoIP services subject to 911 obligations under part 9 of our rules, including providers of Internet Protocol Captioned Telephone Service (IP CTS), who are also the providers of the associated interconnected VoIP service. IP CTS is a form of Telecommunications Relay Service (TRS) “that permits an individual with a hearing or a speech disability to communicate in text using an internet Protocol-enabled device via the internet, rather than using a text telephone (TTY) and the public switched telephone network.” 47 CFR § 64.601(a)(24). We also include other providers of Internet-based TRS, video relay service (VRS), and Internet Protocol Relay Service (IP Relay).

³⁵ *VoIP 911 Order*, 20 FCC Rcd at 10274, para. 53 n.164.

³⁶ *Implementation of the NET 911 Improvement Act of 2008*, WC Docket No. 08-171, Report and Order, 23 FCC Rcd 15884, 15893, para. 22 (citing New and Emerging Technologies 911 Improvement Act of 2008, Pub. L. No. 110-283, Preamble, §102, 122 Stat. 2620 (2008) (NET 911 Act)).

³⁷ See H.R. Rep. No. 110-442, at 6-7 (2007).

³⁸ NET 911 Act, Preamble.

³⁹ *Id.* §§ 101, 201(a).

obligations to provision VoIP 911 service.⁴⁰

B. Transition to Next Generation 911

1. Legal and Policy Landscape

14. Like communications networks generally, 911 networks are evolving from TDM-based architectures to IP-based architectures. With the transition to NG911, the circuit-switched architecture of legacy 911 will eventually be entirely replaced by IP-based technologies and applications that provide all of the same functions as the legacy 911 system, as well as new capabilities. In its end state, NG911 will facilitate interoperability and system resilience, improve connections between 911 call centers, and support the transmission of text, photos, videos, and data to PSAPs by individuals seeking emergency assistance.⁴¹

15. Congress has recognized the Commission's role in facilitating the transition to NG911. As part of the 2010 National Broadband Plan, the Commission recommended that Congress consider developing a new "legal and regulatory framework for development of NG911 and the transition from legacy 911 to NG911 networks."⁴² Also in 2010, Congress enacted the Twenty-First Century Communications and Video Accessibility Act (CVAA), which authorized the Commission to implement regulations necessary to achieve reliable and interoperable communication that ensures access to an IP-enabled emergency network by individuals with disabilities, where achievable and technically feasible.⁴³ In 2012, Congress enacted the Next Generation 9-1-1 Advancement Act of 2012 (NG911 Act) as part of the Middle Class Tax Relief and Job Creation Act of 2012, and directed the Commission to prepare and submit a report to Congress on recommendations for the legal and statutory framework for NG911 services.⁴⁴ In 2013, the Commission submitted that report, recommending among other things that Congress: (1) facilitate the exercise of existing authority over NG911 by certain federal agencies (including the Commission); and (2) consider enacting legislation that would ensure there is no gap between federal and state authority over NG911.⁴⁵ The Commission stated that "[t]he Commission already has sufficient authority to regulate the 911 and NG911 activity of, inter alia, wireline and wireless carriers, interconnected VoIP providers, and other IP-based service providers."⁴⁶

16. The technological and regulatory landscape underlying 911 has evolved significantly since 2013. The Commission has adopted requirements for text-to-911, real-time text, wireless indoor

⁴⁰ *Id.* § 101(2) (codified at 47 U.S.C. § 615a-1(b)).

⁴¹ *See, e.g.*, City of New York Office of Technology & Innovation, 2022 Annual Report on Implementation of Next Generation 9-1-1 in NYC at 4 (2022), <https://www.nyc.gov/assets/oti/downloads/pdf/reports/annual-report-next-generation-911-2022.pdf> (listing the primary technical benefits of NG911); *see also* NENA, Why NG9-1-1 at 1-2 (2009), https://cdn.ymaws.com/www.nena.org/resource/resmgr/ng9-1-1_project/whyng911.pdf (identifying the purposes of NG911).

⁴² FCC, Connecting America: The National Broadband Plan, Recommendation 16.14 at 326 (2010), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296935A1.pdf (last visited May 16, 2023) (National Broadband Plan)

⁴³ Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. No. 111-260, 124 Stat 2751 § 106(g) (2010) (CVAA) (codified at 47 U.S.C. § 615c(g)).

⁴⁴ Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96 (2012), Title VI, Subtitle E, Next Generation 9-1-1 Advancement Act (NG911 Act) § 6509.

⁴⁵ FCC, Legal and Regulatory Framework for Next Generation 911 Services, Section 4.1.2.2 at 28-29 (2013), https://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0227/DOC-319165A1.pdf (last visited May 16, 2023) (2013 NG911 Framework Report).

⁴⁶ *Id.* at 28.

location accuracy, and dispatchable location.⁴⁷ In addition, the Commission has updated 911 outage and reliability rules, including establishing reliability requirements for covered 911 service providers.⁴⁸ With respect to technology, E911 Phase II is now widely implemented,⁴⁹ and many state and local jurisdictions have deployed ESInets and taken other transitional steps towards NG911.⁵⁰ Although the NG911 transition remains ongoing and there are no fully enabled NG911 systems yet operating,⁵¹ the technical architecture of NG911 systems has been developed in detail and is well-established.⁵²

2. Standards Work and Federal Advisory Committee Reports

17. *NENA i3 Transitional and End State NG911.* The public safety community has recognized the need to evolve to NG911, and industry associations and standards bodies have worked toward defining standard architectures and protocols for NG911. For example, NENA’s “i3” standard describes a system architecture for NG911 that standardizes the structure and design of the software services, databases, network elements, and interfaces needed to process multimedia emergency calls and data for NG911.⁵³ The i3 standard is intended to “support[] end-to-end IP connectivity,” while using

⁴⁷ E.g., *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications; Framework for Next Generation 911 Deployment*, PS Docket Nos. 11-153 and 10-255, Second Report and Order and Third Further Notice of Proposed Rulemaking, 29 FCC Rcd 9846 (2014) (*T911 Second Report and Order*); *Transition from TTY to Real-Time Text Technology; Petition for Rulemaking to Update the Commission’s Rules for Access to Support the Transition from TTY to Real-Time Text Technology, and Petition for Waiver of Rules Requiring Support of TTY Technology*, CG Docket No. 16-145, GN Docket No. 15-178, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 13568 (2016); *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Fourth Report and Order, 30 FCC Rcd 1259 (2015); *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Fifth Report and Order and Fifth Further Notice of Proposed Rulemaking, 34 FCC Rcd 11592 (2019); *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Sixth Report and Order and Order on Reconsideration, 35 FCC Rcd 7752 (2020); *Kari’s Law/RAY BAUM’S Act Order*, 34 FCC Rcd 6607.

⁴⁸ E.g., *Amendments to Part 4 of the Commission’s Rules Concerning Disruptions to Communications; Improving 911 Reliability; New Part 4 of the Commission’s Rules Concerning Disruptions to Communications*, PS Docket Nos. 15-80, 13-75, and 04-35, Second Report and Order, 37 FCC Rcd 13847 (2022).

⁴⁹ NENA, *9-1-1 Statistics*, <https://www.nena.org/page/911Statistics> (last visited May 16, 2023).

⁵⁰ According to the most recent National 911 Annual Report, 2,287 PSAPs reported using an ESInet across 47 states in 2021, nearly a 5% increase from the 2020 data. National 911 Program, National 911 Annual Report, 2021 Data at 8, 60, 64 (2023), https://www.911.gov/assets/2021-911-Profile-Database-Report_FINAL.pdf (National 911 Annual Report).

⁵¹ Association of Public-Safety Communications Officials-International, Inc. (APCO) Comments at 1-2 (rec. Jan. 19, 2022) (APCO Comments) (“ECCs should be able to receive, process, and share appropriate information with responders in the field and with other ECCs in a secure and fully interoperable fashion [but] no part of the country can be described as having achieved this vision of NG9-1-1 with end-to-end broadband communications for ECCs.”); see also APCO, APCO International’s Definitive Guide to Next Generation 9-1-1 at 9 (2022), https://www.apcointl.org/ext/pages/APCOng911Guide/APCO_NG911_Report_Final.pdf (noting that comprehensive, end-to-end NG911 “does not yet exist anywhere in the country”).

⁵² See Task Force on Optimal PSAP Architecture (TFOPA), Adopted Final Report (2016), https://transition.fcc.gov/pshs/911/TFOPA/TFOPA_FINALReport_012916.pdf (TFOPA Final Report).

⁵³ NENA, *NENA i3 Standard for Next Generation 9-1-1* at 2 (Oct. 7, 2021), https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/NENA-STA-010.3e-2021_i3_Stan.pdf (NENA i3). In July 2021, NENA released the third version of the i3 standard for NG911. See NENA, *NENA Releases New Version of the i3 Standard for Next Generation 9-1-1* (July 12, 2021) <https://www.nena.org/news/572966/NENA-Releases-New-Version-of-the-i3-Standard-for-Next-Generation-9-1-1.htm>. In October 2021, the NENA i3 standard was approved by the American National Standards Institute (ANSI). See NENA, *ANSI Approves NENA’s i3 Standard for Next Generation 9-1-1* (Oct. 7, 2021), <https://www.nena.org/news/582667/ANSI-Approves-NENAs-i3-Standard-for-Next-Generation-9-1-1.htm>.

“gateways . . . to accommodate legacy wireline and wireless originating networks that are non-IP as well as legacy PSAPs that interconnect to the i3 solution architecture.”⁵⁴ In addition, NENA i3 addresses the concept of the ESInet, “an IP-based inter-network (network or networks) that can be shared by all public safety agencies that may be involved in any emergency,” and identifies “a set of core services that process 9-1-1 calls on that network (NGCS–NG9-1-1 Core Services).”⁵⁵ The i3 standard envisions that NG911 will reach a mature “end state”⁵⁶ after all PSAPs have migrated from legacy E911 systems based on TDM circuit-switched telephony to all-IP systems that operate over ESInets and provide the full array of NGCS.⁵⁷ The standard also recognizes that achieving end state NG911 will take time and that significant intermediate and transitional mechanisms are needed in the interim. Accordingly, the i3 standard provides for Legacy Network Gateways (LNGs) and other transitional network elements to ensure that TDM-based OSPs can originate 911 calls and that legacy PSAPs can receive them while the NG911 transition is ongoing.⁵⁸

18. *Task Force on Optimal PSAP Architecture.* In 2014, the FCC established the Task Force on Optimal PSAP Architecture (Task Force or TFOPA) to provide recommendations regarding actions that PSAPs can take to optimize their security, operations, and funding as they implement NG911.⁵⁹ In its Final Report,⁶⁰ TFOPA noted that the transition to NG911 requires comprehensive changes across the “Originating Service Environment (OSE),” which includes originating service providers as part of a broader environment that provides the 911 caller’s location as part of the call setup.⁶¹ This environment includes IP call set-up, location determination, validation, and delivery to ESInets across the country.⁶² In addition, the three TFOPA Working Groups issued supplemental reports in 2016 concerning (1) an

⁵⁴ NENA i3 at 2.

⁵⁵ NENA i3 at 2 (footnote omitted).

⁵⁶ The NENA i3 standard describes how NG911 works after transition, including ongoing interworking requirements for IP-based and Time Division Multiplexed (TDM)-based PSAPs and originating networks. The i3 standard does not provide solutions for how legacy PSAPs, originating networks, Selective Routers (SRs), and Automatic Location Identification (ALI) systems evolve. Rather, the i3 standard describes the end state when transition is complete. According to the NENA i3 standard, “[a]t that point, SRs and existing ALI systems are decommissioned and all 9-1-1 calls are routed using the Emergency Call Routing Function (ECRF) and arrive at the ESInet/NGCS via Session Initiation Protocol (SIP).” NENA i3 at 2.

⁵⁷ *Id.* at 2. To get to this “end state,” the NENA i3 standard observes that it is critical to understand several underlying assumptions. For example, “[a]ll calls entering the ESInet are SIP-based. Gateways, if needed, are outside of, or on the edge of, the ESInet. Calls that are IP-based, but use a protocol other than SIP or are not fully i3-compliant, must be interworked to i3-compliant SIP prior to being presented to the ESInet.” NENA i3 at 3.

⁵⁸ *Id.* at 2. “TDM-based PSAPs are connected to the ESInet/NGCS via a gateway (the Legacy PSAP Gateway). The definition of the Legacy PSAP Gateway is broad enough so this type of gateway may serve both primary and secondary PSAPs that have not been upgraded. Similarly, the scope includes gateways for legacy wireline and wireless originating networks (the Legacy Network Gateway) used by originating networks that cannot yet create call signaling matching the interfaces described in this document for the ESInet/NGCS. It is not envisioned that legacy originating networks will evolve to IP interconnect in all cases, and thus Legacy Network Gateways will be needed for the foreseeable future.” NENA i3 at 3.

⁵⁹ See *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications, Framework for Next Generation 911 Deployment*, PS Docket Nos. 11-153 and 10-255, Second Report and Order and Third Further Notice of Proposed Rulemaking, 29 FCC Rcd 9846, 9881, paras. 79-80 (2014).

⁶⁰ FCC, Task Force on Optimal PSAP Architecture (TFOPA) (2016), https://transition.fcc.gov/pshs/911/TFOPA/TFOPA_FINALReport_012916.pdf (TFOPA Report).

⁶¹ TFOPA Report at 114.

⁶² *Id.* at 105.

“Optimal Cybersecurity Approach for PSAPs”;⁶³ (2) an “NG 9-1-1 Readiness Scorecard”;⁶⁴ and (3) a “Funding Sustainment Model.”⁶⁵

19. *Communications Security, Reliability, and Interoperability Council (CSRIC) VI and Small Carrier NG911 Considerations*. In 2017, the Commission directed CSRIC VI to recommend measures to improve both legacy 911 and NG911 systems, including recommending ways in which the Commission can further the NG911 transition, enhance the reliability and effectiveness of NG911, and assist small originating service providers as they transition to providing NG911 service.⁶⁶ The CSRIC VI Working Group 1 considered four types of small originating service providers: wireless carriers, LECs, television cable operators, and Internet/Data Service Providers.⁶⁷ The CSRIC NG911 Transition Report describes the issues these carriers face as they update their networks to support NG911, and it advises the FCC on small carrier concerns related to NG911 implementation.⁶⁸ The Transition Report is organized into three major sections, dealing with the scope and nature of the report;⁶⁹ analysis, findings and recommendations;⁷⁰ and a small carrier readiness checklist⁷¹ structured around service provider support

⁶³ FCC, Task Force on Optimal PSAP Architecture, Working Group 1 Supplemental Report (2016), https://transition.fcc.gov/pshs/911/TFOPA/TFOPA_WG1_Supplemental_Report-120216.pdf.

⁶⁴ FCC, Task Force on Optimal PSAP Architecture, Working Group 2 Supplemental Report (2016), https://transition.fcc.gov/pshs/911/TFOPA/TFOPA_WG2_Supplemental_Report-120216.pdf (TFOPA WG2 Report). Regarding readiness, TFOPA WG 2, for example, observed that the NG911 transition process followed a “maturity continuum” ranging from a “legacy state” through “foundational, transitional, and intermediate” stages, on the way to a goal of full “end state” NG911 relative to PSAPs. TFOPA WG 2 Report at 12-14. Specifically, the WG2 Report defined “Jurisdictional End State” (noting that a jurisdiction could be a Local, Regional, State or Tribal Authority and could be intrastate or interstate) as

“the state in which PSAPs are served by i3 standards-based systems and/or elements, from ingress through multimedia “call” handling. Originating Service Providers are providing SIP interfaces and location information during call set-up time. Within the jurisdiction, ESInets are interconnected providing interoperability which is supported by established agreements, policies and procedures. Systems in the End State are NG9-1-1 Compliant.” TFOPA WG 2 Report at 13.

Based on anecdotal information, including based on ESInet and NG911 early adopter case studies, TFOPA WG2 noted that a “phased” implementation model offers the greatest opportunity for success, as opposed to a one-step implementation. TFOPA WG 2 Report at 12, 76-88.

⁶⁵ FCC, Task Force on Optimal PSAP Architecture, Working Group 3 Supplemental Report (2016), https://transition.fcc.gov/pshs/911/TFOPA/TFOPA_WG3_Supplemental_Report-120216.pdf (TFOPA WG 3 Report). TFOPA WG 3 discusses among other things, 911 network and call routing, including providing historical context regarding the relationship between 911 networks and 911 jurisdictions relative to selective routing, and the role of FCC rules and state policies relative to originating service provider cost responsibilities. TFOPA WG 3 Report at 19-20.

⁶⁶ CSRIC VI Working Group 1, *Transition Path to NG9-1-1 Final Report - Small Carrier NG9-1-1 Transition Considerations*, §§ 1.1, 3.1 (Sept. 2018), <https://www.fcc.gov/sites/default/files/csr6wg1sept18ng911report.docx> (CSRIC NG911 Transition Report). The FCC charged CSRIC VI with defining the long term network requirements for transmitting emergency services information to emergency services organizations and personnel that is beyond communications between PSAPs, and between the public and PSAPs. *Id.* § 1.1. CSRIC VI Working Group 1 was charged to specifically look at service provider support for public safety transition to NG911. *Id.*

⁶⁷ *Id.* § 1.1.

⁶⁸ *Id.*

⁶⁹ *Id.* § 3.

⁷⁰ The “Analysis, Findings and Recommendation” section builds on a review of today’s legacy environment and addresses service provider interconnection with both transitional and “end-state” NG9-1-1 systems, call and data related matters, security, and regulatory/policy factors. *Id.* § 5.1.

for migration to NG911. The report's recommendations relating to small carriers address: (1) transition timelines;⁷² (2) the regulatory environment;⁷³ (3) NG911 funding;⁷⁴ (4) interconnection options;⁷⁵ and (5) delivering caller location to the NG911 ESInet.⁷⁶ The report includes advice on how small carriers should prepare to deliver their 911 traffic in an NG911 compatible manner; what economic challenges small carriers may face; and what barriers to implementation, if any, the FCC should address.⁷⁷

20. One of CSRIC's chief recommendations was for the Commission to "explore opportunities to resolve [the] cost recover[y] debate," referring to disputes between carriers and 911 Authorities over how to fairly allocate the costs of NG911 networks.⁷⁸ CSRIC suggested that the Commission update its *King County* decision in order to resolve ongoing uncertainty about cost responsibilities in the NG911 environment.⁷⁹ CSRIC also suggested a three-stage structure for the transition to NG911, ranging from current legacy 911 systems; through a "transitional phase" in which carriers may not yet originate 911 traffic in IP but are able to interconnect with a 911 Authority's ESInet and deliver IP-based traffic via IP translation; and an "End State . . . where the small carrier has deployed an IP-based network."⁸⁰ In CSRIC's transitional phase, the originating service provider would deliver 911 calls in IP via one of two options – either (1) by providing an LNG itself and converting its TDM signaling to SIP before interconnecting with the ESInet using native SIP and converting the legacy data access protocols (e.g. E2) to those used by the ESInet, or (2) by using legacy signaling (e.g., TDM) and data access protocols (e.g., E2) to interconnect with the ESInet at an LNG provided by the ESInet

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⁷¹ The small carrier checklist is structured around three stages of small carrier "readiness" to support NG9-1-1. *Id.* § 5.2. Essential "elements" of readiness are identified, ranging from public safety governance and regulatory matters, to routing and location matters, geographic information system (GIS) needs, network considerations, security and operational planning requirements. *Id.*

⁷² CSRIC advises that small carrier transition timelines will vary by carrier depending on the resources they have available to focus on the transition and notes that it is important that small carriers work with their state or regional 911 Authority to coordinate their transition timelines and expectations. *Id.* § 5.1.6.1.

⁷³ Historically, state and federal statutes or regulations regarding time division multiplex (TDM) network interconnection to a legacy 9-1-1 selective router in a particular Local Access and Transport Area (LATA) by small carriers has often been based on the process for interconnecting with the largest incumbent Local Exchange Carrier (ILEC) in an area. *Id.* § 4.1 As traffic exchange evolves into full IP environment, regulatory and technical expectations and responsibilities may change. *Id.* § 1.1.

⁷⁴ CSRIC advises that 911 Authorities should understand historical cost recovery models for rural carriers and remain flexible to accommodate any economic challenges caused by the migration to NG911. *Id.* § 1.1.

⁷⁵ *Id.* § 1.1 ("Small carriers need to evaluate the interconnection options to the NG9-1-1 ESInet based upon negotiations with the NG9-1-1 System Service Provider (SSP). They may interconnect with native IP or via gateways based upon their own network transition plans.").

⁷⁶ *Id.* § 5.2.2 ("[A] 'pure' or 'end-state' NG9-1-1 implementation assumes OSPs have changed the means by which they deliver 9-1-1 calls, however it is not realistic or expected that all small carrier OSPs will change at the same time. Therefore, the model is complicated by mechanisms to 'transition' from legacy methods to NG9-1-1 methods. The LNG is required until all OSPs deliver location information with their 9-1-1 call setup messages (location-by-value) or provide location databases that may be queried (location-by-reference).").

⁷⁷ *See id.* §§ 1.1, 3.2.

⁷⁸ *Id.* § 5.1.5.

⁷⁹ *Id.*

⁸⁰ *Id.* § 5.2.1.

vendor.⁸¹ CSRIC also suggested that smaller carriers with fewer resources may need a longer timeline to transition to NG911, and it stressed the importance of coordination between carriers and 911 Authorities.⁸² Overall, the CSRIC NG911 Transition Report called on the FCC to provide structure and certainty to the NG911 transition via rulemaking while maintaining some flexibility and accounting for smaller carriers' more-limited resources.

C. Recent Regulatory Changes

21. *NASNA Petition.* In October 2021, NASNA filed a petition asking the Commission to initiate a rulemaking or notice of inquiry to facilitate the transition to NG911 (NASNA Petition).⁸³ Specifically, NASNA asked the Commission to assert authority over the delivery of 911 communications by OSPs to ESInets and to amend the Commission's rules as needed to advance the transition to NG911.⁸⁴ As part of its petition, NASNA urged the Commission to set a default cost demarcation point in the NG911 environment analogous to its *King County* ruling in the E911 environment.⁸⁵ NASNA also asked the Commission to set deadlines for OSPs to begin delivering 911 traffic in NG911 format when the relevant state or local 911 Authority achieves NG911 readiness, and to establish a registry through which 911 authorities would notify OSPs of their NG911 readiness status.⁸⁶ The Public Safety and Homeland Security Bureau (PSHSB or Bureau) placed the Petition on public notice in December 2021, and received twenty-two comments, eight replies, and seven *ex partes*.⁸⁷

22. *Wireless Location-Based Routing.* In December 2022, the Commission issued the *Location-Based Routing Notice* proposing to require CMRS and covered text providers to implement location-based routing for 911 calls and texts nationwide.⁸⁸ As part of that proceeding, the Commission sought comment on aspects of the NG911 transition raised by the NASNA Petition as they applied to CMRS and covered text providers. Specifically, the Commission proposed to require CMRS and covered text providers to deliver 911 calls, texts, and associated routing information in IP format upon request of 911 Authorities that have established the capability to accept NG911-compatible IP-based 911 communications.⁸⁹ In addition, the Commission proposed to establish time frames for CMRS and covered text providers to deliver IP-based 911 traffic.⁹⁰ Further, the Commission sought comment on whether to make available a registry or database that would allow state and local 911 authorities to notify

⁸¹ *Id.* § 5.2.1. At the transitional phase, CSRIC anticipates that the ESInet vendor would have “deployed aspects of NG9-1-1 as discussed in the Transitional State, Intermediate State or Jurisdictional End State as defined by the TFOPA Report.” *Id.*

⁸² *Id.* § 5.1.6.

⁸³ NASNA Petition at 1.

⁸⁴ *Id.* at 2, 4-5.

⁸⁵ *Id.* at 2-3, 5-7.

⁸⁶ *Id.* at 3, 7-8.

⁸⁷ *Public Safety and Homeland Security Bureau Seeks Comment on Petition for Rulemaking Filed by the National Association of State 911 Administrators*, CC Docket No. 94-102 and PS Docket Nos. 21-479, 18-261, 18-64, 11-153, and 10-255, Public Notice, 36 FCC Rcd 17805 (PSHSB 2021), <https://www.fcc.gov/document/pshsb-seeks-comment-nasna-petition-rulemaking> (*Public Notice*). Comments, replies, and *ex partes* in this proceeding may be viewed in the Commission's Electronic Comment Filing System (ECFS): [https://www.fcc.gov/ecfs/search/search-filings/results?q=\(proceedings.name:\(%2221-479%22\)\)](https://www.fcc.gov/ecfs/search/search-filings/results?q=(proceedings.name:(%2221-479%22))).

⁸⁸ *Location-Based Routing for Wireless 911 Calls*, PS Docket No. 18-64, Notice of Proposed Rulemaking, 37 FCC Rcd 15183, 15184, para. 1 & n.1 (2022) (*LBR Notice*).

⁸⁹ *Id.* at 15185, 15202, paras. 4, 46.

⁹⁰ *Id.* at 15203, para. 50.

CMRS and covered text providers of the 911 authorities' readiness to accept IP-based communications.⁹¹ The Commission noted that these proposals, if adopted, would effectively implement a key element of NASNA's petition with respect to transition to NG911 for wireless 911 calls and texts, which represent an estimated 80 percent of 911 traffic in many areas.⁹²

23. *NG911 Notice Proposed Framework.* In June 2023, the Commission issued the *NG911 Notice* seeking to establish a framework that would expedite the nation's transition to NG911 by proposing comprehensive requirements that would apply to wireline, CMRS, interconnected VoIP, and Internet-based TRS providers.⁹³ First, the Commission proposed to require wireline, interconnected VoIP, and Internet-based TRS providers to complete all translation and routing to deliver 911 calls, including associated location information, in the requested IP-based format to an ESInet or other designated point(s) that allow emergency calls to be answered upon request of 911 authorities who have certified the capability to accept IP-based 911 communications.⁹⁴ Second, as state and local 911 authorities transition to IP-based networks, the Commission proposed to require wireline, interconnected VoIP, CMRS, and Internet-based TRS providers to transmit all 911 calls to destination point(s) designated by a 911 Authority.⁹⁵ Third, the Commission proposed that in the absence of agreements by states or localities on alternative cost recovery mechanisms, wireline, interconnected VoIP, CMRS, and Internet-based TRS providers must cover the costs of transmitting 911 calls to the point(s) designated by a 911 Authority, including any costs associated with completing the translation and routing necessary to deliver such calls and associated location information to the designated destination point(s) in the requested IP-based format.⁹⁶

24. In the *NG911 Notice*, the Commission explained that it sought to create a consistent framework for ensuring that all originating service providers take the necessary steps to implement the transition to NG911 in coordination with 911 Authorities.⁹⁷ In addition, the Commission sought to align the NG911 transition rules for wireline, interconnected VoIP, and Internet-based TRS providers with similar requirements that the Commission had proposed for CMRS and covered text providers in the *LBR Notice*, thereby promoting consistency across service platforms.⁹⁸ The Commission also explained that the demarcation point and cost allocation proposals sought to address what NASNA described in its Petition as "the critical component, and biggest regulatory roadblock, to transitioning to NG911 services."⁹⁹ PSHSB announced the comment and reply comment filing deadlines for the *NG911 Notice*

⁹¹ *Id.* at 15204, para. 52.

⁹² NENA, *9-1-1 Statistics*, <https://www.nena.org/page/911Statistics> (last visited May 30, 2024).

⁹³ *Facilitating Implementation of Next Generation 911 Services (NG911)*, PS Docket No. 21-479, Notice of Proposed Rulemaking, FCC 23-47, 2023 WL 3946685, at *1, para. 2 (June 9, 2023) (*NG911 Notice*).

⁹⁴ *NG911 Notice* at *2, para. 2.

⁹⁵ *NG911 Notice* at *2, para. 2. In the *NG911 Notice*, "destination point" includes "a public safety answering point (PSAP), designated statewide default answering point, local emergency authority, ESInet, or other point(s) designated by 911 authorities that allow emergency calls to be answered, upon request of 911 authorities who have certified the capability to accept IP-based 911 communications." *Id.*

⁹⁶ *NG911 Notice* at *2, para. 2. Under this proposal, the Commission noted that "states and localities would remain free to establish alternative cost allocation arrangements with providers. However, in the absence of such arrangements, providers would be presumptively responsible for the costs associated with delivering traffic to the destination point(s) identified by the appropriate 911 authority." *Id.*

⁹⁷ *NG911 Notice* at *2, para. 3.

⁹⁸ *NG911 Notice* at *2, para. 3.

⁹⁹ *NG911 Notice* at *2, para. 3 (citing NASNA Petition at 6).

on July 10, 2023, and the Commission received 47 comments, 28 replies, and a number of *ex partes*.¹⁰⁰

25. *LBR Order*. In 2024, we issued the *LBR Order* requiring all CMRS providers to implement location-based routing nationwide for wireless calls and real-time text (RTT) communications to 911 call centers.¹⁰¹ Under those rules, most 911 voice calls and RTT texts will be routed based on the location of the caller as opposed to the location of the cell tower that handles that call.¹⁰² However, we deferred to this docket consideration of NG911-related proposals and issues raised in the *LBR Notice* concerning IP-formatted delivery of wireless 911 voice calls, texts, and associated routing information.¹⁰³ Accordingly, we incorporate comments received on these issues and proposals in response to the *LBR Notice* into this proceeding, and we address the NG911 requirements applicable to all originating service providers in this *Order*.

III. DISCUSSION

26. In this *Order*, we require OSPs to support the NG911 transition. In the sections below, we explain the basis for adopting NG911 transition rules, including the significant and potentially life-saving benefits that NG911 affords, and we set forth the scope and extent of our NG911 requirements. We also find that the deadlines adopted are achievable and technically feasible for OSPs.

A. The Need for Rules to Facilitate the NG911 Transition

27. In the *NG911 Notice* and *LBR Notice*, the Commission proposed to expedite the nationwide transition to NG911 by adopting certain requirements that would apply to wireline, CMRS, covered text, interconnected VoIP, covered text providers, and Internet-based TRS providers.¹⁰⁴ Together, our proposals were intended not only to expedite this vital transition, but also to help ensure that the nation's 911 system functions effectively and utilizes advanced capabilities.¹⁰⁵ In addition, the proposed rules in the *NG911 Notice* responded to the petition from NASNA, the organization that represents state 911 administrators, urging the Commission to adopt rules to facilitate the transition to NG911.¹⁰⁶

28. As the Commission noted in the *NG911 Notice*, to achieve the transition to NG911, state and local 911 authorities must implement IP-based technologies and applications that will provide all of the functions of the legacy E911 system as well as new capabilities.¹⁰⁷ NG911 relies on IP-based

¹⁰⁰ *Public Safety and Homeland Security Bureau Announces Comment and Reply Comment Dates for the Notice of Proposed Rulemaking on Facilitating Implementation of Next Generation 911 Services (NG911)*, PS Docket No. 21-479, Public Notice, DA 23-596, 2023 WL 4503161 (PSHSB July 10, 2023). A list of entities that filed comments, replies, and *ex partes* may be found in Appendix C. Comments, replies, and *ex partes* in this proceeding may be viewed in the Commission's Electronic Comment Filing System (ECFS): [https://www.fcc.gov/ecfs/search/search-filings/results?q=\(proceedings.name:\(%2221-479%22\)\)](https://www.fcc.gov/ecfs/search/search-filings/results?q=(proceedings.name:(%2221-479%22))). We note that there are also comments, replies, and *ex partes* filed in response to the *LBR Notice* pertaining to issues that we address in this proceeding. Those filings can be viewed in the location-based routing docket (PS Docket No. 18-64) in the Commission's ECFS: [https://www.fcc.gov/ecfs/search/search-filings/results?q=\(proceedings.name:\(%2218-64*%22\)\)](https://www.fcc.gov/ecfs/search/search-filings/results?q=(proceedings.name:(%2218-64*%22))).

¹⁰¹ *Location-Based Routing for Wireless 911 Calls*, PS Docket No. 18-64, Report and Order, FCC 24-4, 2024 WL 356874 (Jan. 26, 2024) (*LBR Order*).

¹⁰² See *LBR Order* at *2, para. 3.

¹⁰³ *LBR Order* at *2, *24, *32, *37, *38, paras. 3, 66, 92, 110, 113.

¹⁰⁴ *NG911 Notice* at *1, paras. 1-2; *LBR Notice*, 37 FCC Rcd at 15201, para. 46.

¹⁰⁵ *NG911 Notice* at *2, para. 3; *LBR Notice*, 37 FCC Rcd at 15202, para. 48.

¹⁰⁶ *NG911 Notice* at *2, para. 3; NASNA Petition.

¹⁰⁷ *NG911 Notice* at *6, para. 15.

architecture to provide an expanded array of emergency communications services that encompasses both the core functionalities of legacy E911 and additional functionalities that take advantage of the enhanced capabilities of IP-based devices and networks.¹⁰⁸ The transition to NG911 involves fundamental changes in the technology that 911 Authorities use to receive and process 911 traffic, and it requires equally fundamental changes in the way OSPs deliver 911 traffic to PSAPs.¹⁰⁹ The benefits that result from the transition to NG911 include improvements to 911 network reliability and resilience,¹¹⁰ improvements to interoperability between PSAPs,¹¹¹ and location information that is available to PSAPs more quickly.¹¹² As the Commission observed in the *NG911 Notice*, in its end state, NG911 will also support the transmission of text, photos, video, and data.¹¹³

29. Most states have already made significant commitments to implementing NG911.¹¹⁴ Thirty-seven states and jurisdictions reported to the FCC in 2023 that they had ESInets operating in 2022.¹¹⁵ Despite investments in these new capabilities, however, some states report experiencing delays in OSPs connecting to their ESInets.¹¹⁶ Disputes with OSPs include issues of both cost allocation and the points to which the OSPs will deliver 911 traffic.¹¹⁷ In addition, some commenters contend that some OSPs have financial incentives to delay transitioning from legacy 911 to NG911, resulting in protracted disputes and mounting costs for 911 Authorities, and further contributing to delays.¹¹⁸ As a result of these

¹⁰⁸ *Id.*; *Framework for Next Generation 911 Deployment*, PS Docket No. 10-255, Notice of Inquiry, 25 FCC Rcd 17869, 17877, para. 18 (2010) (*NG911 NOI*).

¹⁰⁹ See *NG911 Notice* at *7, para. 16.

¹¹⁰ Intrado Mar. 25, 2024 *Ex Parte* at 1; iCERT NG911 Notice Comments at 1.

¹¹¹ iCERT NG911 Notice Comments at 1.

¹¹² Intrado Mar. 25, 2024 *Ex Parte* at 1.

¹¹³ *NG911 Notice* at *5, para. 10 (citing City of New York Office of Technology & Innovation, 2022 Annual Report on Implementation of Next Generation 9-1-1 in NYC at 4 (2022), <https://www.nyc.gov/assets/oti/downloads/pdf/reports/annual-report-next-generation-911-2022.pdf> (listing the primary technical benefits of NG911)).

¹¹⁴ Forty-four states, the District of Columbia, Guam, and Puerto Rico reported expenditures on NG911 programs in calendar year 2022. Fifteenth Annual 911 Fee Report at 3. The total amount of reported NG911 expenditures in 2022 was \$512,168,670.94. *Id.*

¹¹⁵ *Id.*

¹¹⁶ See discussion *infra*; see also, e.g., Minnesota Department of Public Safety / Emergency Communication Networks Division (Minnesota DPS-ECN) NG911 Public Notice Comments at 1 (rec. Jan. 19, 2022) (Minnesota DPS-ECN NG911 Public Notice Comments); Pennsylvania Emergency Management Agency NG911 Public Notice Comments at 4-5 (rec. Jan. 19, 2022) (Pennsylvania Emergency Mgmt. Agency NG911 Public Notice Comments).

¹¹⁷ See discussion *infra*; see also, e.g., AT&T Services, Inc. (AT&T) NG911 Notice Comments at 7 (rec. Aug. 9, 2023) (AT&T NG911 Notice Comments); Comtech Telecommunications Corp. (Comtech) NG911 Notice Comments at 7 (rec. Aug. 9, 2023) (Comtech NG911 Notice Comments) (“[D]isputes relating to [point of interconnection] locations and cost demarcations are a *major* source of OSP disputes and delays.”); Pennsylvania Emergency Mgmt. Agency NG911 Public Notice Comments at 4 (“One ILEC is requesting that Pennsylvania build the network all the way out to their switch(es) and that [Pennsylvania Emergency Mgmt. Agency], or Pennsylvania’s NG911 system service provider assume all costs associated with this effort.”).

¹¹⁸ See, e.g., Inteliquent, Inc. (Inteliquent) NG911 Notice Reply at 2 (rec. Sep. 8, 2023) (“The current arrangement provides a disincentive to efficiently migrate to an NG911 system because it increases the revenue for a [Covered 911 Service Provider] to operate legacy/transitionary 911 services.”); Letter from Susan Ornstein, Senior Director, Legal & Regulatory Affairs, Comtech, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, Attach. at 8 (filed Nov. 6, 2023) (Comtech Nov. 6, 2023 *Ex Parte*) (reporting that it is “[e]xclusively seeing RLEC resistance to NG911 transitions,” that “[n]otices around NG911 connectivity are ignored, not respected or responded to in a

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delays, 911 Authorities incur prolonged and compounded costs because they must maintain both legacy and IP networks during the transition.¹¹⁹ Managing 911 traffic on both legacy and IP networks may also result in increased vulnerability and risk of 911 outages.¹²⁰

30. Adopting rules in this proceeding is necessary to advance the critical transition to NG911, with its vital public safety benefits for the entire American public. Currently, as 911 Authorities deploy NG911 infrastructure, there are no rules at the federal level describing what OSPs must do to support the transition. The lack of rules creates uncertainty for 911 stakeholders and increases delays in the transition. In addition, the increased costs incurred to support both 911 and NG911 systems concurrently while the transition to NG911 is delayed reduce the limited amount of funding actually available to implement NG911 itself, further stalling the eventual transition to lifesaving NG911 technology across the country. The magnitude of delays and costs in the national transition to NG911 to date demonstrates the necessity and importance of the Commission taking action to establish a regulatory framework for the orderly and efficient implementation of NG911.

31. Numerous commenters on the *NG911 Notice* have voiced support for the Commission's goals in this rulemaking and have acknowledged the need for rules to facilitate the transition to NG911, although some have advocated for changes to the proposed rules.¹²¹ For example, NASNA says it is

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timely manner,” and that RLECs have “[f]inancial incentive for noncooperation with 911 Authorities”); Comtech NG911 Public Notice Comments at 4-5 (rec. Jan. 19, 2022) (Comtech NG911 Public Notice Comments) (“Currently, in the absence of an FCC-defined framework for NG911 deployments, 911 Authorities and NG911 service providers are effectively held hostage by OSPs and Legacy 911 Providers’ willingness to cause delays in the transition process, as such activity is without regulatory consequence – and in certain cases – to a delaying company’s financial benefit.”).

¹¹⁹ See, e.g., iCERT NG911 Notice Reply at 3 (rec. Sep. 8, 2023) (iCERT NG911 Notice Reply) (“[T]he need to accommodate TDM-based 911 calls creates added costs for State and local 911 authorities.”); *id.* at 4 (“[A]doption of the proposed rule would reduce the cost burdens of maintaining and operating legacy 911 infrastructure.”); Comtech NG911 Notice Reply at 4 (rec. Sept. 8, 2023) (Comtech NG911 Notice Reply) (arguing that maintaining both legacy and IP-based systems for delivery of 911 traffic involves significant costs); State of Minnesota Department of Public Safety-Emergency Communication Networks (Minnesota DPS-ECN) NG911 Notice Comments at 3 (rec. Aug. 9, 2023) (Minnesota DPS-ECN NG911 Notice Comments) (discussing the costs of maintaining duplicative legacy and NG911 network components); Nebraska Public Safety Commission (Nebraska PSC) NG911 Notice Comments at 2 (rec. Aug. 9, 2023) (Nebraska PSC NG911 Notice Comments) (discussing increased costs until NG911 transition is complete); South Carolina Revenue and Fiscal Affairs Office (South Carolina RFA) NG911 Notice Comments at 4 (rec. Aug. 9, 2023) (South Carolina RFA NG911 Notice Comments) (providing an analysis of cost savings in South Carolina to complete the transition to NG911).

¹²⁰ Motorola Solutions Connectivity, Inc. (MSCI) NG911 Notice Comments at 2 (rec. Aug. 9, 2023) (MSCI NG911 Notice Comments); Comtech NG911 Notice Comments at 4 (citing MSCI NG911 Notice Comments at 2).

¹²¹ See, e.g., Alaska Telecom Association (Alaska Telecom Assoc.) NG911 Notice Comments at 1 (rec. Aug. 9, 2023) (Alaska Telecom Assoc. NG911 Notice Comments) (“ATA supports the Commission’s efforts to encourage the transition to NG911 technology but cautions that any requirements adopted by the FCC must afford adequate flexibility to reflect the complexities associated with IP delivery and the realistic capabilities of providers.”); National Association of State 911 Administrators (NASNA) NG911 Notice Comments at 8 (rec. Aug. 8, 2023) (NASNA NG911 Notice Comments) (supporting various proposed rules from the *NG911 Notice* but suggesting revisions, e.g., “[w]hile the commission’s proposed rules facilitate the 911 authorities’ transition to i3 SIP capabilities with all originating service providers, the rules should also support the interoperability needs of the call delivery process”); Association of Public-Safety Communications Officials-International, Inc. (APCO) NG911 Notice Comments at 2 (rec. Aug. 9, 2023) (APCO NG911 Notice Comments) (indicating support of Commission NG911 rulemaking but recommending modifications to proposals); Letter from Don Brittingham, Policy Committee Chair, Industry Council for Emergency Response Technologies, Inc. (iCERT) to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, Attachment at 5 (filed Nov. 2, 2023) (iCERT Nov. 2, 2023 *Ex Parte*), (“While end-

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“grateful” to the Commission for its “forward-thinking action in facilitating NG911,” says “[t]his rulemaking will be instrumental” in moving NG911 forward, and “urges timely implementation of effective rules to make NG911 a reality nationwide.”¹²² The Maine PUC “applauds the FCC for undertaking this rulemaking to expedite the much-needed transition to NG911.”¹²³ Pennsylvania Emergency Mgmt. Agency notes that Pennsylvania’s ability to successfully and completely implement NG911 service and retire legacy E911 technologies is hampered by the current lack of rules clarifying roles and responsibilities among stakeholders, and that a regulatory framework is needed.¹²⁴ Similarly, Communications Equality Advocates (CEA) “[a]pplauds” the Commission’s efforts to pave the way for full migration to NG911.¹²⁵ NENA supports the Commission’s NG911 rulemaking proceeding and “commends” the Commission for initiating a proceeding “to build a framework to make NG9-1-1 in our nation a reality.”¹²⁶ APCO indicates support of the Commission adopting NG911 rules, noting the Commission’s proposals “have the potential to accelerate the transition” to NG911.¹²⁷ Commenter iCERT notes its “strong support for accelerating the implementation of NG911 across the country,” urges the FCC “to establish a clear regulatory framework,” and urges the FCC “to act promptly in this proceeding” due to the “urgent need to implement NG911 throughout the nation.”¹²⁸ Comtech expresses support for the Commission’s proposed NG911 rules and notes “the urgent need for swift adoption of these rules to help mitigate NG911 deployment delays.”¹²⁹ Other commenters note the benefits of

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state NG9-1-1 is the goal, FCC rules should recognize and accommodate various stages of NG9-1-1 implementation.”).

¹²² NASNA NG911 Notice Comments at 3, 13.

¹²³ Maine Public Utilities Commission (Maine PUC) NG911 Notice Comments at 1 (rec. Aug. 9, 2023) (Maine PUC NG911 Notice Comments); *accord id.* at 3.

¹²⁴ Letter from Gregory R. Kline, Deputy Director for 911, Pennsylvania Emergency Mgmt. Agency, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 1, 4 (filed June 24, 2024) (encouraging the FCC to establish uniform timelines and requirements for all technologies to connect to the NG911 system utilizing the IP-based format and emphasizing that without uniform regulation, “achieving the NG911 end state will be hampered by the application of different standards among the various 911 stakeholders”).

¹²⁵ Communications Equality Advocates (CEA) NG911 Notice Comments at 5 (rec. Aug. 9, 2023) (CEA NG911 Notice Comments). Mission Critical Partners also “applauds” the Commission “for taking this essential next step toward facilitating NG911 nationwide” and states that “MCP encourages the Commission to move forward with this rulemaking forthwith.” Mission Critical Partners, LLC (Mission Critical Partners) NG911 Notice Comments at 12 (rec. Aug. 9, 2023) (Mission Critical Partners NG911 Notice Comments).

¹²⁶ NENA: The 9-1-1 Association (NENA) NG911 Notice Comments at 16 (rec. Aug. 7, 2023) (NENA NG911 Notice Comments); *accord id.* at 1 (“applaud[ing] the Commission for initiating a rulemaking proceeding to expedite the NG9-1-1 transition”).

¹²⁷ APCO NG911 Notice Comments at 2; *see id.* at 1-2 (discussing recommended changes to the Commission’s proposals and arguing that implementation of NG911 “will save lives”).

¹²⁸ iCERT Nov. 2, 2023 *Ex Parte* at 1-2; *see also* Letter from Don Brittingham, Policy Committee Chair, iCERT, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 1 (Filed Dec. 13, 2023) (iCERT Dec. 13, 2023 Office of Commissioner Starks *Ex Parte*); Letter from Don Brittingham, Policy Committee Chair, iCERT, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 1 (Filed Dec. 13, 2023) (iCERT Dec. 13, 2023 Office of Commissioner Carr *Ex Parte*); Letter from Don Brittingham, Policy Committee Chair, iCERT, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 1 (Filed Dec. 13, 2023) (iCERT Dec. 13, 2023 Office of Commissioner Gomez *Ex Parte*); iCERT NG911 Notice Comments at 1-2 (rec. Aug. 9, 2023) (iCERT NG911 Notice Comments); iCERT NG911 Notice Reply at 1-2.

transitioning to NG911 and support Commission action to facilitate that transition.¹³⁰ No commenter to the *NG911 Notice* is opposed to the Commission adopting rules in some form to facilitate the transition to NG911.

32. Therefore, based on the foregoing and the record as a whole, we conclude that there is a need for the Commission to establish rules to facilitate the NG911 transition. We believe the rules adopted today provide a regulatory framework that will assist in expediting the critical transition to NG911 nationwide, which will serve to greatly promote public safety in the years to come.

B. Definitions of Key Terms

33. In this section, we discuss and adopt definitions for certain key terms, such as “Next Generation 911 (NG911),” “commonly accepted standards,” “Emergency Services Internet Protocol Network (ESInet),” and other terms. The definitions we adopt for additional key terms, such as “911 Traffic,” “NG911 Delivery Point,” “Session Initiation Protocol (SIP),” “Functional Element,” “Location Validation Function (LVF),” and “Location Information Server (LIS)” are discussed in subsequent sections of this *Order*.

34. *Next Generation 911 (NG911)*. In the *NG911 Notice*, the Commission sought comment

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¹²⁹ Comtech Nov. 6, 2023 *Ex Parte* at 1; *see also* Letter from Susan Ornstein, Senior Director, Legal & Regulatory Affairs, Comtech, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 1 (filed Nov. 2, 2023); Letter from Susan Ornstein, Senior Director, Legal & Regulatory Affairs, Comtech, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 1 (filed Nov. 8, 2023).

¹³⁰ *See, e.g.*, Hamilton Relay, Inc. (Hamilton Relay) NG911 Notice Comments at 1 (rec. Aug. 9, 2023) (Hamilton Relay NG911 Notice Comments) (“Hamilton supports the Commission’s efforts to expedite the NG911 transition and ensure that the nation’s emergency call handling systems function effectively and with the most advanced capabilities available.”); Competitive Carriers Association (CCA) NG911 Notice Comments at 1 (rec. Aug. 9, 2023) (CCA NG911 Notice Comments) (stating that CCA supports efforts to facilitate the nationwide transition to NG911 and to make NG911 requirements consistent across the industry and noting that “[u]ltimately, NG911 can lead to greater consistency and efficiency, lower costs, and better 911 capabilities and public safety outcomes”); CTIA NG911 Notice Reply at 1, 11 (rec. Sep. 10, 2023) (CTIA NG911 Notice Reply) (“The FCC can help by establishing a national, uniform framework for the NG911 transition that provides certainty and flexibility to address complex technical and operational issues, including key terms, conditions, and processes, and by encouraging collaboration among stakeholders.”); Jack Varnado NG911 Notice Comments at 1-2 (rec. Aug. 9, 2023) (filed on behalf of Livingston Parish Sheriff’s Office and Livingston Parish Communications District (Livingston Parish)) (Livingston Parish NG911 Notice Comments) (supporting the need for NG911 and certain Commission rules); PTI Pacifica Inc. dba IT&E (IT&E) NG911 Notice Comments at 1-3 (rec. Aug. 9, 2023) (IT&E NG911 Notice Comments) (saying “fully supports” the transition to NG911 and indicating support for the Commission’s adoption of rules); Windstream Services, LLC (Windstream) NG911 Notice Reply at 1-4 (rec. Sep. 8, 2023) (Windstream NG911 Notice Reply) (saying “fully supports the transition” to NG911 but urging changes to the Commission’s proposed approaches); AT&T NG911 Notice Comments at 2-3, 12 (indicating support for the Commission to adopt rules and saying the *NG911 Notice*’s policy goals for NG911 deployment are “highly laudable,” but urging modifications to the proposed rules); South Carolina Telephone Coalition (South Carolina RLECs) NG911 Notice Comments at 1-4, 16 (rec. Aug. 9, 2023) (South Carolina RLECs NG911 Notice Comments) (supporting “an orderly and rapid transition to NG911 and commend[ing] the Commission for its leadership,” but advocating for modifications to the proposed rules). *See also* Letter from National Association of Counties (NACo), National Association of Regulatory Utility Commissioners (NARUC), National Association of State Utility Consumer Advocates (NASUCA), NASNA, National States Geographic Information Council (NSGIC), NENA, Urban and Regional Information Systems Association (URISA), iCERT, World Institute on Disability (WID), to Charles E. Schumer, Senator, Senate Democratic Leader, United States Senate, et al., at 2 (Jan. 23, 2024), https://cdn.ymaws.com/www.nena.org/resource/resmgr/govaffairs/Joint_Letter_Congress_1_23_2.pdf (Letter from Nine Entities to Congress Supporting H.R. 3565) (stating that “full, nationwide implementation of NG911” remains an important national priority that is “critical to the safety and security of our nation”).

on defining the term “Next Generation 911.”¹³¹ As reflected in relevant proposed legislation and the comments of parties in the *NG911* and *LBR* proceedings, stakeholders have varying views on how, or even whether, to define Next Generation 911 in the Commission’s rules. In the *NG911 Notice*, the Commission noted that there are multiple definitions of “NG911” in proposed federal legislation and a definition of “Next Generation 9-1-1 services” in federal law.¹³² The Spectrum Auction Reauthorization Act of 2023 (H.R. 3565), a bill introduced in May 2023, proposed the following definition of “Next Generation 9-1-1”:

[A]n Internet Protocol-based system that— (A) ensures interoperability; (B) is secure; (C) employs commonly accepted standards; (D) enables emergency communications centers to receive, process, and analyze all types of 9-1-1 requests for emergency assistance; (E) acquires and integrates additional information useful to handling 9-1-1 requests for emergency assistance; and (F) supports sharing information related to 9-1-1 requests for emergency assistance among emergency communications centers and emergency response providers.¹³³

Several other pieces of recent proposed federal legislation have used the same or a very similar definition of NG911.¹³⁴

35. Some commenters on the *LBR Notice* argued that the Commission should adopt a definition of NG911.¹³⁵ For example, APCO urged the Commission to adopt the definition of NG911 “as defined by the public safety community with support from a variety of stakeholders” that appeared in

¹³¹ See, e.g., *NG911 Notice* at *20, para. 51.

¹³² *NG911 Notice* at *20, para. 51.

¹³³ Spectrum Auction Reauthorization Act of 2023, H.R. 3565, 118th Cong. § 159(d)(12) (2023); Press Release, U.S. House of Representatives Energy and Commerce Committee, Chair Rodgers Announces Full Committee Markup of 19 Bills (May 22, 2023), <https://energycommerce.house.gov/posts/chair-rodgers-announces-full-committee-markup-of-19-bills> (linking to text of H.R. 3565).

¹³⁴ The same definition of NG911 used in H.R. 3565 was also used in a March 2023 House bill, H.R. 1784 (the Next Generation 9-1-1 Act of 2023), and in a 2022 House bill, H.R. 7624 (the Spectrum Innovation Act of 2022). See H.R. 1784, 118th Cong. § 159(d)(12) (2023), <https://www.congress.gov/bill/118th-congress/house-bill/1784/text>; H.R. 7624, 117th Cong. § 159(d)(11) (2022), <https://www.congress.gov/bill/117th-congress/house-bill/7624/text>. In addition, a bill introduced in the Senate in July 2023, S. 2712, proposes a similar definition of NG911: “NEXT GENERATION 9-1-1.—The term ‘Next Generation 9-1-1’ means an interoperable, secure, Internet Protocol-based system that—(A) employs commonly accepted standards; (B) enables emergency communications centers to receive, process, and analyze all types of 9–1–1 requests for emergency assistance; (C) acquires and integrates additional information useful to handling 9–1–1 requests for emergency assistance; and (D) supports sharing information related to 9–1–1 requests for emergency assistance among emergency communications centers and emergency response providers.” S. 2712, 118th Cong. § 4(9) (2023), <https://www.congress.gov/bill/118th-congress/senate-bill/2712/text?s=1&r=72>. Congress used a somewhat different definition of NG911 in the Next Generation 9-1-1 Advancement Act of 2012, for purposes of administration of federal 911 implementation grants. That earlier statute provides that “Next Generation 9-1-1 services” means “an IP-based system comprised of hardware, software, data, and operational policies and procedures that—(A) provides standardized interfaces from emergency call and message services to support emergency communications; (B) processes all types of emergency calls, including voice, data, and multimedia information; (C) acquires and integrates additional emergency call data useful to call routing and handling; (D) delivers the emergency calls, messages, and data to the appropriate public safety answering point and other appropriate emergency entities; (E) supports data or video communications needs for coordinated incident response and management; and (F) provides broadband service to public safety answering points or other first responder entities.” 47 U.S.C. § 942(e)(5).

¹³⁵ *NG911 Notice* at *20, para. 51.

legislation passed by the House of Representatives in 2022 but that was not enacted into law.¹³⁶ By contrast, NENA urged the Commission to “be cautious in adopting formal definitions [of terms such as NG911] . . . without full industry-wide support and without considering all potential consequences of such definitions.”¹³⁷ NENA also asked the Commission to consider using the term “i3 compatible” or some other mutually agreed upon terminology rather than “IP-enabled” to describe standards-based NG911.¹³⁸

36. In the *NG911 Notice*, the Commission sought comment on whether it should adopt one of these definitions or incorporate elements of these or other definitions of NG911 into our rules.¹³⁹ The Commission asked whether a definition of NG911 is necessary for compliance with its proposed NG911 rules and, if so, sought input on crafting a definition that would be technologically neutral.¹⁴⁰ The Commission noted that recent proposed legislative definitions include qualitative descriptors of NG911 systems, such as security, interoperability, and use of commonly accepted standards, as well as specific technical capabilities.¹⁴¹ The Commission asked if it should include any or all of these elements in a definition of NG911 adopted by the Commission, and whether the definitions discussed encompass current NG911 networks and technologies as well as possible future NG911 technologies.¹⁴²

37. In comments on the *NG911 Notice*, APCO contends that a definition of NG911 is necessary. APCO again urges the Commission to adopt the same definition of NG911 proposed in the Spectrum Auction Reauthorization Act of 2023 (H.R. 3565), calling this a “comprehensive definition . . . crafted by the public safety community,” and stating that adopting this definition is important for aligning the rules with public safety’s needs and the Commission’s objectives.¹⁴³ Similarly, NASNA indicates a

¹³⁶ APCO LBR Notice Comments, PS Docket No. 18-64, at 5 (rec. Feb. 16, 2023). In its LBR comments, APCO urged the Commission to define NG911 as “an IP-based system that: (A) ensures interoperability; (B) is secure; (C) employs commonly accepted standards; (D) enables emergency communications centers to receive, process, and analyze all types of 9–1–1 requests for emergency assistance; (E) acquires and integrates additional information useful to handling 9–1–1 requests for emergency assistance; and (F) supports sharing information related to 9–1–1 requests for emergency assistance among emergency communications centers and emergency response providers.” *Id.* (citing Spectrum Innovation Act of 2022, H.R. 7624, 117th Cong. § 301 (2022)). As noted, this is the same NG911 definition included in the Spectrum Auction Reauthorization Act of 2023 (H.R. 3565) and the Next Generation 9-1-1 Act of 2023 (H.R. 1784).

¹³⁷ NENA LBR Notice Reply at 7-8, PS Docket No. 18-64 (rec. Mar. 20, 2023) (NENA LBR Notice Reply) (noting that such definitions may have “substantial impacts” on state statutes, federal and state regulatory bodies, future grant programs, and future case law).

¹³⁸ NENA LBR Notice Comments at 11, PS Docket No. 18-64 (rec. Feb. 15, 2023) (NENA LBR Notice Comments).

¹³⁹ *NG911 Notice* at *20, para. 51.

¹⁴⁰ *Id.*

¹⁴¹ *Id.*

¹⁴² *Id.*

¹⁴³ APCO NG911 Notice Comments at 3; *see also* APCO NG911 Notice Reply at 2-3 (rec. Sep. 8, 2023) (APCO NG911 Notice Reply) (noting that commenters offer a variety of opinions on how to define NG911, which “underscores the need for the Commission to provide a common understanding of the public safety community’s goals and expectations for NG9-1-1”; stating that providing a comprehensive NG911 definition is necessary to achieve the Commission’s objectives and that adopting “the public safety community’s comprehensive definition” of NG911 will provide “a north star”). APCO also advocates that adopting this specific NG911 definition “is a basic step to ensure that, should Congress pass NG9-1-1 funding legislation, the Commission’s rules facilitating NG9-1-1 will align with the \$15 billion grant program for communities across the country to deploy NG9-1-1.” APCO NG911 Notice Comments at 3. We note, however, that should Congress pass NG911 funding legislation in the future, Congress will not necessarily use this particular definition of NG911 and may instead adopt a different definition.

definition of NG911 is needed and advocates adopting the NG911 definition used in H.R. 3565.¹⁴⁴ Mission Critical Partners also believes that a definition of NG911 is needed, stating that, to speed up the process of migrating to NG911, “it would be best to have the Commission define, for purposes of the rulemaking, what NG911 means.”¹⁴⁵ However, Mission Critical Partners states that “NG911 has been defined differently by many groups,” and advocates for a different and more detailed definition of NG911 than that recommended by APCO and NASNA.¹⁴⁶ NENA notes that a definition of NG911 and other terms “can provide stakeholders with clarity” as the transition to NG911 progresses, and recommends that an NG911 definition be standards based. Nevertheless, NENA again cautions the Commission only to adopt formal definitions for terms with public and private 911 industry-wide support.¹⁴⁷

38. Commenters also express differing views on whether a codified definition of NG911 should reference the NENA i3 standard or any specific technical standard. To ensure compatibility and interoperability of NG911 systems, NENA argues that any definition of NG911 should reference “an i3-centric architecture.”¹⁴⁸ Colorado PUC agrees that the Commission should consider including language

¹⁴⁴ NASNA NG911 Notice Comments at 4-5 (NASNA believes the Commission’s proposed rule should reflect the following NG911 definition: “A tiered system consisting of multiple IP-based networks that: (A) ensures interoperability; (B) is secure; (C) employs commonly accepted standards; (D) enables emergency communications centers and Public Safety Answering Points to receive, process, and analyze all types of 911 requests for emergency assistance; (E) acquires and integrates additional information useful to handling 911 requests for emergency assistance; and (F) supports sharing information related to 911 requests for emergency assistance among emergency communications centers and emergency response providers.”). NASNA explains that it believes the standards suggested by APCO and the standards suggested by NENA “both have applicability as it relates to the proposed rules,” but “we believe it is important to acknowledge that an end-to-end NG911 ‘system’ consists of multiple networks and systems which are subject to different, but complementary interoperable standards.” NASNA further explains that, “[w]ith this perspective, NASNA offers a revision to the Next Generation 911 definition as it relates to the rules of this NPRM which recognizes the various networks at work.” NASNA NG911 Notice Comments at 4-5.

¹⁴⁵ Mission Critical Partners NG911 Notice Comments at 10.

¹⁴⁶ Mission Critical Partners suggests, “[f]or example,” the following definition: “Next Generation 911, commonly referred to as NG911, is a system of interconnected systems that delivers and processes calls for help from the public and delivers the media to the appropriate [Emergency Communications Center]/PSAP. NG911 must include at a minimum: An IP-based transport ability that interconnects the system components, ECCs/PSAPs, and disparate NG911 systems. This should be a robust, properly sized, resilient network.[;] Ability to receive SIP sessions to include all types of media (voice, video, picture, Real-Time Text [RTT], etc.). While the Commission could limit this requirement to specific types of media, that would require future rule changes.[;] Ability to receive and process call-routing and location data from the geolocation SIP header.[;] Ability to process routing and location data by value and by reference.[;] Ability to have authoritative geographic information system (GIS) information, including address points, street centerlines, and boundary polygons, needed to process calls and sessions.[;] Ability to deliver calls and sessions to ECCs/PSAPs.[;] Ability to bridge additional users into calls in progress, e.g., language services, other ECCs/PSAPs.[;] Ability to apply rules to the routing of calls and sessions using all available data provided in the SIP messaging, including routing and location data that is dereferenced.[;] Ability to provide cybersecurity functions at the edges of all interconnected networks and throughout the inner workings of each NGCS.[;] Ability to transfer calls and sessions between ECCs/PSAPs on the network and to other NG911 systems without the loss of location data.[;] Ability to log, and report on, call data and associated network, service, and system activity.” *Id.* at 10-11.

¹⁴⁷ NENA NG911 Notice Comments at 13-14. NENA sets forth its own definition of NG911, but acknowledges that a variety of other definitions have been proposed and that the NENA definition “is not sufficient for the specific scope of the Commission’s proceeding without modification,” including adding reference “an i3-centric architecture.” *Id.*

¹⁴⁸ *Id.* See also NENA, NENA Releases New Version of the i3 Standard for Next Generation 9-1-1 (July 12, 2021), <https://www.nena.org/news/572966/NENA-Releases-New-Version-of-the-i3-Standard-for-Next-Generation-9-1-1.htm>.

regarding “i3 standard compatibility” in the NG911 definition, stating that “[t]he vast majority, if not all” implementations of NG911 technology across the country have the goal of deploying i3-based NG911 systems.¹⁴⁹ In contrast, APCO opposes incorporating i3 or any other specific NG911 standard into the Commission’s rules, noting that there are alternative potential standards, that the telecommunications ecosystem and technology continue to evolve, and that Emergency Communications Centers (ECCs) should have flexibility to pursue their preferred approaches with a “technology-neutral approach” that ensures “ECCs can continually benefit from ongoing innovation.”¹⁵⁰ APCO urges that the Commission must avoid rules or assumptions that might “lock ECCs into a particular approach to implementing NG9-1-1” and should not adopt rules “that bake in specific architectures for NG9-1-1.”¹⁵¹ APCO states that this is why the public safety community’s “comprehensive definition of NG9-1-1 [i.e., the definition in H.R. 3565, H.R. 1784, and H.R. 7624] references the use of ‘commonly accepted standards’ rather than identify[ing] a particular standard for NG9-1-1.”¹⁵² Mission Critical Partners also advocates for a “technology-neutral definition” of NG911 “to reduce any ambiguity by providers or 911 authorities regarding compliance with the proposed NG911 rulemaking.”¹⁵³

39. We find that adopting a definition of NG911 will facilitate compliance with the NG911 rules that we adopt today, as it will help promote clarity and certainty about the Commission’s NG911 requirements. Accordingly, we adopt the definition of NG911 used in the Spectrum Auction Reauthorization Act of 2023 (H.R. 3565), a definition that is supported by multiple stakeholders in the public safety community and that has been used in several recent pieces of proposed federal legislation. Although not all commenters to this proceeding support this specific definition, we believe that it comes closest to reflecting a broad consensus as to the essential elements that should be included in a definition of NG911. In particular, the definition adopted today will advance our goal of a technology-neutral approach to implementation of NG911, and it contains the important requirements that an NG911 system ensure interoperability, be secure, and employ commonly accepted standards.

40. We decline to reference any specific standard or set of standards as part of the codified definition of NG911. Although NENA and Colorado PUC advocate for including a reference to the i3 standard in the rules,¹⁵⁴ we conclude that the better approach is to adopt a technology-neutral definition that avoids referencing any specific standard. As discussed below, we believe commenters’ concerns that

¹⁴⁹ Colorado Public Utilities Commission (Colorado PUC) NG911 Notice Comments at 10 (rec. Aug. 9, 2023) (Colorado PUC NG911 Notice Comments).

¹⁵⁰ Letter from Jeffrey S. Cohen, Chief Counsel, Mark S. Reddish, Senior Counsel, and Alison P. Venable, Government Relations Counsel, APCO International, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 2 (Filed Oct. 31, 2023) (APCO Oct. 31, 2023 *Ex Parte*); APCO NG911 Notice Reply at 2 & n.5; APCO NG911 Notice Comments at 1-2.

¹⁵¹ APCO NG911 Notice Comments at 1-2.

¹⁵² APCO NG911 Notice Reply at 2; *see also* APCO Oct. 31, 2023 *Ex Parte* at 2 (noting “the public safety community’s legislative efforts to require the use of ‘commonly accepted standards’ rather than a particular method for achieving the capabilities envisioned” for NG911); APCO NG911 Notice Comments at 1-3 (“The public safety community has coalesced around a comprehensive vision for NG9-1-1 based on a technology-neutral approach that fosters a competitive marketplace and is pursuing significant federal funding legislation that has received broad bipartisan support on Capitol Hill.”).

¹⁵³ Mission Critical Partners NG911 Notice Comments at 10; *accord* Letter from Lauren Kravetz, Vice President, Government Affairs, Intrado, to Marlene Dortch, Secretary, FCC, PS Docket No. 21-479, at 4-5 (filed Mar. 26, 2024) (Intrado Mar. 26, 2024 *Ex Parte*) (Intrado “typically respond[s] to RFPs by proposing the use of a ‘mutually agreed industry standard,’ with the intention to base the deployment on a foundation of i3 methodology tailored to the circumstances.”).

¹⁵⁴ NENA NG911 Notice Comments at 13-14; Colorado PUC NG911 Notice Comments at 10.

NG911 development be standards-based are fully addressed by including “commonly accepted standards” as an element of our NG911 definition.¹⁵⁵

41. We have also considered, but decline to adopt, the more detailed NG911 definition suggested by Mission Critical Partners.¹⁵⁶ Mission Critical Partners’ proposed NG911 definition identifies many specific operational and technical functions, such as the ability to “bridge additional users into calls in progress;” “provide cybersecurity functions at the edges of all interconnected networks and throughout the inner workings of each NGCS,” “transfer calls and sessions between ECCs/PSAPs on the network and to other NG911 systems without the loss of location data,” and “log, and report on, call data and associated network, service, and system activity.”¹⁵⁷ While we anticipate that many NG911 networks will support these capabilities, incorporating this level of detail into the codified definition of NG911 appears unnecessary and could cause confusion to the extent that it goes beyond the level of detail in the draft legislative definition supported by most commenters.¹⁵⁸

42. The definition of NG911 adopted today addresses other concerns raised by commenters on the *NG911 Notice*. In the *NG911 Notice*, the Commission sought comment on how to ensure that its proposed rules would support interoperability in the NG911 environment.¹⁵⁹ Commenters confirm the importance of interoperability in NG911 to enable the efficient transfer of emergency calls, texts, and data between ESInets, PSAPs, and first responders.¹⁶⁰ In addition, commenters note that the uniform use of commonly accepted standards by OSPs and NG911 vendors is a necessary prerequisite to interoperability,¹⁶¹ although it is not enough by itself to achieve interoperability.¹⁶² Consistent with commenters’ views, the definition of NG911 we adopt in this *Order* therefore specifies that NG911

¹⁵⁵ We agree with commenters that the i3 standard meets the definition of a “commonly accepted standard” under the definition we adopt in this *Order*.

¹⁵⁶ Mission Critical Partners NG911 Notice Comments at 10-11.

¹⁵⁷ Mission Critical Partners NG911 Notice Comments at 11.

¹⁵⁸ We note, however, that some of the elements of Mission Critical Partners’ proposed “NG911” definition are already included in the “NG911” definition that we adopt today. For example, Mission Critical Partners’ element of “[a]n IP-based transport ability that interconnects the system components, ECCs/PSAPs, and disparate NG911 systems” appears to match our final definition’s requirement of “ensures interoperability,” and its required element of “[a]bility to provide cybersecurity functions at the edges of all interconnected networks and throughout the inner workings of each NGCS” appears to match our final definition’s requirement of “is secure.” Mission Critical Partners NG911 Notice Comments at 10-11; *see infra* Appendix A at § 9.28 (definition of “NG911”).

¹⁵⁹ *NG911 Notice* at *9, para. 24.

¹⁶⁰ *See, e.g.*, H.R. 3565, § 301 (defining interoperability as “the capability of emergency communications centers to receive 9–1–1 requests for emergency assistance and information and data related to such requests, such as location information and callback numbers from a person initiating the request, then process and share the 9–1–1 requests for emergency assistance and information and data related to such requests with other emergency communications centers and emergency response providers without the need for proprietary interfaces and regardless of jurisdiction, equipment, device, software, service provider, or other relevant factors”).

¹⁶¹ Colorado PUC NG911 Notice Comments at 10; NENA NG911 Notice Comments at 5 (stating that the Commission can address interoperability concerns through the adoption of i3 compatible standards in its rules); MSCI LBR Notice Reply at 2 (rec. Mar. 20, 2023) (MSCI LBR Notice Reply) (supporting requiring delivery of 911 calls using the NENA i3 format to “advance the NG911 transition, standardize location information delivery, and promote interoperability”).

¹⁶² NENA Oct. 24, 2023 *Ex Parte* at 1; *see also* APCO NG911 Notice Reply at 3 (“The Commission should reject assertions that interoperability will be achieved as a result of requiring delivery of 9-1-1 traffic in an IP-based format or by requiring use of the i3 standard.”).

systems shall “ensure interoperability.”¹⁶³

43. Google and EPIC urge the importance of security, with Google stating that “security has to be built into NG911 and should be part of the Commission’s definition of NG911.”¹⁶⁴ The definition of NG911 adopted here specifically includes that the system “is secure.”¹⁶⁵ CEA urges the Commission to adopt an NG911 definition “that includes accessibility as an essential characteristic,” and notes favorably that the NG911 definition in the Spectrum Auction Reauthorization Act of 2023 (H.R. 3565) requires that NG911 “be capable of processing ‘all types’ of requests.”¹⁶⁶ CEA states that “[w]e read this requirement as mandating that NG911 standards support accessible technologies.”¹⁶⁷ We agree with CEA’s reading and find that adopting the same language used in H.R. 3565 is sufficient to incorporate the accessibility component into the NG911 definition.

44. *Commonly Accepted Standards.* The NG911 definition that we adopt today specifies that NG911 systems and technology must be based on “commonly accepted standards.” In the *NG911 Notice*, we discussed the concept of commonly accepted standards but did not propose a specific definition of that term.¹⁶⁸

45. Commenters generally support including a definition of “commonly accepted standards” in the rules. The proposed legislation in H.R. 3565 provides a definition of “commonly accepted standards.”¹⁶⁹ NENA offers a similar definition that “very closely aligns with the definitions as promulgated in multiple NG9-1-1 funding bills as introduced in Congress.”¹⁷⁰ We find that requiring that the commonly accepted standards be developed and approved by an accredited standards development organization will help ensure that there is a minimum threshold for ensuring the integrity and validity of such standards, as technology continues to evolve over time. Accordingly, we adopt the following definition of “commonly accepted standards”:

¹⁶³ Livingston Parish Sheriff NG911 Notice Comments at 1; APCO Sept. 22, 2023 *Ex Parte*; iCERT Nov. 2, 2023 *Ex Parte* at 4; Letter from Jeffrey S. Cohen, Chief Counsel, et al., APCO, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 2-3 (Filed May 20, 2024) (APCO May 20, 2024 *Ex Parte*).

¹⁶⁴ Google NG911 Notice Comments at 8 (rec. Aug. 9, 2023) (Google NG911 Notice Comments); Electronic Privacy Information Center (EPIC) NG911 Notice Comments at 3, 5 (rec. Aug. 9, 2023) (EPIC NG911 Notice Comments) (agreeing that a definition of NG911 should include “an emphasis on security”; also stating, as a broader observation, that the Commission must address privacy issues for NG911 data, not merely cybersecurity).

¹⁶⁵ See *infra* Appendix A at § 9.28; see also Google NG911 Notice Comments at 8 (acknowledging that, “[i]ndeed, the Spectrum Auction Reauthorization Act of 2023 (H.R. 3565) introduced in May 2023 includes a definition of ‘Next Generation 9-1-1’ as an IP-based system that ‘is secure’”).

¹⁶⁶ CEA NG911 Notice Comments at 11.

¹⁶⁷ *Id.*

¹⁶⁸ *NG911 Notice* at *9, *20, paras. 24, 51. In addition, several potential definitions of NG911 that were proposed by commenters or discussed in the *NG911 Notice* included the term “commonly accepted standards.” See, e.g., *NG911 Notice* at *20, para. 51 & n.166; NASNA NG911 Notice Comments at 4-5.

¹⁶⁹ H.R. 3565 states: “The term ‘commonly accepted standards’ means the technical standards followed by the communications industry for network, device, and Internet Protocol connectivity that— (A) enable interoperability; and (B) are— (i) developed and approved by a standards development organization that is accredited by an American standards body (such as the American National Standards Institute) or an equivalent international standards body in a process— (I) that is open to the public, including open for participation by any person; and (II) provides for a conflict resolution process; (ii) subject to an open comment and input process before being finalized by the standards development organization; (iii) consensus-based; and (iv) made publicly available once approved.”

¹⁷⁰ NENA NG911 Notice Reply at 12-13 & nn.39-40 (rec. Sep. 6, 2023) (NENA NG911 Notice Reply). NENA’s proposed definition requires that the technical standards be “developed and approved by a recognized standards development organization, that may be accredited by a United States or international standards accreditation body.”

The technical standards followed by the communications industry for network, device, and Internet Protocol connectivity that— (1) enable interoperability; and (2) are— (i) developed and approved by a standards development organization that is accredited by a United States standards body (such as the American National Standards Institute) or an equivalent international standards body in a process that— (A) is open to the public, including open for participation by any person; and (B) provides for a conflict resolution process; (ii) subject to an open comment and input process before being finalized by the standards development organization; (iii) consensus-based; and (iv) made publicly available once approved.¹⁷¹

This definition tracks the definition of “commonly accepted standards” set forth in H.R. 3565, with minor non-substantive revisions.¹⁷²

46. As noted above, this definition of “commonly accepted standards” does not specify a particular standard or set of standards to which 911 Authorities or networks must adhere. This approach gives parties flexibility to implement changes or improvements as more advanced technologies become available and allows industry standards to evolve without the need for rule changes. Equally important, our approach discourages the use of “proprietary . . . standards,”¹⁷³ which do not meet the definition of “commonly accepted standards” as they would not (1) enable interoperability; and (2) would not be developed and approved by a standards development organization accredited by a United States standards body or equivalent international standards body, be subject to an open comment and input process prior to finalization, be consensus-based, or be made publicly available once approved.¹⁷⁴

47. We also emphasize that the NENA i3 standard qualifies as a “commonly accepted standard” under the definition we adopt in this *Order*.¹⁷⁵ As numerous commenters indicate, the i3 standard is the prevailing standard adopted by all NG911 systems currently being deployed in the U.S. (and in Canada and Europe) is the NENA i3 standard.¹⁷⁶ The i3 standard has been approved by the American National Standards Institute (ANSI),¹⁷⁷ following an open comment and input process, and was made publicly available once approved.¹⁷⁸ In addition, work is ongoing to improve and augment the i3 standard as the NG911 transition proceeds.¹⁷⁹ While we do not specifically reference the i3 standard in

¹⁷¹ See *infra* Appendix A at § 9.28.

¹⁷² The definition we adopt refers to accreditation by a “United States standards body” rather than an “American standards body.” In addition, we have moved the word “that” to precede the (2)(i)(A) provision, so that it modifies both subsections that follow. Finally, we have made non-substantive changes to the introductory wording and numbering of the definition for consistency with adjacent rule provisions. See *infra* Appendix A at § 9.28.

¹⁷³ USTelecom NG911 Notice Comments at 5 (discussing that proprietary standards “may vary vendor-by-vendor.”)

¹⁷⁴ See Appendix A, § 9.28.

¹⁷⁵ See, e.g., Brian Rosen NG911 Notice Comments at 1; iCERT Nov. 2, 2023 *Ex Parte* at 4; MSCI NG911 Notice Comments at 3; Comtech NG911 Notice Comments at 7; Texas 9-1-1 Entities NG911 Notice Comments at 2.

¹⁷⁶ NENA Oct. 26, 2023 *Ex Parte* at 1 (“[A] known NG9-1-1 deployments today adopt the i3 standard, including across Canada, all deployments in the United States, and the regional version adopted in Europe.”); iCERT Nov. 2, 2023 *Ex Parte*, Attachment at 4 (“All current NG9-1-1 implementations are based on NENA i3.”); Brian Rosen NG911 Notice Reply at 1 (rec. Sep. 8, 2023) (Brian Rosen NG911 Notice Reply) (“[T]here is a single accepted industry standard, and that is the i3 standard.”).

¹⁷⁷ NENA, *Standards and Documents*, <https://www.nena.org/page/standards> (last visited Apr. 11, 2024) (noting that NENA’s i3 is an ANSI-approved standard).

¹⁷⁸ *Id.*; NENA, *NENA Standards and Documents*, <https://www.nena.org/page/standards>.

¹⁷⁹ NENA, *NENA Standards and Documents*, <https://www.nena.org/page/standards> (listing published corrections to the NENA i3 standard).

our rules, as some commenters advocate,¹⁸⁰ we regard the widespread adoption of i3 as a positive trend that will help ensure that the development of NG911 is in accordance with “commonly accepted standards” as defined in our rules. At the same time, our rules provide flexibility that will “help promote a technology-neutral approach that ensures that ECCs can continually benefit from ongoing innovation.”¹⁸¹

48. *911 Authority.* In the *NG911 Notice*, the Commission proposed to define “911 Authority” as “[t]he state, territorial, regional, Tribal, or local agency or entity with the authority and responsibility under applicable law to designate the point(s) to receive emergency calls.”¹⁸² The Commission asked if this definition encompassed the diverse set of authorities in the United States that have authority and responsibility to designate the point(s) to receive emergency calls.¹⁸³

49. The South Carolina Revenue and Fiscal Affairs Office (South Carolina RFA) agrees that the *NG911 Notice*’s proposed definition “sufficiently encompasses the roles and responsibilities of the 911 Authority for the State.”¹⁸⁴ Other commenters, however, propose to modify the definition. NASNA proposes to define “911 authority” as “[t]he state, territorial, regional, Tribal, or local agency or entity with the authority and responsibility under applicable law to procure and administer an ESInet and NG911 core services on behalf of one or more PSAPs and to designate the point(s) to receive emergency calls.”¹⁸⁵ Commenter Brian Rosen Technologies states that the Commission should define “911 Authority” as “the entity contracting for the ESInet and the NGCS service.”¹⁸⁶ We adopt the suggestions of NASNA and Brian Rosen Technologies to define the 911 Authority in reference to the operation or oversight of certain NG911 capabilities, including the authority and responsibility to designate the points to which 911 traffic must be delivered. Colorado PUC notes that there may be 911 Authorities with concurrent jurisdiction over the same geographic area and suggests including language indicating this possibility.¹⁸⁷ Instead, we include a reference in our definition of “911 Authority” to the operation and oversight of “a communications network for the receipt of 911 traffic at NG911 Delivery Points and for the transmission of such traffic from that point to PSAPs.”¹⁸⁸ While there may be overlapping state and

¹⁸⁰ NENA LBR Notice Comments at 11 (supporting “i3 compatible” or some other mutually-agreed upon terminology to describe standards-based NG911); iCERT Nov. 2, 2023 *Ex Parte*, Attachment at 4 (promoting “full interoperability and the use of commonly accepted standards, such as i3”); NASNA NG911 Notice Reply at 2 (“recognizing the NENA i3 standard as the benchmark standard will improve competition in the marketplace, ensure a standards-based approach, provide a consistent benchmark for a phased path forward for NG911, align the US with other global access to emergency calling, and improve the deployment timeline”); USTelecom NG911 Notice Reply at 5-6; Colorado PUC NG911 Notice Comments at 9; Verizon NG911 Notice Comments at 5; NG911 Service Providers NG911 Notice Comments at 8; Brian Rosen NG911 Notice Comments at 2; Comtech NG911 Notice Comments at 7; BRETSA NG911 Notice Reply at 6 (stating that the “Commission should open a rulemaking docket to adopt the i3 standard for NG911, along with any corollary standards”).

¹⁸¹ See APCO Oct. 31, 2023 *Ex Parte* at 2.

¹⁸² *NG911 Notice* at *21, *34, para. 53, Appendix A (§ 9.28 “Definitions”).

¹⁸³ *NG911 Notice* at *21, para. 53.

¹⁸⁴ South Carolina Revenue and Fiscal Affairs Office (South Carolina RFA) NG911 Notice Comments at 11 (rec. Aug. 8, 2023) (South Carolina RFA NG911 Notice Comments).

¹⁸⁵ NASNA NG911 Notice Comments at 6.

¹⁸⁶ Brian Rosen NG911 Notice Reply at 15 (also stating that “[a] PSAP should not be declaring they are ready, it is the 9-1-1 Authority, often a state entity”).

¹⁸⁷ Colorado PUC NG911 Notice Comments at 10 (“For instance, a state may have a single state-level 911 authority, but each region may also have a local 911 authority, with the state and local authorities having different roles and responsibilities.”).

¹⁸⁸ See *infra* Appendix A at § 9.28.

local 911 entities with the authority to designate the points to which 911 traffic should be delivered, there are generally not overlapping networks for the receipt of 911 traffic. This step will provide clarity regarding the appropriate entities to submit Phase 1 and Phase 2 requests.

50. We find that this modified definition of “911 Authority” will provide greater clarity and assist parties in complying with our rules. Accordingly, we adopt the following definition of “911 Authority”:

“911 Authority”: A state, territorial, regional, Tribal, or local governmental entity that operates or oversees a communications network for the receipt of 911 traffic at NG911 Delivery Points and for the transmission of such traffic from that point to PSAPs.¹⁸⁹

51. *Emergency Services Internet Protocol Network (ESInet)*. In the *NG911 Notice*, the Commission proposed to adopt a definition of “Emergency Services Internet Protocol Network (ESInet)” that would define the term “in reference to the protocol used on the network, the entities that manage the network, and the use of the network for purposes of emergency services communications.”¹⁹⁰ The Commission’s proposed definition was “[a]n Internet Protocol (IP)-based network managed by public safety authorities and used for emergency services communications, including Next Generation 911.”¹⁹¹

52. Mission Critical Partners generally supports this definition of ESInet but notes that the ESInet is “simply a transport mechanism.”¹⁹² NASNA proposes to define ESInet as: “[t]he Internet Protocol (IP)-based network tier of a Next Generation 911 system that exists between the points designated by the 911 authority and a PSAP, which is used for emergency services communications, including Next Generation 911.”¹⁹³ NENA states that “[w]ithin the confines of this proceeding,” it concurs with NASNA’s proposed definition for ESInet.¹⁹⁴ Alaska Telecom notes that the Commission seeks comment on the definitions of both “NG911” and “ESInet,” and says that any definitions adopted should reference “statewide, or at least regional, ESInet development,” as doing so will ensure that deployment of NG911 networks “is coordinated with a statewide (or at a minimum, partially statewide) rollout,” not conducted solely on a PSAP-by-PSAP, provider-by-provider basis.¹⁹⁵

53. We adopt a definition of “ESInet” similar to that proposed in the *NG911 Notice*, with slight revisions to add greater clarity and certainty to what constitutes an ESInet for purposes of these

¹⁸⁹ See *infra* Appendix A at § 9.28. The term “NG911 Delivery Point” is also defined in this rulemaking.

¹⁹⁰ *NG911 Notice* at *21, para. 52.

¹⁹¹ *NG911 Notice* at *34, Appendix A (§ 9.28 “Definitions”); see *id.* at 27, para. 52 (proposing to define “Emergency Services Internet Protocol Network (ESInet)” as “[a]n Internet Protocol (IP)-based network used for emergency services communications, including Next Generation 911”).

¹⁹² Mission Critical Partners NG911 Notice Comments at 11 (stating that “it is the core services that perform the critical functions that make NG911 work”).

¹⁹³ NASNA NG911 Notice Comments at 5.

¹⁹⁴ NENA NG911 Notice Reply at 11 (also noting that NENA has its own different “official definition of an ESInet” that it does not recommend adopting in this proceeding, but that NENA will continue to use that other definition in “other forums”). See also Brian Rosen NG911 Notice Reply at 16-17 (discussing whether the ESInet should be the default demarcation point for cost allocation, and stating that “[c]loud deployments of NGCS services complicate the definition of what is the ESInet”).

¹⁹⁵ Alaska Telecom Assoc. NG911 Notice Comments at 15-16 (“Furthermore, deploying NG911 networks in coordination with an in-state ESInet (or ESInets) in Alaska will help prevent scenarios in which a 911 authority contracts with an NG911 provider in the contiguous United States rather than Alaska, requiring service providers to somehow deliver traffic to a demarcation point far outside their service areas or in the Lower 48. Such a configuration would impose high costs on carriers serving remote areas and would jeopardize the redundancy and reliability of the 911 communications system in Alaska.”).

NG911 rules. The modifications in this final definition are consistent with the criteria set forth by the Commission in the *NG911 Notice*, and also reflect wording that NASNA and NENA support and recommend in their proposed “ESInet” definition.¹⁹⁶ The definition we adopt today is as follows:

Emergency Services Internet Protocol Network (ESInet). An Internet Protocol (IP)-based network that is managed or operated by a 911 Authority or its agents or vendors and that is used for emergency services communications, including Next Generation 911.

54. The adopted definition of “ESInet” reflects the three criteria that we proposed in the *NG911 Notice* for the definition of “ESInet”— the protocol used on the network, the entities that manage the network, and the use of the network for purposes of emergency services communications.¹⁹⁷ In addition, while our proposed definition provided that the network must be managed by “public safety authorities,” the final definition adopted today provides greater clarity by specifying that the network must be managed or operated by a “911 Authority or its agents or vendors,” with “911 Authority” being a term specifically defined elsewhere in the rules.¹⁹⁸

55. NASNA and NENA propose stating in the definition that the ESInet is the “Internet Protocol (IP)-based tier of a Next Generation 911 system that exists between the points designated by the 911 authority and a PSAP.”¹⁹⁹ While ESInets typically operate in the manner described by NASNA and NENA, we believe that ESInets should be defined functionally without reference to any particular “tier” or network configuration. Alaska Telecom recommends that the “ESInet” definition reference “statewide, or at least regional, ESInet development” to ensure that NG911 networks are not deployed on a PSAP-by-PSAP, provider-by-provider basis.²⁰⁰ We find that it is not necessary to include specific wording on this issue. The “ESInet” definition we adopt today is intended to be flexible and leaves the scale of ESInet deployment (e.g., local, state, or regional) to the discretion of stakeholders.

56. *Originating Service Providers.* The *NG911 Notice* discussed wireline providers, rural wireline providers, and non-rural telecommunications wireline providers,²⁰¹ but it did not propose specific definitions for “Wireline Provider” or “Non-Rural Wireline Provider.” Similarly, the *NG911 Notice* did not specifically propose to define the terms “Nationwide CMRS Provider,” “Non-Nationwide CMRS Provider,” and “Rural Incumbent Local Exchange Carrier (RLEC).” In addition, the Commission noted that it had previously defined the term “Covered Text Provider” at 47 CFR § 9.10(q)(1),²⁰² but did not specifically propose to adopt a definition of that term in this proceeding. However, in the *NG911 Notice* the Commission sought comment on whether there are “any other terms that we should define for purposes of the cost allocation and IP-delivery rules.”²⁰³ The terms “Wireline Provider,” “Non-Rural Wireline Provider,” “Covered Text Provider,” “Nationwide CMRS Provider,” “Non-Nationwide CMRS Provider,” and “Rural Incumbent Local Exchange Carrier (RLEC)” are used in certain NG911 rules that we adopt today. We find that specifically defining these terms will ensure greater clarity and certainty, and will help parties to comply with our regulations. Accordingly, today we incorporate and adopt the

¹⁹⁶ NASNA NG911 Notice Comments at 5; NENA NG911 Notice Reply at 11.

¹⁹⁷ *NG911 Notice* at *21, para. 52.

¹⁹⁸ See *infra* Appendix A at § 9.28.

¹⁹⁹ NASNA NG911 Notice Comments at 5; NENA NG911 Notice Reply at 11.

²⁰⁰ Alaska Telecom Assoc. NG911 Notice Comments at 15.

²⁰¹ *NG911 Notice* at *21, para. 55.

²⁰² *Id.* at *2, para.2 n.2.

²⁰³ *Id.* at *21, para. 54.

definitions for these terms that have previously been set forth in other existing statutes and regulations.²⁰⁴

57. The *NG911 Notice* and the *LBR Notice* did not specifically propose a defined term that would encompass all providers that would be specifically subject to NG911 rules. We define the term “Originating Service Providers” for purposes of this rulemaking and the new NG911 rules we adopt today as follows:

Originating Service Providers. Providers that originate 911 traffic, specifically wireline providers; commercial mobile radio service (CMRS) providers, excluding mobile satellite service (MSS) operators to the same extent as set forth in § 9.10(a); covered text providers, as defined in § 9.10(q)(1); interconnected Voice over Internet Protocol (VoIP) providers, including all entities subject to subpart D of this part; and Internet-based Telecommunications Relay Service (TRS) providers that are directly involved with routing 911 traffic, pursuant to subpart E of this part.

58. *Other Definitions.* Some commenters suggest that the Commission codify definitions of additional terms, such as “Associated Location Information,”²⁰⁵ “IP-based format,”²⁰⁶ and “Phases of Readiness.”²⁰⁷ We conclude that adopting formal definitions of these terms is unnecessary, but we note that some of the suggested additional terms are discussed and explained in other sections of this *Order*.²⁰⁸ We believe that the formal definitions we adopt in this proceeding provide sufficient certainty, clarity, and guidance for stakeholders at this time.

C. Service Providers’ Obligation to Deliver 911 Traffic in IP Format Upon Request

1. Two-Phased Implementation of IP-Based Transmission Formats

a. Overview

59. For the transition to NG911, we adopt rules that require OSPs to take steps in two phases to complete all translation and routing to deliver 911 traffic, including associated routing and location information, in the requested IP-based format. These requirements are intended to correspond to and complement the readiness phases for 911 Authorities, such that once a 911 Authority is ready to receive NG911 traffic in a specific IP format, the OSP will be required to deliver it in that format.

60. In the *LBR Notice*, the Commission proposed to require CMRS and covered text

²⁰⁴ See *infra* Appendix A at § 9.28.

²⁰⁵ iCERT NG911 Notice Comments at 4 (urging that “the Commission should clarify what it means to “include associated location information” with a 911 call”).

²⁰⁶ T-Mobile USA, Inc. (T-Mobile) NG911 Notice Comments at 5 (rec. Aug. 9, 2023) (T-Mobile NG911 Notice Comments); The Texas 9-1-1 Alliance, the Texas Commission on State Emergency Communications, and the Municipal Emergency Communication Districts Association (Texas 9-1-1 Entities) NG911 Notice Comments at 2 (rec. Aug. 8, 2023) (Texas 9-1-1 Entities NG911 Notice Comments); iCERT NG911 Notice Comments at 4 (stating “iCERT recommends that delivery of 911 calls in IP-based format require conformance to ‘commonly accepted standards for NG911’”).

²⁰⁷ NASNA NG911 Notice Comments at 6-7; T-Mobile NG911 Notice Reply at 9-10 (rec. Sep. 8, 2023) (T-Mobile NG911 Notice Reply); NENA NG911 Notice Reply at 2.

²⁰⁸ For example, in section III.C.1.a, we note that “associated location information” means “the location information that OSPs are required to determine and transmit under current part 9 rules,” and we clarify that “nothing in our rules is intended to change location determination requirements for OSPs.” In section III.C.1.b.ii, we discuss the term “IP-based format,” noting that using and defining the technical term “SIP” to describe IP delivery and 911 Authority readiness will provide clarity regarding the Commission’s NG911 rules, as “SIP” is a technically more precise term than “IP-based format” and similar terms. In section III.C.2, we discuss and adopt two phases of readiness “to promote clarity and specificity regarding the readiness that 911 Authorities must achieve to prepare to accept Phase 1 and Phase 2 delivery by OSPs.”

providers to deliver 911 calls, texts, and associated location information in IP-based format to NG911-capable PSAPs that request it.²⁰⁹ The Commission reasoned that such a requirement would advance the transition to NG911 by helping address operational and routing issues for jurisdictions that have implemented NG911.²¹⁰ The Commission also noted that the 2016 TFOPA Report concluded that a significant impediment to NG911 service was that originating service providers were not prepared to deliver 911 calls via IP technology with location information to NG911 service providers.²¹¹ The Commission reasoned that requiring OSPs to deliver IP-formatted calls and routing information to NG911-capable PSAPs would alleviate the burden on state and local 911 Authorities of maintaining transitional gateways and other networks to process and convert legacy calls²¹² and would help jurisdictions realize additional public safety benefits available on NG911 networks.²¹³

61. In the *NG911 Notice*, the Commission proposed to require wireline, interconnected VoIP, and Internet-based TRS providers to complete all translation necessary to deliver 911 calls, including associated location information, in the requested IP-based format to an ESInet or other designated point(s) that allow emergency calls to be answered upon request of 911 Authorities who have established the capability to accept NG911-compatible, IP-based 911 communications.²¹⁴ The Commission reasoned that its proposal would help jurisdictions that are seeking to implement NG911 by alleviating the burden on 911 Authorities to maintain transitional gateways and other network elements to process and convert legacy calls²¹⁵ and would complement its IP-delivery proposal in the *LBR Notice*.²¹⁶ In the *NG911 Notice*, the Commission sought comment on achieving regulatory parity in its requirements for delivery of IP-based 911 calls by CMRS, wireline, interconnected VoIP, and Internet-based TRS providers, and asked whether there were reasons to apply different requirements to 911 calls from different platforms.²¹⁷ In addition, the Commission sought specific comment on how its proposal should extend to 911 calls that originate on non-IP wireline networks²¹⁸ and how to extend its proposed requirement to Internet-based TRS.²¹⁹

62. In both the *LBR Notice* and *NG911 Notice*, the Commission proposed to require OSPs to complete all NG911 transition steps in a single phase.²²⁰ In the *NG911 Notice*, the Commission also sought comment on whether to consider different or additional phases, including NASNA's proposal for

²⁰⁹ *LBR Notice*, 37 FCC Rcd at 15201, para. 46.

²¹⁰ *Id.*

²¹¹ *Id.* (citing TFOPA Final Report at 37).

²¹² *Id.* at 15202, para. 47.

²¹³ *Id.* at 15202, para. 48.

²¹⁴ *NG911 Notice* at *8, para. 21.

²¹⁵ *Id.* at *8, para. 22.

²¹⁶ *Id.* at *9, para. 23 (“Although CMRS providers originate 75 to 80 percent of 911 calls in the U.S., successful implementation of NG911 for all 911 calls cannot occur without similar steps being taken by wireline, interconnected VoIP, and Internet-based TRS providers. Therefore, we propose that wireline, interconnected VoIP, and Internet-based TRS providers should be subject to similar requirements to deliver 911 communications in IP-based format to those we have proposed for CMRS and covered text providers.”).

²¹⁷ *Id.* at *9, para. 23.

²¹⁸ *Id.* at *10, para. 25.

²¹⁹ *Id.* at *10, para. 26.

²²⁰ *Id.* at *8, para. 21; *LBR Notice*, 37 FCC Rcd at 15201, para. 46. In the *LBR Order*, the Commission deferred to this proceeding, PS Docket No. 21-479, consideration of proposals for CMRS and covered text providers to deliver wireless 911 voice calls, texts, and associated routing information in IP format. *LBR Order* at *2, para. 3.

three phases based on TFOPA’s “NG911 Readiness Scorecard.”²²¹ In addition, the Commission asked related questions regarding the costs and benefits associated with NASNA’s suggestion.²²²

63. In response to the *NG911 Notice*, several commenters, including NASNA, USTelecom, Intrado, MSCI, iCERT, and the Colorado PUC, advocate for regulations that account for multiple phases in the transition to NG911.²²³ Several of these commenters indicate that a phased approach would better reflect the realities of the ongoing, typically phased, implementation of NG911 thus far. NASNA states that the implementation of NG911 is “typically a multi-phase transition process” and that “there is not just one phase of readiness.”²²⁴ Intrado states that “a phased-in approach . . . account[s] for, on the one hand, the significant difference between delivering IP-formatted traffic to the NG911 POI and delivering i3-formatted traffic and, on the other hand, differences in OSP type.”²²⁵ iCERT states that “FCC rules should recognize and accommodate various stages of NG911 implementation.”²²⁶ MSCI argues that requiring immediate implementation of full NG911 capabilities in a single phase would “complicate, if not frustrate, the Commission’s goal to more quickly transition TDM-based communications to IP-based communications.”²²⁷ However, some commenters support implementation of the transition in a single phase,²²⁸ urge the Commission to seek further comment on phased approaches,²²⁹ or urge the Commission to create an industry task force to further study NG911.²³⁰

64. Today, we require OSPs to complete in two phases all translation and routing to deliver 911 traffic, including associated location information, in the requested IP-based format.²³¹ In Phase 1, OSPs will be required to deliver 911 traffic in a basic SIP format, thereby implementing the fundamental IP translation or transport that is a prerequisite for the delivery of 911 traffic in SIP format that complies

²²¹ *NG911 Notice* at *16, para. 41 (citing the NASNA Petition at 7-8).

²²² *Id.* at *16, para. 41.

²²³ NASNA NG911 Notice Comments at 3, 6-7; USTelecom–The Broadband Association (USTelecom) NG911 Notice Reply at 6 (rec. Sept. 8, 2023) (USTelecom NG911 Notice Reply) (citing NASNA NG911 Notice Comments at 9 and Intrado Life and Safety, Inc. (Intrado) NG911 Notice Comments at 4 (rec. Aug. 9, 2023) (Intrado NG911 Notice Comments)); iCERT Nov. 2, 2023 *Ex Parte*, Attach. at 5; MSCI NG911 Notice Comments at 4; iCERT Dec. 13, 2023 Office of Commissioner Gomez *Ex Parte*, Attach. at 4; iCERT Dec. 13, 2023 Office of Commissioner Carr *Ex Parte*, Attach. at 4; iCERT Dec. 13, 2023 Office of Commissioner Starks *Ex Parte*, Attach. at 4; Colorado PUC NG911 Notice Comments at 4.

²²⁴ NASNA NG911 Notice Comments at 3.

²²⁵ Intrado NG911 Notice Comments at 4.

²²⁶ iCERT Nov. 2, 2023 *Ex Parte*, Attach. at 5.

²²⁷ MSCI NG911 Notice Comments at 3.

²²⁸ Letter from Brandon Abley, Director of Technology, and Jonathan Gilad, Director of Government Affairs, NENA: The 9-1-1 Association (NENA), to FCC, PS Docket No. 21-479, at 3 (filed Dec. 8, 2023) (NENA Dec. 8, 2023 *Ex Parte*); Brian Rosen NG911 Notice Reply at 11-12.

²²⁹ APCO Oct. 31, 2023 *Ex Parte* at 2.

²³⁰ Bandwidth, Inc. (Bandwidth) NG911 Notice Reply at 4-5 (rec. Sept. 8, 2023) (Bandwidth NG911 Notice Reply).

²³¹ Associated location information means the location information that OSPs are required to determine and transmit under current part 9 rules. We clarify that nothing in our rules is intended to change location determination requirements for OSPs, meaning the accuracy or reliability of the location information provided with 911 calls. *See, e.g.*, 47 CFR §§ 9.8 (indicating the dispatchable location requirement for wireline providers); 9.10(i)(2)(i) (indicating horizontal dispatchable location requirements for CMRS providers); 9.10(i)(2)(ii) (indicating vertical dispatchable location requirements for CMRS providers); 9.11(b)(4) (indicating dispatchable location requirements for interconnected VoIP providers); 9.14(d)(4) (indicating dispatchable location requirements for VRS and IP Relay providers); 9.14(e)(4) (indicating dispatchable location requirements for IP CTS providers).

with commonly accepted standards. In Phase 2, OSPs will be required to deliver 911 traffic in SIP format that complies with NG911 commonly accepted standards. This approach represents a division of the one phase approach proposed in the *LBR Notice* and *NG911 Notice*.

65. We adopt two phases for all OSPs—i.e., wireline providers, CMRS providers, covered text providers, interconnected VoIP providers, and Internet-based TRS providers—to facilitate an ordered and synchronized transition to NG911, to better reflect the transition to NG911 as it currently is progressing, and to achieve regulatory parity in the requirements for the delivery of IP-based 911 calls across different platforms. We agree with Colorado PUC that “every implementation of NG911 is being accomplished on a phased basis, so allowing for multiple iterations of requirements to be established is necessary.”²³² This approach recognizes that OSPs will need additional time to achieve delivery of 911 traffic using NG911 commonly accepted standards in Phase 2.

66. The phased approach we adopt is consistent with phased approaches recommended by Intrado²³³ and MSCI,²³⁴ with minor adjustments to accommodate our regulatory goal of encompassing current and future NG911 commonly accepted standards. Intrado states that “NG911 delivery is divisible into two distinct stages—(1) IP transit (i.e., SIP delivery to the POI) and (2) NG911-formatted call information under the i3 standard, with the former being a prerequisite for the latter.”²³⁵ MSCI suggests that the Commission consider “a two-step approach to NG911 deployment. The first step would involve a requirement that an OSP deliver 911 calls in IP format [upon request of a 911 Authority] The second step would involve a requirement that an OSP deliver 911 calls consistent with NENA i3 standard”²³⁶ The rules we adopt today are very similar to Intrado’s and MSCI’s recommendations.

67. NASNA proposed a three-phase approach in which the initial phase would be triggered when the 911 Authority has an ESInet that is ready to receive 911 calls from the OSPs via an LNG.²³⁷ Colorado PUC similarly contemplates a phase in which 911 Authorities would maintain an LNG.²³⁸ We conclude that incorporating this initial phase into our rules is unnecessary and potentially counterproductive, as it merely describes the earliest transitional stage in which 911 Authorities continue to maintain LNGs to accommodate OSPs that have not transitioned to IP. We agree with MSCI that including this “legacy phase” could “prolong the migration.”²³⁹ Instead, Phase 1 and Phase 2 in our rules correspond to the second and third phases proposed by NASNA, which call for OSPs to first support basic SIP and then support SIP that complies with NG911 commonly accepted standards.

68. We prefer the two-phase approach to the single-phase approach proposed in the *LBR Notice* and *NG911 Notice* because a single-phase approach is less capable of encompassing the sequencing of steps that both 911 Authorities and OSPs must take during the NG911 transition. As discussed by several commenters, a phased regulatory approach aligns with the typical multi-phased implementation of NG911.²⁴⁰ In addition, we find it unnecessary to seek further comment on whether to

²³² Colorado PUC NG911 Notice Comments at 4 (emphasis in original).

²³³ Intrado NG911 Notice Comments at 4.

²³⁴ MSCI NG911 Notice Comments at 4.

²³⁵ Intrado NG911 Notice Comments at 4.

²³⁶ MSCI NG911 Notice Comments at 4.

²³⁷ NASNA NG911 Notice Comments at 6-7.

²³⁸ Colorado PUC NG911 Notice Comments at 5-6.

²³⁹ Mission Critical Partners NG911 Notice Comments at 8-9 (citing NASNA Petition).

²⁴⁰ NASNA NG911 Notice Comments at 3; Intrado NG911 Notice Comments at 4; iCERT Nov. 2, 2023 *Ex Parte*, Attach. at 5.

adopt a phased approach, given that the Commission sought comment on NASNA's phased recommendation in the *NG911 Notice* and has gathered an adequate record for decision.²⁴¹ We additionally conclude that, in light of the extensive record in this proceeding, an industry task force is not needed to further study the NG911 rules we consider today.²⁴² We also find that a two-phased approach will not needlessly slow the transition to NG911, as argued by APCO,²⁴³ as the phased approach we adopt will ensure that OSPs and 911 Authorities take the necessary steps at each phase of the transition to NG911.

69. We affirm the Commission's reasoning in the *LBR Notice* and *NG911 Notice* that IP delivery requirements will advance the transition to NG911 by alleviating the burden on 911 Authorities to maintain transitional gateways and helping 911 Authorities realize the public safety benefits of NG911 networks. We agree with iCERT's assertion that the need to accommodate TDM-based 911 calls creates added costs for state and local 911 authorities, and that the adoption of IP delivery requirements will reduce the cost burdens of maintaining and operating legacy 911 infrastructure.²⁴⁴ We also agree with Intrado's assertion that establishing direct OSP connectivity via SIP to ESInets "will materially reduce the number of 911 outages through improved network reliability and availability."²⁴⁵ We agree with Comtech that maintaining both legacy and IP-based systems for the delivery of 911 traffic involves significant costs and creates increased vulnerability and risk of 911 outages.²⁴⁶ NENA also states that it is prohibitively expensive to maintain TDM and IP networks for 911 simultaneously.²⁴⁷

70. In addition, we affirm the principle of parity in NG911 requirements for OSPs at Phases 1 and 2, though as discussed in section III.C.3, differences among types of OSPs regarding their current NG911 transition progress and capabilities merit adjustment of compliance timelines for some classes of OSPs. NENA, iCERT, NASNA, Maine PUC, Colorado PUC, Mission Critical Partners, and the Ad Hoc NG911 Service Providers Coalition support parity among different types of OSPs.²⁴⁸ Several commenters indicate that the Commission should decline to extend IP delivery requirements to wireline and VoIP providers as these services deliver location information to 911 Authorities differently than CMRS providers.²⁴⁹ We note that interconnected VoIP providers already use a LIS functional element to

²⁴¹ *NG911 Notice* at *16, para. 41.

²⁴² See Bandwidth NG911 Notice Reply at 4-5.

²⁴³ APCO Oct. 31, 2023 *Ex Parte* at 2.

²⁴⁴ iCERT NG911 Notice Reply at 3-4.

²⁴⁵ Letter from Lauren Kravetz, Vice President, Government Affairs, Intrado, to Marlene Dortch, Secretary, FCC, PS Docket No. 21-479, at 1 (filed Oct. 24, 2023) (Intrado Oct. 24, 2023 *Ex Parte*).

²⁴⁶ Comtech NG911 Notice Reply at 4.

²⁴⁷ NENA NG911 Notice Reply at 8.

²⁴⁸ NENA NG911 Notice Comments at 3; iCERT NG911 Notice Reply at 4; NASNA NG911 Notice Reply at 2 (rec. Sept. 8, 2023) (NASNA NG911 Notice Reply); Maine PUC NG911 Notice Comments at 2; Colorado PUC NG911 Notice Comments at 5; Mission Critical Partners NG911 Notice Comments at 4; the Ad Hoc NG911 Service Providers Coalition NG911 Notice Comments at 2.

²⁴⁹ South Carolina Telephone Coalition (South Carolina RLECs) NG911 Notice Reply at 13 (rec. Sept. 8, 2023) (South Carolina RLECs NG911 Notice Reply) (stating that it is premature to extend IP delivery requirements to fixed wireline carriers, and that such rules should not be applied to wireline and VoIP because this would be expensive and unnecessary due to differences in how fixed and mobile 911 location data is delivered); Home Telephone ILEC LLC (Home Telephone) NG911 Notice Comments at 15-16 (rec. Aug. 9, 2023) (Home Telephone NG911 Notice Comments) (stating that the Commission should not require wireline providers to deliver location data in IP format, as RLECs lack that capability); USTelecom NG911 Notice Comments at 3 (rec. Aug. 9, 2023) (USTelecom NG911 Notice Comments) (stating that it is technically infeasible for some wireline carriers to include location information in IP call headers, requiring continued reliance on ALI databases); Five Area Telephone

(continued....)

transmit location information to 911 Authorities, subject to the NENA i2 standard,²⁵⁰ and we therefore find arguments that interconnected VoIP providers cannot provide location information to NG911 networks via a LIS to be unsupported. The record also confirms that it is technically feasible for wireline providers to use a LIS to transmit location information to 911 Authorities, even when they do not originate calls in IP. We also note that nothing under these rules changes the existing obligations that all OSPs have to determine the location of the 911 caller under the OSP-specific rules in part 9.

b. Phase 1

(i) Requirement

71. Upon receipt of a valid Phase 1 request from a 911 Authority, OSPs must (i) deliver all 911 traffic bound for the relevant PSAPs in the IP-based SIP format requested by the 911 Authority, (ii) obtain and deliver 911 traffic to enable the ESInet and other NG911 network facilities to transmit all 911 traffic to the destination PSAP, (iii) deliver all such 911 traffic to one or more in-state NG911 Delivery Points designated by the 911 Authority, and (iv) complete connectivity testing to confirm that the 911 Authority receives 911 traffic in the IP-based SIP format requested by the 911 Authority.²⁵¹ OSPs are not required to originate 911 traffic in an IP format, and therefore may use a legacy TDM-to-IP gateway (LNG) to achieve compliance with these Phase 1 requirements.

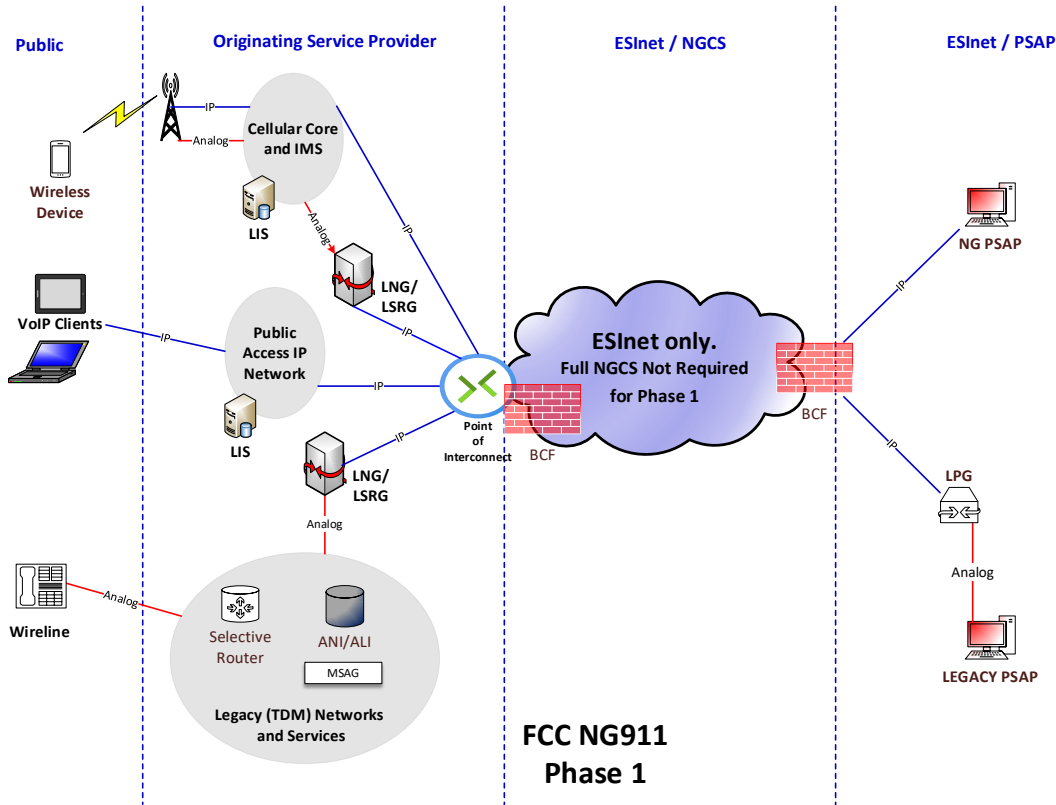
72. The diagram below demonstrates the main high-level functions covered at Phase 1. This diagram is not meant to represent required network architectures in an “as built” configuration and is not prescriptive in nature. The call flow is illustrated by blue lines representing SIP 911 traffic and red lines indicating legacy 911 traffic. In the diagram below, 911 traffic originates on the left side of the diagram and flows from left to right.

(Continued from previous page) _____

Cooperative, Inc. and Mid-Plains Telephone Cooperative, Inc. (Five Area Telephone) NG911 Notice Comments at 5 (rec. Aug. 9, 2023) (Five Area Telephone NG911 Notice Comments) (arguing that wireline and VoIP carriers cannot provide the same automated location data as CMRS); NTCA – The Rural Broadband Association (NTCA) NG911 Notice Comments at 16-17 (rec. Aug. 9, 2023) (NTCA NG911 Notice Comments) (arguing that wireline providers should be allowed to continue to rely on ALI for location information and should not have to provide the location information proposed in the LBR proceeding for CMRS and covered text providers).

²⁵⁰ NENA, Interim VoIP Architecture for Enhanced 9-1-1 Services (i2) at page 58 (Dec. 6, 2005), https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards-archived/nena_08-001-v1_interim_voip_.pdf (“The i2 solution proposes a Location Information Server (LIS) be the source for distributing location information within an access network.”).

²⁵¹ See *infra* Appendix A at § 9.29(a).



The above diagram uses the following acronyms:

- ANI = Automatic Number Identification
- ALI = Automatic Location Information
- BCF = Border Control Function
- ESInet = Emergency Services IP Network
- IMS = IP Multimedia Subsystem
- LIS = Location Information Server
- LNG = Legacy Network Gateway
- LPG = Legacy PSAP Gateway
- LSRG = Legacy Selective Router Gateway
- MSAG = Master Street Address Guide
- NG PSAP= Next Generation 911 PSAP
- NGCS = NG911 Core Services
- TDM = Time Division Multiplex

73. Implementing Phase 1 will help reduce costs and improve 911 reliability by moving 911 traffic from legacy to IP transmission facilities, and will establish the foundation necessary for subsequent implementation of Phase 2. MSCI and iCERT argue, and we agree, that delivery in IP is a critical first

step before compliance with NG911 commonly accepted standards.²⁵² Intrado asserts that IP delivery will “materially reduce the number of 911 outages through improved network reliability.”²⁵³ Mission Critical Partners, iCERT, Comtech, and the State of Minnesota Department of Public Safety-Emergency Communication Networks (Minnesota DPS-ECN) indicate that relieving 911 Authorities of the burden of supporting TDM traffic from OSPs will materially reduce costs to those 911 Authorities.²⁵⁴

74. To the extent that OSPs originate 911 traffic in TDM, we find that they should be responsible in Phase 1 for translating such traffic to SIP when delivering it to the designated NG911 Delivery Point. We disagree with Verizon’s argument that requiring each individual TDM-based OSP to provide an LNG “imposes unnecessary costs on OSPs” and that “LNG capabilities should thus presumptively remain the PSAP/NG911 provider’s responsibility.”²⁵⁵ As most OSPs already transmit traffic via SIP, it is unreasonable to require 911 Authorities to maintain LNGs for the small number of OSPs that continue to originate and transmit their traffic in TDM. In addition, we find that it is not unreasonably costly for OSPs that originate and transmit traffic in TDM to maintain an LNG or contract with a third party to translate 911 traffic.²⁵⁶ We find that it should be the responsibility of the OSP to translate 911 traffic from legacy formats and deliver 911 traffic in the SIP format requested by the 911 Authority. However, nothing in our rules prevents a 911 Authority from continuing to host an LNG for OSPs to use, either through an alternative agreement with an OSP or by choosing not to use the valid request mechanism in our rules. This possibility was noted by CSRIC, which observed that a 911 Authority’s ESInet provider “can provide the LNG as a service and accommodate small carriers coming on board with minimal expense to the smaller carrier.”²⁵⁷

75. *Connectivity Testing.* As part of Phase 1, we require OSPs to conduct connectivity testing to confirm that the 911 Authority receives 911 traffic in the IP-based SIP format requested by the 911 Authority. Such testing will help to ensure that the connection from the OSP to the 911 Authority is implemented correctly and meets the requirements of the 911 Authority. The Commission sought comment on testing related to NG911 delivery in the *LBR Notice* and *NG911 Notice*.²⁵⁸ Several commenters emphasize the importance of connectivity testing as part of the process of initiating delivery of 911 traffic to ESInets.²⁵⁹ Commenters also note that connectivity testing will require cooperation, coordination, and collaboration among multiple parties, including OSPs, NG911 vendors, and 911

²⁵² MSCI NG911 Notice Comments at 2 (stating that the most urgent element of NG911 is the delivery of 911 calls in IP-based format, and compliance with the NENA i3 standard should not hinder such delivery); iCERT NG911 Notice Comments at 5 (stating that full implementation of end state NG911 capabilities should not be a prerequisite for PSAPs to have 911 delivered in IP format); iCERT Dec. 13, 2023 Office of Commissioner Gomez *Ex Parte*, Attach. at 4; iCERT Dec. 13, 2023 Office of Commissioner Carr *Ex Parte*, Attach. at 4; iCERT Dec. 13, 2023 Office of Commissioner Starks *Ex Parte*, Attach. at 4.

²⁵³ Intrado Oct. 24, 2023 *Ex Parte* at 1; *see also* Comtech NG911 Notice Reply at 4.

²⁵⁴ Mission Critical Partners NG911 Notice Comments at 5; iCERT NG911 Notice Reply at 3-4; Comtech NG911 Notice Reply at 4; Minnesota DPS-ECN NG911 Notice Comments at 3.

²⁵⁵ Verizon NG911 Notice Reply at 5 (rec. Sept. 8, 2023) (Verizon NG911 Notice Reply).

²⁵⁶ *See* section III.G.2.

²⁵⁷ CSRIC NG911 Transition Report, § 5.1.1.2.2.3.

²⁵⁸ *LBR Notice*, 37 FCC Rcd at 15208, para. 64; *NG911 Notice* at *19, para. 47.

²⁵⁹ *See, e.g.*, T-Mobile LBR Comments at 12 (“Carriers cannot unilaterally deliver traffic in IP—they must first ensure that PSAPs are ready to receive it, which is verified through comprehensive testing.”); Verizon LBR Reply Comments at 4 (“[M]any of the technical and operational details will inevitably need to be addressed as part of the [NG911] implementation process”); CCA NG911 Notice Comments at 7-8 (noting that it is important for OSPs to “meaningfully collaborate” with 911 Authorities on IP traffic delivery by ensuring that sufficient testing occurs to minimize real world issues when IP traffic is exchanged and NG911 is implemented).

Authorities.²⁶⁰ Because the ability of OSPs to complete testing within the required time period depends on such cooperation, we condition the testing requirement on 911 Authorities securing commitments from their NG911 vendors to ensure that such vendors are available to complete connectivity testing by the compliance deadline applicable to the OSP.

(ii) Definitions

76. To facilitate compliance with our rules for Phase 1 delivery, we adopt definitions for “911 traffic,” “NG911 Delivery Point,” and “Session Initiation Protocol (SIP).” Adopting functional definitions of these terms will provide guidance to OSPs in complying with our cost allocation and IP-delivery rules and will assist both OSPs and 911 Authorities by providing baseline definitions of important technical terms relevant to their needs. We define the term “911 traffic” as a convenient descriptor of the transmissions regulated under these rules. We similarly define the term “NG911 Delivery Point” as a convenient descriptor of the point to which an OSP’s 911 traffic is delivered. While several commenters called for definitions of the terms “IP-capable,” “IP-based,” and “NG911-capable,”²⁶¹ the term “SIP” is a standard technical term used in NG911 reference materials.²⁶² “SIP” was also used by several other commenters in the record.²⁶³ We believe that referencing “SIP” to describe IP delivery and 911 Authority readiness at Phases 1 and 2 and defining that term will provide clarity regarding the Commission’s NG911 rules, as it is a technically more precise term than “IP-based format” and similar terms.

77. We find that defining these terms will help to clarify our NG911 requirements and assist parties with compliance. Accordingly, we adopt the following definitions:

- *911 traffic.* Transmissions consisting of all 911 calls (as defined in §§ 9.3, 9.11(b)(2)(ii)(A), 9.14(d)(2)(iii)(A), and 9.14 (e)(2)(ii)(A)) and/or 911 text messages (as defined in § 9.10(q)(9)), as well information about calling parties’ locations and originating telephone numbers and routing information transmitted with the calls and/or text messages.²⁶⁴

²⁶⁰ CCA NG911 Notice Comments at 7-8 (“It is important for OSPs to meaningfully collaborate with 911 authorities on IP traffic delivery and NG911 to ensure readiness, account for any unique local circumstances or complexities, and ensure that sufficient planning and testing occurs to minimize real world issues when IP traffic is exchanged and NG911 is implemented.”); Boulder Regional Emergency Telephone Service Authority (BRETSA) NG911 Notice Reply at i (rec. Sept. 8, 2023) (BRETSA NG911 Notice Reply) (“The ESInet or NGCS provider is also the party which can confirm that the PSAPs are IP-ready, and which must cooperate in provisioning and testing IP call delivery.”); T-Mobile LBR Notice Comments at 12.

²⁶¹ Comtech NG911 Notice Comments at 7; CTIA LBR Notice Reply at 2, 9-10; NENA LBR Notice Reply at 4-5; Southern Communications Services, Inc. d/b/a Southern Linc (Southern Linc) LBR Notice Reply at 8-9 (rec. Mar. 20, 2023) (Southern Linc LBR Notice Reply).

²⁶² NENA i3 at 3; NENA, NENA Knowledge Base (May 17, 2024), [https://kb.nena.org/wiki/SIP_\(Session_Initiation_Protocol\)](https://kb.nena.org/wiki/SIP_(Session_Initiation_Protocol)).

²⁶³ See, e.g., USTelecom NG911 Notice Reply at 4 (discussing the *NG911 Notice*’s “proposal to require OSPs to provide location data with the SIP message”); T-Mobile NG911 Notice Comments at 4 (“SIP connectivity is a foundational building block for NG911.”); Intrado Life & Safety, Inc. NG911 Notice Reply at 3 (rec. Sept. 8, 2023) (Intrado NG911 Notice Reply) (explaining its proposal that the first stage of PSAP readiness would be that a 911 Authority is “ready to certify that it can receive IP-formatted (i.e., SIP) traffic at the designated IP POI”). Regarding IP Service Delivery, NASNA urged the Commission to assist with the transition to NG911 by, among other things, amending the Commission’s rules to “specifically address NG911, including the standardized requirements associated with NG911 (e.g., Session Initiation Protocol [SIP] format and provide location information attached to the SIP header of the call using Presence Information Data Format Location Object [PIDF-LO]).” *NG911 Notice* at *8 para. 20 (citing NASNA Petition at 4-5).

²⁶⁴ See *infra* Appendix A at § 9.28.

- *NG911 Delivery Point*. A geographic location, facility, or demarcation point designated by a 911 Authority where an originating service provider shall transmit and deliver 911 traffic in an IP format to ESInets or other NG911 network facilities.²⁶⁵
- *Session Initiation Protocol (SIP)*. A signaling protocol used for initiating, maintaining, modifying, and terminating communications sessions between Internet Protocol (IP) devices. SIP enables voice, messaging, video, and other communications services between two or more endpoints on IP networks.²⁶⁶

c. Phase 2

(i) Requirement

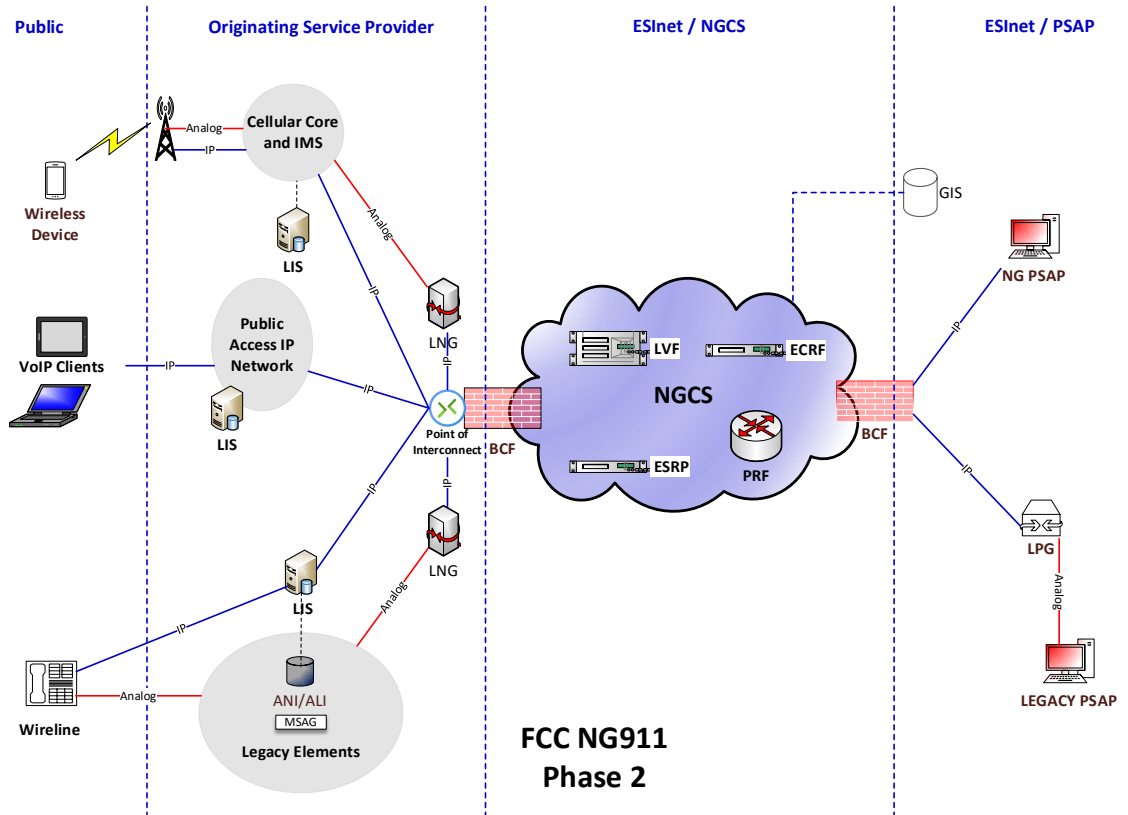
78. Upon receipt of a 911 Authority's valid Phase 2 request, OSPs must deliver all 911 traffic bound for the relevant PSAPs to NG911 Delivery Points designated by the 911 Authority in an IP-based SIP format that complies with NG911 commonly accepted standards identified by the 911 Authority, including having location information embedded in the call signaling using Presence Information Data Format – Location Object (PIDF-LO)²⁶⁷ or its functional equivalent. OSPs must also install and put into operation all equipment, software applications, and other infrastructure necessary to use a LIS or its functional equivalent for the verification of its customer location information and records, or else to acquire such services. In addition, OSPs must complete connectivity testing to confirm that the 911 Authority receives 911 traffic in the IP-based SIP format that complies with the identified NG911 commonly accepted standards. Because Phase 2 builds upon Phase 1, and completion of Phase 1 is a prerequisite for Phase 2, the OSP must also continue to comply with Phase 1 requirements during Phase 2, including the requirement to deliver all such 911 traffic to NG911 Delivery Points designated by the 911 Authority. Phase 2 will facilitate the full use of the functional elements of NGCS, including LVF, which can deliver more dynamic and actionable information to PSAPs than legacy ALI databases, and policy routing functions that can dynamically re-route 911 calls and texts in response to real-time events. This will eliminate the need for 911 Authorities to maintain legacy ANI and ALI components and will provide PSAPs with greater flexibility to avoid network disruptions and reduce the impact of outages on 911 continuity.

79. We provide the below illustrative diagram to demonstrate the main high-level functions covered at Phase 2. This diagram is not meant to represent required network architectures in an “as built” configuration and is not prescriptive in nature. The call flow is illustrated by blue lines representing SIP 911 traffic and red lines indicating legacy 911 traffic. In the below diagram, 911 traffic originates on the left side of the diagram and flows from left to right.

²⁶⁵ See *infra* Appendix A at § 9.28.

²⁶⁶ See *infra* Appendix A at § 9.28.

²⁶⁷ See RFC 4119.



The above diagram uses the following acronyms:

- ANI = Automatic Number Identification
- ALI = Automatic Location Information
- BCF = Border Control Function
- ECRF = Emergency Call Routing Function
- ESInet = Emergency Services IP Network
- ESRP = Emergency Services Routing Proxy
- GIS = Geographic Information System
- IMS = IP Multimedia Subsystem
- LIS = Location Information Server
- LNG = Legacy Network Gateway
- LPG = Legacy PSAP Gateway
- LSRG = Legacy Selective Router Gateway
- LVS = Location Validation Function
- MSAG = Master Street Address Guide
- NG PSAP = Next Generation 911 PSAP
- NGCS = NG911 Core Services

- PRF = Policy Routing Function
- PSTN = Public Switched Telephone Network
- TDM = Time Division Multiplex

80. OSPs may comply with Phase 2 either by originating 911 traffic in IP format or by maintaining or accessing an LNG to convert the traffic in order to deliver 911 traffic in SIP format that complies with the NG911 commonly accepted standards identified by the requesting 911 Authority. This addresses a concern raised by several commenters that requiring IP origination, as opposed to delivery, could be burdensome for some wireline providers.²⁶⁸ Although some commenters support an origination requirement,²⁶⁹ AT&T notes that this could require certain OSPs to make “inefficient alterations to network components that are nearing end-of-life.”²⁷⁰ USTelecom states that in some instances OSPs would have to “overbuild their existing networks with fiber on an abbreviated timeline, a proposition that is not only unnecessary but would be extremely costly.”²⁷¹ USTelecom also notes that some wireline providers have carrier of last resort (COLR) obligations “prohibiting them from retiring legacy networks and technology.”²⁷² We agree that in light of these considerations, IP origination should be encouraged but not required, so long as OSPs ensure that 911 calls originated in TDM are translated and delivered in SIP format. Therefore, in both Phase 1 and Phase 2, we permit OSPs to choose between upgrading networks to enable IP origination or converting their TDM traffic to IP before delivery to the NG911 network.²⁷³

81. CCA questions whether the Commission provided sufficient notice of a proposed requirement for wireless carriers to translate 911 traffic to IP.²⁷⁴ We find that both the *NG911 Notice* and *LBR Notice* clearly proposed requirements for TDM-based wireless carriers to translate 911 traffic to IP. The proposed rules in the *LBR Notice* specified that CMRS providers would be required to deliver calls in

²⁶⁸ USTelecom NG911 Notice Comments at 2-3; US Telecom NG911 Notice Reply at 2; Pennsylvania Telephone Association NG911 Notice Comments at 8 (rec. Aug. 9, 2023) (Pennsylvania Telephone Association NG911 Notice Comments); Fastwyre Broadband (Fastwyre) NG911 Notice Reply at 4 (rec. Sept. 7, 2023) (Fastwyre NG911 Notice Reply); AT&T NG911 Notice Comments at 6; Bandwidth NG911 Notice Reply at 2-3; NENA NG911 Notice Reply at 7.

²⁶⁹ WTA—Advocates for Rural Broadband (WTA) NG911 Notice Comments at 8 (rec. Aug. 9, 2023) (WTA NG911 Notice Comments); Letter from Brandon Abley, Director of Technology, and Jonathan Gilad, Director of Government Affairs, NENA: The 9-1-1 Association, to FCC, PS Docket No. 21-479, at 1 (filed Jan. 17, 2024) (NENA Jan. 17, 2024 *Ex Parte*).

²⁷⁰ AT&T NG911 Notice Comments at 4.

²⁷¹ USTelecom NG911 Notice Reply at 2; *see also* Fastwyre NG911 Notice Reply at 4.

²⁷² USTelecom NG911 Notice Comments at 3.

²⁷³ Verizon indicates that its current approach for deploying NG911 includes working with NGCS providers to implement and test capabilities, which results in a “fairly straightforward process” for delivering 911 calls to the NGCS provider’s PSAP customers as those jurisdictions implement their own NG911 capabilities. Letter from Robert G. Morse, Associate General Counsel, Federal Regulatory and Legal Affairs, Verizon, to Marlene H. Dortch, Secretary, FCC, PS Docket Nos. 18-64 and 21-479, at 1-2 (filed July 13, 2023) (Verizon July 13, 2023 *Ex Parte*). OSPs may wish to consider Verizon’s approach in order to prepare for the timelines adopted under these rules, but we do not specifically require OSPs to take this approach.

²⁷⁴ CCA NG911 Notice Comments at 3-4 (stating that “the draft implementing regulations in the [NG911] NPRM contain clear language about the requirement of TDM-based wireline carriers to translate 911 traffic to IP, but there is no such language related to wireless carriers”).

the requested IP-based format.²⁷⁵ In the *NG911 Notice*, the Commission proposed that valid requests by 911 Authorities for IP-based service would trigger obligations for all OSPs, including CMRS providers.²⁷⁶ Therefore, there has been sufficient notice, and the Commission finds CCA's concern unwarranted.

82. Some wireline commenters argue that it is not technically feasible for wireline carriers to translate 911 calls from TDM to IP with the inclusion of location data that is required for Phase 2.²⁷⁷ We disagree. There are several commercially available solutions that offer LIS services to wireline providers, as well as gateway products for translating calls from TDM to IP with the inclusion of location data.²⁷⁸ We therefore find that it is technically feasible for wireline providers to provide location information to 911 Authorities in a format that complies with NG911 commonly accepted standards. Further, we agree with NCTA that "any provider that continues to originate traffic in TDM format should bear responsibility for adding appropriate location information and converting such calls to IP format before delivering them to the demarcation point."²⁷⁹

83. APCO urges the Commission to explore options for ensuring that PSAPs receive actionable location information in the form of dispatchable location.²⁸⁰ We clarify that nothing in our rules is intended to change existing location accuracy requirements for OSPs, including rules that require provision of dispatchable location when feasible.²⁸¹

84. We decline to adopt the Texas 9-1-1 Entities' alternative proposal to establish different requirements for OSPs that already are capable of originating 911 calls in IP format versus OSPs that continue to rely on legacy TDM switching facilities for voice traffic within their networks.²⁸² Under the Texas 9-1-1 Entities proposal, IP-capable OSPs would be required to fully support delivery of 911 calls in

²⁷⁵ *LBR Notice*, 37 FCC Rcd at 15216, Appx. A; *accord id.* at 15201, para. 46 ("We propose to require CMRS and covered text providers to deliver 911 calls, texts, and associated routing information in IP-based format to NG911-capable PSAPs that request it.").

²⁷⁶ *NG911 Notice* at *16, para. 41.

²⁷⁷ Home Telephone NG911 Notice Comments at 15-16 (arguing that the Commission should not require wireline providers to deliver location data in IP format, as RLECs lack that capability); USTelecom NG911 Notice Comments at 3 (stating that it is technically infeasible for some wireline carriers to include location information in IP call headers); South Dakota Telecommunications Association NG911 Notice Comments at 12-14 (rec. Aug. 9, 2023) (South Dakota Telecommunications Association NG911 Notice Comments) (asking that carriers be exempt from delivering IP location until technically feasible); Five Area Telephone Notice Comments at 5-7, 15 (arguing that wireline and VoIP carriers cannot provide the same automated location data as CMRS providers and so should allow more time for OSPs to provide location information in the call path).

²⁷⁸ See, e.g., Virginia Department of Emergency Management, MSAG and ALI Maintenance After Next Generation 9-1-1 Go-Live (2022), <https://gismaps.vdem.virginia.gov/Websites/PSC/RegionalAdvisoryCommittee/Documents/20221117MSAGALIMaint.pdf> (indicating that AT&T and Intrado offer this gateway translation service to wireline OSPs).

²⁷⁹ NCTA – The Internet & Television Association (NCTA) NG911 Notice Reply at 2 (rec. Aug. 9, 2023) (NCTA NG911 Notice Reply).

²⁸⁰ Letter from Jeffrey S. Cohen, Chief Counsel, APCO International, to Marlene Dortch, Secretary, FCC, PS Docket Nos. 21-479, 18-64, and 07-114, at 1 (filed Sept. 22, 2023) (APCO Sept. 22, 2023 *Ex Parte*).

²⁸¹ See, e.g., 47 CFR §§ 9.8 (indicating the dispatchable location requirement for wireline providers); 9.10(i)(2)(i) (indicating horizontal dispatchable location requirements for CMRS providers); 9.10(i)(2)(ii) (indicating vertical dispatchable location requirements for CMRS providers); 9.11(b)(4) (indicating dispatchable location requirements for interconnected VoIP providers); 9.14(d)(4) (indicating dispatchable location requirements for VRS and IP Relay providers); 9.14(e)(4) (indicating dispatchable location requirements for IP CTS providers).

²⁸² See *NG911 Notice* at *13, para. 32; Texas 9-1-1 Entities NG911 Public Notice Comments at 7-8 (rec. Jan. 19, 2022).

Phase 2 NG911 format, but non-IP capable OSPs would deliver calls to LNGs designated by 911 Authorities or their NG911 service providers. The 911 Authorities or their service providers would be responsible for operating the LNGs, which would translate the 911 calls into IP format. We decline to adopt this proposal because it would require 911 Authorities to continue to operate and maintain LNGs to support a small number of TDM-based OSPs, thereby incentivizing OSPs to continue to maintain legacy infrastructure, increase costs, and lengthen the time to transition to NG911.²⁸³ Instead, our rules appropriately shift the burden of maintaining translation gateways to those OSPs that continue to originate legacy 911 calls that require translation.²⁸⁴

85. *Connectivity testing.* In Phase 2, we require OSPs to complete connectivity testing to confirm that the 911 Authority receives 911 traffic in the IP-based SIP format that complies with the NG911 commonly accepted standards identified by the requesting 911 Authority. Such testing is important to ensure that the connection from the OSP to the 911 Authority is implemented correctly and meets the requirements of the 911 Authority. Several commenters raise the importance of testing as part of the process of initiating delivery of 911 traffic to ESInets in a way that complies with NG911 commonly accepted standards.²⁸⁵ As with Phase 1 valid requests, we also adopt a condition prerequisite that 911 Authorities secure commitments from their NG911 vendors at Phase 2 in order to ensure that such vendors are available to complete connectivity testing by the compliance deadline applicable to the OSP.

(ii) Definitions

86. To facilitate Phase 2 implementation, we adopt definitions of “Functional Element,” “Location Information Server (LIS),” and “Location Validation Function (LVF)” in the NG911 regulations that we issue today. In the *LBR Notice* and *NG911 Notice*, the Commission proposed to require OSPs to complete all translation necessary to deliver 911 calls, including associated location information, in the requested IP-based format to an ESInet or other designated point(s) that allow emergency calls to be answered upon request of 911 authorities who have established the capability to accept NG911-compatible, IP-based 911 communications.²⁸⁶ We are establishing functional requirements to facilitate the provision of location information with 911 traffic for Phase 2.²⁸⁷ Under our Phase 2

²⁸³ NENA NG911 Notice Comments at 10 (“[L]ong-term maintenance of NG9-1-1 compliant services is much more cost effective than maintaining legacy systems in perpetuity.”); Comtech NG911 Notice Reply at 5 (noting the importance of “replacing the circuit-switched [TDM] architecture of legacy 911 networks with [IP]-based technologies and applications”); Brian Rosen NG911 Notice Reply at 20-21) (stating that 911 Authorities should not remain responsible for LNGs).

²⁸⁴ See, e.g., NENA NG911 Notice Comments at 10; NG911 Service Providers Reply at 6 (urging the Commission to “refrain from establishing two sets of rules to accommodate the long-anticipated sunset of TDM technology”); Comtech Reply at 5; Brian Rosen NG911 Notice Reply at 20-21; South Carolina RFA NG911 Notice Comments at 6-7; NCTA NG911 Notice Comments at 2 (the Commission “generally should not establish exceptions that would encourage companies to continue to rely on legacy TDM technology after the 911 Authority has transitioned to NG911.”) see also BRETSA NG911 Notice Reply at i (warning against “build[ing] layers of delay into the . . . deployment of NG911”); MSCI NG911 Notice Reply at 7 (rec. Sept. 8, 2023) (MSCI NG911 Notice Reply) (opposing “proposals to allow different parties to play by different rules, which will only serve to increase costs and lengthen the time it takes to reach end-state NG911 deployment”).

²⁸⁵ See, e.g., Verizon NG911 Notice Comments at 6; Alaska Telecom Assoc. NG911 Notice Comments at 11.

²⁸⁶ *LBR Notice* at 15203, 15215, para. 52, Appendix A; *NG911 Notice* at *8, para. 21.

²⁸⁷ Under our Part 9 rules, dispatchable location refers to “[a] location delivered to the PSAP with a 911 call that consists of the validated street address of the calling party, plus additional information such as suite, apartment or similar information necessary to adequately identify the location of the calling party, except for Commercial Mobile Radio Service providers, which shall convey the location information required by Subpart C of this Part.” 47 CFR § 9.3. Under rule 9.10(i), dispatchable location refers to “[a] location delivered to the PSAP by the CMRS provider

(continued....)

default rules, LIS based location validation uses LVF, and this interaction is analogous to the interaction between the ANI/ALI database and MSAG in the E911 context. However, in the NG911 environment, LVF replaces the functionality of the MSAG. Given the extent to which our rules use these terms, we find that defining them will provide greater certainty and clarity regarding our NG911 requirements and will assist parties in complying with our rules. To codify our approach, we adopt a definition of “functional elements” that will be part of our definitions for LIS and LVF. Accordingly, we adopt the following definitions for these terms:

- *Functional Element*. A set of software features that may be combined with hardware interfaces and operations on those interfaces to accomplish a defined task.²⁸⁸
- *Location Information Server (LIS)*. A Functional Element that provides locations of endpoints. A LIS can provide Location-by-Reference or Location-by-Value, and, if the latter, in geodetic or civic forms. A LIS can be queried by an endpoint for its own location, or by another entity for the location of an endpoint.²⁸⁹
- *Location Validation Function (LVF)*. A Functional Element in an NG911 Core Services (NGCS) consisting of a server where civic location information is validated against the authoritative Geographic Information System (GIS) database information. A civic address is considered valid if it can be located within the database uniquely, is suitable to provide an accurate route for an emergency call, and is adequate and specific enough to direct responders to the right location.²⁹⁰

d. Modification of Phase Requirements by Mutual Agreement

87. We encourage OSPs and 911 Authorities to collaborate throughout the transition to NG911. To facilitate such collaboration, and consistent with our proposals in the *NG911 Notice* and *LBR Notice*, we permit 911 Authorities and OSPs to enter into mutual agreements specifying requirements, timetables, and other terms that are different from the Phase 1 and Phase 2 rules adopted in this *Order*. Commenters confirm that such flexibility is important to address unique or unforeseen challenges that OSPs may face in transitioning from legacy 911 to NG911.²⁹¹ The alternative agreement rule we adopt today provides additional flexibility beyond what was proposed in the *NG911 Notice* and *LBR Notice*, which focused on alternative agreements establishing different compliance timeframes for OSPs, as well as different cost recovery mechanisms for certain providers.²⁹² The rules we adopt today allow 911

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with a 911 call that consists of the street address of the calling party, plus additional information such as suite, apartment or similar information necessary to adequately identify the location of the calling party. The street address of the calling party must be validated and, to the extent possible, corroborated against other location information prior to delivery of dispatchable location information by the CMRS provider to the PSAP.” 47 CFR § 9.10(i).

²⁸⁸ See *infra* Appendix A at § 9.28.

²⁸⁹ *Id.*

²⁹⁰ *Id.*

²⁹¹ See, e.g., NENA NG911 Notice Comments at 9 (stating that the rules should permit a more lenient timeline if a state or local 911 authority determines that a different timeline is appropriate); BRETSA NG911 Notice Reply at ii (recommending that states be given the flexibility to adopt rules that diverge from the Commission’s default requirements as necessitated by state policy); Verizon NG911 Notice Reply at 3 (stressing the need for flexibility in deadlines due to unforeseen challenges); CTIA NG911 Notice Reply at 7 (stating that OSPs and PSAPs need flexibility to work through various implementation and testing issues); AT&T NG911 Notice Comments at 7 (stating that timetables should be adaptable to unforeseen circumstances); and Alaska Telecom Assoc. NG911 Notice Comments at 7 (discussing unique challenges in Alaska).

²⁹² *NG911 Notice* at *2, para. 2; *15, para. 39; *18, para. 45; *19, para. 47; *34-35; Appendix A (§ 9.29(a)(2), (c)(2), (d)(2), and (e)); and *LBR Notice*, 37 FCC Red at 15202, para. 50; 15216, Appendix A (§ 9.10(s)(6)(iii)).

Authorities and OSPs to mutually address specific concerns beyond timeframes for compliance, including designation of NG911 delivery points or cost allocation for OSPs. We find that this additional flexibility should be beneficial to both 911 Authorities and OSPs.

88. When OSPs and 911 authorities enter into an alternative agreement, we require OSPs to notify the Commission of the agreement and its pertinent terms, as was proposed in the *NG911 Notice* and *LBR Notice*,²⁹³ within 30 days of the date of execution of the agreement. We also require that the notice specifically identify each provision of the agreement that differs from the rules. Mission Critical Partners recommends that for certain deployment agreements, “an explanation and detailed plan with a timeline should be included and provided to the Commission and the 911 authority requesting the service.”²⁹⁴ We permit but do not require that the actual plans and timeline documents themselves be provided to the Commission. We delegate authority to PSHSB to issue instructions for OSPs to provide notification to the Commission of the modification of the agreement and its pertinent terms.

e. Internet-Based TRS Providers

89. The Phase 1 and Phase 2 requirements we adopt today apply to Internet-based TRS providers. However, ClearCaptions and Hamilton Relay point out that whereas most Internet-based TRS providers directly support 911 calling, Internet Protocol Captioned Telephone Service providers generally rely on underlying providers for routing emergency calls.²⁹⁵ We therefore clarify that Phase 1 and Phase 2 requirements only apply to Internet-based TRS providers that are directly involved with routing 911 traffic, pursuant to part 9, subpart E of the Commission’s rules.

90. Brian Rosen suggests that the Commission take additional steps to impose additional requirements on IP CTS, IP Relay, and videoconferencing services.²⁹⁶ We did not make such proposals in the *NG911 Notice* and therefore decline to take such steps at this time as they are outside the scope of this proceeding.

2. Valid Requests for Delivery of 911 Traffic in IP-Based Transmission Formats

91. We adopt rules defining the prerequisites that 911 Authorities must meet in order to make a valid request to OSPs for compliance with the requirements of Phase 1 and Phase 2. In the *LBR Notice* and *NG911 Notice*, the Commission proposed that for a 911 Authority request to be deemed valid, the 911 Authority would certify that it (1) is technically ready to receive 911 calls and texts in the IP-based format requested, (2) is specifically authorized to accept calls and/or texts in the IP-based format requested, and (3) has provided notification to the OSPs receiving the request that it meets these requirements.²⁹⁷ The Commission also sought comment on whether other prerequisites were needed to determine a 911 Authority’s readiness.²⁹⁸

92. For both Phases 1 and 2, we adopt the three general prerequisites for a valid request proposed in the *LBR Notice* and *NG911 Notice*: technical readiness, authorization, and notification. We adopt a valid request definition at each phase that specifies the functional requirements that NG911 networks

²⁹³ *NG911 Notice* at *34-35; Appendix A (§ 9.29(a)(2), (c)(2) and (d)(2)); and *LBR Notice*, 37 FCC Rcd at 15216, Appendix A (§ 9.10(s)(6)(iii)).

²⁹⁴ Mission Critical Partners NG911 Notice Comments at 9.

²⁹⁵ ClearCaptions, LLC (ClearCaptions) NG911 Notice Comments at 1 (rec. Aug. 9, 2023) (ClearCaptions NG911 Notice Comments); Hamilton Relay NG911 Notice Comments at 2.

²⁹⁶ Brian Rosen NG911 Notice Comments at 5-6 (rec. July 28, 2023) (Brian Rosen NG911 Notice Comments).

²⁹⁷ *LBR Notice* at 15202-3, para. 51; *NG911 Notice* at *16, para. 40.

²⁹⁸ *LBR Notice* at 15203, para. 51; *NG911 Notice* at *17, para. 42.

must achieve prior to OSP compliance. In order to facilitate communication between 911 Authorities and OSPs, valid requests must indicate the location of NG911 Delivery Point(s) designated by the 911 Authority. Finally, we implement a process by which OSPs may file a petition contesting whether the 911 Authority has met the prerequisites for a Phase 1 or Phase 2 valid request, but we decline to automatically toll OSP compliance deadlines based on submission of such a petition.

a. Phase 1 Valid Requests

93. In order for a Phase 1 request to be valid for purposes of our rules, the requesting 911 Authority must certify that it has all of the necessary infrastructure installed and operational to receive 911 traffic in a basic SIP format and transmit such traffic to the PSAP(s) connected to it. We believe that this certification is sufficient to establish that the 911 Authority is technically ready for Phase 1. We agree with Intrado that “there is normally party consensus regarding a 911 Authority’s technical capability to receive 911 traffic in IP-format (i.e., SIP),”²⁹⁹ and we therefore do not believe that establishing additional specific technical requirements to meet the elements of a Phase 1 valid request is necessary.

94. We believe that Phase 1 is a reasonable interim step in 911 Authority readiness to establish the ingress of IP traffic to an ESInet. While Verizon argues that establishing IP connectivity at the ESInet is “not always necessary for the PSAP and its NG911 vendor to migrate to NG911,”³⁰⁰ the record indicates that most 911 Authorities have implemented or plan to implement IP connectivity as a transitional step in their implementation of NG911. For OSPs that wish to deliver Phase 2 without implementing Phase 1 first, we note that OSPs and 911 Authorities may mutually agree on such an approach.

b. Phase 2 Valid Requests

95. For a Phase 2 request to be deemed valid, the requesting 911 Authority must certify that it has all of the necessary infrastructure installed and operational to receive 911 traffic in SIP format that complies with NG911 commonly accepted standards and to transmit such traffic to the PSAP(s) connected to it. The 911 Authority also must certify that its ESInet is connected to a fully functioning NGCS network that can provide access to a LVF and interface with a LIS or its functional equivalent provided by the OSP. We believe that these elements functionally describe the prerequisites for an NG911 network to accept traffic in SIP format that complies with NG911 commonly accepted standards.

96. The readiness prerequisites that we adopt for a valid Phase 2 request are generally supported by commenters.³⁰¹ For example, T-Mobile provides a checklist of elements that it uses when considering “i3 NG911 Readiness.”³⁰² T-Mobile’s checklist asks questions regarding whether the PSAP’s NGCS supports standards-based NG911 connectivity to T-Mobile’s LIS.³⁰³ This element is similar to the Phase 2 prerequisite that the 911 Authority be able to interface with the LIS or functionally equivalent capability provided by the OSP. Our readiness prerequisites additionally stipulate that the ESInet is connected to a fully functioning NGCS network, which is similar to T-Mobile’s checklist questions regarding the extent of NGCS deployment.³⁰⁴ While the Phase 2 readiness elements we adopt in this

²⁹⁹ Intrado NG911 Notice Comments at 7.

³⁰⁰ Verizon NG911 Notice Reply at 2.

³⁰¹ Texas 9-1-1 Entities NG911 Notice Reply at 10 (rec. Sept. 8, 2023) (Texas 9-1-1 Entities NG911 Notice Reply); NASNA NG911 Notice Reply at 3-4; Bandwidth NG911 Notice Comments at 6.

³⁰² Letter from Kristine Laudadio Devine, Counsel, T-Mobile, to Marlene H. Dortch, Secretary, FCC, PS Docket Nos. 18-64 and 21-479, at 7-9, Exh. B (filed July 26, 2023) (T-Mobile July 26, 2023 *Ex Parte*).

³⁰³ *Id.* at 7, Exh. B.

³⁰⁴ *Id.*

Order are less granular and do not specify every element in T-Mobile’s checklist, the two are substantially consistent.

97. Several wireless industry commenters support the completion of an HTTP-Enabled Location Delivery (HELD) certification as a prerequisite of 911 Authority readiness.³⁰⁵ While 911 Authorities need not certify to the Commission that they or their NGCS providers have a HELD certification, we recognize that this may certificate may enable providers to access location information from a LIS, depending on technical requirements. We decline to include this certification as a required element because it is not clear that a HELD certification is necessary in every situation for a 911 Authority to access a LIS. ATIS indicates that it is working to develop technical documentation to include “readiness checklists and guidelines for PSAPs/911 Authorities to request NG911 connectivity,” and we encourage such work to the extent that it serves to provide technical guidance to 911 Authorities in achieving readiness to initiate a Phase 1 or 2 request.³⁰⁶ We also encourage OSPs, 911 service providers, and 911 Authorities to collaborate to develop methods, processes, and best practices to facilitate responses to 911 Authorities’ valid requests, as suggested by APCO.³⁰⁷

c. Other Readiness Considerations

98. *Designation of NG911 Delivery Points.* As part of a Phase 1 or 2 valid request, the requesting 911 Authority includes the designated location of NG911 Delivery Point(s) relevant to Phase 1 or 2. We agree with Verizon that the establishment of NG911 Delivery Points is a threshold capability for technical readiness; however, as discussed in section III.D.1, we disagree that such a designation should be the result of a “mutual agreement regarding the location and terms and conditions governing” the NG911 Delivery Points.³⁰⁸ The inclusion of the location of NG911 Delivery Point(s) as part of a Phase 1 and 2 valid request will facilitate OSPs’ compliance with Phase 1 and 2 by the relevant deadline.

99. *Readiness established at time of request.* A Phase 1 or 2 valid request indicates that the 911 Authority is ready at the time the request is made to receive 911 traffic from an OSP in Phase 1 or 2 format. Several commenters support this approach.³⁰⁹ We agree with T-Mobile that a valid request also includes the readiness of any vendors used by the 911 Authority to implement NG911 services.³¹⁰ We require readiness at the time of the valid request in order to address concerns that a valid request indicating future readiness could slow the NG911 transition. We agree with Verizon that readiness at the time of a valid request is an “appropriate departure from the trigger for six-month deployment of wireless E911 Phase 1 and 2, which allowed a PSAP to certify that it *would be* capable within that period.”³¹¹ For the foregoing reasons, we decline to implement Comtech’s suggestion that a valid request “is one in which the applicable 911 Authority certifies that it *will* be technically ready to receive 911 calls in the

³⁰⁵ *Id.* at 7-9, Exh. B; Verizon NG911 Notice Comments at 6; Alaska Telecom Assoc. NG911 Notice Comments at 11. See IETF, HTTP-Enabled Location Delivery (HELD) (Sept. 2010), <https://datatracker.ietf.org/doc/rfc5985/> (RFC 5985).

³⁰⁶ Alliance for Telecommunications Industry Solutions (ATIS) NG911 Notice Comments at 6-7 (rec. Aug. 9, 2023) (ATIS NG911 Notice Comments).

³⁰⁷ Letter from Jeffrey S. Cohen, Chief Counsel; Mark. S. Reddish, Senior Counsel; Alison P. Venable, Government Relations Counsel; APCO, to Marlene Dortch, Secretary, FCC, PS Docket No. 21-479, at 2 (filed Apr. 18, 2024) APCO Apr. 18, 2024 *Ex Parte*.

³⁰⁸ Verizon NG911 Comments at 6.

³⁰⁹ Brian Rosen NG911 Notice Reply at 7; CTIA NG911 Notice Reply at 5, n.22; Verizon NG911 Notice Comments at 7.

³¹⁰ T-Mobile NG911 Notice Reply at 4.

³¹¹ Verizon NG911 Notice Comments at 7 (emphasis in original).

requested IP-based format.”³¹²

100. *Individual PSAP readiness not a required part of a valid request.* Neither phase would require individual PSAPs connected to the ESInet to be NG911-ready. The 911 Authority is responsible for ensuring that all connected PSAPs can receive 911 communications via the ESInet, either by implementing NG911 upgrades or by translating/converting the communications after they have transited the ESInet via a Legacy PSAP Gateway. BRETSA, NASNA, and Mission Critical Partners agree with this approach.³¹³ As such, we decline to specifically require that 911 Authorities implement NG911 call handling equipment at the PSAP prior to the initiation of a valid request for either Phase 1 or 2, as suggested by some commenters.³¹⁴ This will provide flexibility to 911 Authorities in upgrading PSAPs while enabling the NG911 network to capture the benefits of receiving 911 traffic in either a basic SIP format at Phase 1 or SIP format that complies with NG911 commonly accepted standards at Phase 2. iCERT states that criteria for readiness should include “details about any arrangements that have been entered into with NG911 service providers to secure equipment, interconnection agreements, and other service arrangements that will ensure PSAPs are ready to accept IP-based 911 calls.”³¹⁵ We disagree that 911 Authorities must provide such details to OSPs as a component of a valid request, as the 911 Authority remains responsible for the delivery of 911 calls and texts to PSAPs connected to the ESInet.

101. *Connectivity testing not required prior to a valid request.* As noted above, for both Phase 1 and 2 valid requests, we require the 911 Authority to certify that it has obtained commitments from an ESInet vendor, NGCS vendor, and/or call handling equipment vendor needed to facilitate and complete connectivity testing within the compliance timeframe applicable to the originating service provider. However, we decline to require testing as a prerequisite to a 911 Authority’s valid request, as suggested by some commenters.³¹⁶ In order to meet the readiness element to receive 911 traffic at Phase 1 or 2, we believe that it is highly likely that 911 Authorities would need to have completed at least some internal testing of their network elements to ensure that they are operational and functioning effectively. The nature and extent of this testing is likely to vary based on the specific NG911 vendors the 911 Authority has selected. We believe that our approach to require 911 Authorities to demonstrate readiness for connectivity testing with OSPs accomplishes our goal of facilitating timely OSP compliance with NG911 rules.

102. We permit flexible compliance timelines, subject to mutual agreement of OSPs and 911 Authorities, to accommodate variability in the length of testing, as suggested by some commenters.³¹⁷ We

³¹² Comtech NG911 Notice Reply at 7 (emphasis in original).

³¹³ BRETSA NG911 Notice Comments at 4 (“The fact that PSAPs served by the ESInet may receive calls via LPG is a distinction without a difference.”); NASNA NG911 Notice Reply at 4, n.5 (stating that PSAPs are ready to receive “Phase III 99 calls for service” “[w]ith or without the use of legacy PSAP gateways”); MCP NG911 Notice Comments at 7-8 (“While IP call delivery should be deployed by ECCs/PSAPs, their readiness for doing so should not be a major factor in the overall level of NG911 readiness for requiring OSPs to provide IP connectivity”).

³¹⁴ ATIS NG911 Notice Comments at 6 “[A] 911 authority should be required to demonstrate that PSAP call handling equipment in their jurisdiction is capable of accepting and processing 911 calls that are routed via an ESInet.”); T-Mobile NG911 Notice Reply at 3 (quoting ATIS); Verizon NG911 Notice Comments at 5 (“Capable PSAP call-handling equipment is a long-acknowledged component of PSAP readiness, and the NG911 environment is no exception.”).

³¹⁵ iCERT NG911 Notice Reply at 7.

³¹⁶ See, e.g., Brian Rosen NG911 Notice Comments at 7-8; Texas 9-1-1 Entities NG911 Notice Comments at 8.

³¹⁷ See, e.g., CTIA NG911 Notice Reply at 2 (“Implementation variables and testing will be unique to each PSAP and OSP, and thus flexible timeframes and deadlines are necessary.”); Verizon NG911 Notice Reply at 3 (“Flexibility will be necessary to account for the unforeseen challenges that NG911 vendors and OSPs can face in procuring, deploying and testing the network facilities and equipment necessary to support NG911.”).

emphasize that our rules function as a default. In situations in which connectivity testing takes longer than the time allotted under our default NG911 rules, OSPs and 911 Authorities may wish to consider establishing by mutual agreement extended deployment timelines.

d. Authorized Requesting Entities

103. For purposes of the rules we adopt in this *Order*, only “911 Authorities” as defined in our rules may make a valid request to OSPs for compliance with the requirements of Phase 1 or 2. The Commission stated in the *NG911 Notice* that the appropriate authority to request IP-based service from OSPs would be “the local or state entity with the authority and responsibility to designate the point(s) that allow emergency calls to be answered.”³¹⁸ The Commission also proposed that a valid request would be made by a local or state entity that certifies that it is “specifically authorized to accept calls in the IP-based format requested.”³¹⁹ We adopt these proposals with minor modifications to the structure of the rule for clarity.

104. We limit valid requests to 911 Authorities, as defined in the Commission’s NG911 rules. We recognize that the entity with sufficient jurisdiction and authority to request the delivery of NG911 service from OSPs depends on the governance structure that applies to that 911 jurisdiction. We decline to assume that a request should come from a state-level entity, as suggested by Maine PUC and Colorado PUC.³²⁰ We also decline to limit authorized requests to statewide authorities or ESInets, as suggested by Bandwidth.³²¹ In declining to limit or prioritize requests from statewide authorities, we acknowledge that some NG911 networks are local or regional, rather than state-wide.³²² In some instances, the appropriate jurisdictional authority may be a state 911 administrator, and in other instances, the local or regional 911 office may be the appropriate requesting entity. Texas 9-1-1 Entities states, and we agree, that “there are various potential governance and ESInet/NGCS deployment scenarios nationwide.”³²³ We also agree with NENA that the “entity having sufficient jurisdiction to make the request to deliver NG9-1-1 calls depends entirely on how the local 9-1-1 service is governed, designed, and configured.”³²⁴

105. We decline to allow parties other than a 911 Authority to submit Phase 1 and 2 requests. BRETSA argues that 911 Authorities “should have the discretion to appoint” other parties, such as the NGCS provider, “to negotiate, implement, and test the delivery of 9-1-1 calls in the requested format.”³²⁵ Several other commenters argue that NGCS providers should play a role in determining readiness to receive NG911 traffic.³²⁶ We recognize that NGCS providers have an important role and encourage 911

³¹⁸ *NG911 Notice* at *20, para. 50.

³¹⁹ *Id.* at *16, para. 40.

³²⁰ Maine PUC NG911 Notice Comments at 2 (stating that “a request should come from the respective state, unless the state indicates that there is another 911 jurisdictional authority designated and that additional 911 jurisdictional authority has coordinated with other authorities within the state”); Colorado PUC NG911 Notice Comments at 7 (arguing that a registry should be structure to assume a state-level 911 Authority will make the request).

³²¹ Bandwidth NG911 Notice Comments at 7-9.

³²² *See, e.g.*, Livingston Parish NG911 Notice Comments at 1 (describing how individual local parishes in Louisiana coordinate to contract for NG911 solutions).

³²³ Texas 9-1-1 Entities LBR Notice Comments at 6 (rec. Feb. 16, 2023) (Texas 9-1-1 Entities LBR Notice Comments).

³²⁴ NENA NG911 Notice Comments at 13.

³²⁵ BRETSA NG911 Notice Comments at 2-4.

³²⁶ Mission Critical Partners NG911 Notice Comments at 9 (stating that “the deployment phase [should] be negotiated between the OSP and NGCS provider and approved by the 911 authority”); MSCI NG911 Notice Comments at 5 (stating that providers like MSCI are often best positioned to determine whether a particular 911

(continued....)

Authorities to work closely with their NGCS providers in establishing readiness. However, consistent with prior 911 technology transitions³²⁷ and to minimize confusion, we identify a governmental entity as the appropriate entity to initiate a valid request.

e. Notification Mechanism for Valid Requests

106. As part of a valid Phase 1 or Phase 2 request to an OSP, the requesting 911 Authority must provide notification to each OSP provider that includes the certifications and information required by our rules. In the *LBR Notice* and the *NG911 Notice*, the Commission proposed that 911 Authorities could provide this notification either by submission to a Commission-provided registry or by written notification to individual OSPs.³²⁸ As discussed below, we adopt this proposal and allow 911 Authorities to use either notification method.

107. Several commenters support the proposal to establish a voluntary centralized registry for submission of valid requests from 911 Authorities.³²⁹ A centralized registry will reduce the administrative burden on 911 Authorities to make individual requests to OSPs for Phase 1 and 2. It will also reduce the administrative burden on OSPs to track valid requests; we disagree with RWA that monitoring a centralized registry is a burdensome requirement for small, rural OSPs.³³⁰ RWA's members, as covered text providers, already monitor a similar registry on the Commission's website in the text-to-911 context, and checking the NG911 registry requires only incremental additional resources. We agree with Maine PUC that the registry will provide "clarity and predictability, as well as a similar expectation for all providers."³³¹ We also agree with Mission Critical Partners that a voluntary registry may help resolve challenges 911 Authorities face in identifying all OSPs in their coverage area.³³² Therefore, we provide the option of the voluntary registry as an efficient mechanism to submit requests to all OSPs within a 911 Authority's jurisdiction. We direct PSHSB to develop, implement, and maintain a centralized electronic registry for submission of Phase 1 and Phase 2 requests by 911 Authorities. We leave to the Bureau's discretion whether to consolidate the registry with existing Bureau registries for PSAPs and text-to-911 notifications, if the Bureau determines such a step to be necessary or beneficial.³³³

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Authority is ready to accept calls in IP format, and urging the Commission to encourage close collaboration"); CCA NG911 Notice Comments at 8-9 (arguing for collaboration between 911 Authorities and OSPs to communicate NG911 readiness); NENA NG911 Notice Reply at 2 ("The timing of the formal request to originate NG9-1-1 calls should rest squarely with the ESInet operator.").

³²⁷ See 47 CFR § 9.10(q)(10)(iii)(B).

³²⁸ *NG911 Notice* at *16, para. 40; *LBR Notice* at *16, para. 51.

³²⁹ Maine PUC NG911 Notice Comments at 3; Colorado PUC NG911 Notice Comments at 8; Michael Coonfield NG911 Notice Comments at 1 (rec. Aug. 9, 2023) (filed on behalf of Oklahoma 9-1-1 Management Authority (Oklahoma 9-1-1 Management Authority NG911 Notice Comments); Minnesota DPS-ECN NG911 Notice Comments at 7, 8; Texas 9-1-1 Entities LBR Notice Comments at 6, n.23; Bandwidth NG911 Notice Comments at 9; Intrado NG911 Notice Reply at 5; Mission Critical Partners NG911 Notice Comments at 7; DISA LBR Notice Comments at 2 NENA NG911 Notice Reply at 3; NENA LBR Notice Comments at 9.

³³⁰ Rural Wireless Association (RWA) NG911 Notice Comments at 3 (rec. Aug 9, 2023) (RWA NG911 Notice Comments).

³³¹ Maine PUC NG911 Notice Comments at 3.

³³² Mission Critical Partners NG911 Notice Comments at 9; *see also* Texas 9-1-1 Entities LBR Notice Comments at 6, n.23.

³³³ FCC, *911 Master PSAP Registry*, <https://www.fcc.gov/general/9-1-1-master-psap-registry> (Mar. 28, 2024); FCC, *PSAP Text-to-911 Readiness and Certification Registry (Text-to-911 Registry)*, <https://www.fcc.gov/general/psap-text-911-readiness-and-certification-form> (Feb. 29, 2024). Oklahoma, Minnesota DPS, Intrado, and AT&T support the combination of the Commission's NG911 centralized database with other registry functions. Oklahoma 9-1-1

(continued....)

We further direct PSHSB to open a new docket and issue guidance regarding filing of NG911 valid requests.

108. We do not require 911 Authorities to use the registry to notify OSPs of Phase 1 and Phase 2 requests. As an alternative to providing notice in the registry, 911 Authorities may notify OSPs of Phase 1 and Phase 2 requests by direct written notification. Direct notification is permitted at any time after the rules take effect, regardless of when the registry is made available.

109. CTIA and ATIS argue that notification in the registry should not be the trigger for OSP compliance deadlines.³³⁴ CTIA argues that any deadlines imposed should be “triggered only when OSPs and PSAPs have agreed that a PSAP is capable of receiving NG911-compatible traffic.”³³⁵ Similarly, ATIS argues that 911 Authorities should “engage directly” with OSPs to “become technically ready and capable to receive IP format calls in the first instance.”³³⁶ We find that notification of a valid request is sufficient to trigger OSP compliance deadlines. However, we encourage 911 Authorities and OSPs to communicate directly with one another both before and after valid Phase 1 and Phase 2 requests.

110. We decline to adopt several notification alternatives proposed by commenters. NENA suggests that the national “Forest Guide,” a component of NG911 architecture specified in the i3 standard, could serve as a centralized database for NG911 transition notifications.³³⁷ However, it is unclear whether a national Forest Guide is operational or could be used for the purpose suggested. We also decline to implement a “push notification feature,” as suggested by Intrado.³³⁸ We have not previously determined that such a feature is necessary and the Commission does not maintain the information required in order to implement such a feature. We therefore instead require OSPs to monitor the central registry, as is the case for the existing Text-to-911 Registry.

f. OSP Petitions Challenging Validity of 911 Authority Requests

111. Some commenters convey concerns regarding attestations they have received from 911 Authorities as part of the ongoing NG911 transition; namely, that attestations of readiness do not translate to actual readiness.³³⁹ To address circumstances in which an OSP believes that a 911 Authority has submitted an invalid Phase 1 or 2 request, an OSP may submit a petition challenging the 911 Authority’s request. The petition must be submitted within 60 days of receipt of the request and must document the basis for the OSP’s assertion that the request does not satisfy a requirement or requirements of a Phase 1 or 2 valid request. This petition process is subject to procedural requirements set forth in 47 CFR §§ 1.41, 1.45, and 1.47. The petition must be in the form of an affidavit and include specific information relating to the progress of NG911 implementation.³⁴⁰ In particular, the affidavit must include the basis for

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Management Authority NG911 Notice Comments at 1; Minnesota DPS-ECN NG911 Notice Comments at 7,8; Intrado NG911 Notice Comments at 9; AT&T LBR Notice Comments at 5-6 (rec. Feb. 16, 2023) (AT&T LBR Notice Comments).

³³⁴ CTIA NG911 Notice Comments at 7; ATIS LBR Notice Comments at 5 (rec. Feb. 16, 2023) (ATIS LBR Notice Comments).

³³⁵ CTIA NG911 Notice Comments at 7.

³³⁶ ATIS LBR Notice Comments at 5.

³³⁷ NENA NG911 Notice Comments at 11; *see also* NENA i3 at 285 (describing the Forest Guide).

³³⁸ Intrado NG911 Notice Comments at 9.

³³⁹ T-Mobile NG911 Notice Comments at 4 (“In T-Mobile’s experience, while many PSAPs request SIP connectivity, PSAPs are not always prepared to actually receive SIP calls.”); AT&T NG911 Notice Comments at 8 (“[I]t is not uncommon for a state or local 911 authority to believe in good faith that it is prepared to trigger a technology transition, only for unforeseen readiness issues to arise later.”).

³⁴⁰ *See* Appendix A, § 9.31(c)(2).

the OSP's assertion that the 911 Authority's request does not satisfy one or more of the conditions for a Phase 1 or Phase 2 valid request; each of the specific steps that the OSP has taken to implement Phase 1 or Phase 2 requirements; the basis for the OSP's assertion that it cannot make further implementation efforts until the 911 Authority satisfies the conditions for a Phase 1 or Phase 2 valid request; and the specific steps that must be completed by the OSP and, to the extent known, the 911 Authority or other parties before the OSP can implement the Phase 1 or Phase 2 requirements. An OSP may not challenge a 911 Authority's valid request unless it has completed all necessary steps toward implementing Phase 1 or Phase 2 requirements that are not dependent on the readiness of the 911 Authority. We do not adopt the suggestion by some commenters that a petition should automatically toll the compliance deadline triggered by the request.³⁴¹ We delegate authority to PSHSB to review and decide petitions, including whether to pause implementation deadlines for the OSP that has submitted the petition, affirm the request of the 911 Authority as valid, or take other action as necessary. If the Bureau upholds the 911 Authority request as valid, the OSP may be subject to enforcement of the original Phase 1 or Phase 2 compliance date. We direct PSHSB to open a new docket and issue guidance regarding OSP petitions challenging the validity of 911 Authority requests.

112. We anticipate that the availability of the petition process will deter 911 Authorities from making premature Phase 1 and Phase 2 requests and will provide reasonable recourse for OSPs that believe that they have received an invalid request. A 911 Authority may file an opposition to the OSP's petition and the OSP may file a reply to that opposition in accordance with 47 CFR § 1.45. A copy of the document (petition, opposition, or reply) must be served on the other party (911 Authority or OSP) at the time of filing in accordance with 47 CFR § 1.47. We decline, as suggested by Comtech, to adopt "attestation requirements" in which a 911 Authority would certify specific elements in response to an OSP dispute of a request.³⁴² 911 Authorities already are required to certify their readiness when submitting a Phase 1 or 2 request, and a requirement to submit further attestations would do little to resolve the dispute while entrenching parties in their positions. We believe that the OSP petition regarding requests, an option for the 911 Authority to respond, and a chance for the Bureau to consider such requests provide both OSPs and 911 Authorities with a clear pathway to resolve disputes.

3. OSP Implementation Timeframes

a. Default Timeframes

113. At Phase 1, we require non-rural wireline providers, nationwide CMRS providers, covered text providers, and interconnected VoIP providers to comply with NG911 requirements within six months after receiving a Phase 1 valid request. We provide additional time to RLECs, non-nationwide CMRS providers, and Internet-based TRS providers, which must comply with our NG911 requirements within twelve months after receiving a Phase 1 valid request.

114. At Phase 2, we require non-rural wireline providers, nationwide CMRS providers, covered text providers, and interconnected VoIP providers to comply with our N911 requirements within six months after the latest of: (1) the 911 Authority's Phase 2 valid request; or (2) the date when the OSP is required to comply with Phase 1 requirements, or when it does comply with those requirements (whichever is earlier). Similarly, RLECs, non-nationwide CMRS providers, and Internet-based TRS providers must comply with our NG911 requirements within twelve months after the latest of: (1) the 911 Authority's Phase 2 valid request; or (2) the date when the OSP is required to comply with Phase 1 requirements, or when it does comply with those requirements (whichever is earlier).

³⁴¹ T-Mobile NG911 Notice Reply at 4; Alaska Telecom Assoc. NG911 Notice Comments at 4, 11; Bandwidth NG911 Notice Reply at 4 (stating that "if a deadline is adopted, it must include dispute resolution and tolling mechanisms."); CTIA NG911 Notice Comments at 7-8; Intrado NG911 Notice Comments at 7.

³⁴² Comtech NG911 Notice Comments at 11.

115. Our rules also allow 911 Authorities and OSPs to negotiate alternative agreements regarding the timelines for compliance with NG911 requirements at either Phase 1 or 2. This approach will help expedite the transition to NG911 while providing 911 Authorities and OSPs flexibility to manage the transition at the state and local level.

Table Summarizing NG911 Compliance Timeframes for OSPs

Providers	Compliance Timeframe	
	Phase 1 ³⁴³	Phase 2 ³⁴⁴
Non-rural Wireline Providers	6	6
RLEC Providers	12	12
CMRS Providers (Nationwide)	6	6
CMRS Providers (Non-nationwide)	12	12
Covered Text Providers	6	6
Interconnected VoIP Providers	6	6
Internet-based TRS Providers	12	12

116. *Wireline and Interconnected VoIP Providers.* In the *NG911 Notice*, the Commission proposed that all wireline and interconnected VoIP providers be required to deliver 911 calls in IP format within six months after a valid request or six months from the effective date of such requirement.³⁴⁵ Public safety commenters and NG911 vendors express general support for this timeline,³⁴⁶ and there is specific support for the proposed timeframes for interconnected VoIP providers.³⁴⁷ However, some commenters recommend longer compliance timeframes.³⁴⁸ For example, South Carolina recommends

³⁴³ Expressed in months after Phase 1 valid request.

³⁴⁴ Expressed in months after the latest of: (1) the 911 Authority’s Phase 2 valid request; or (2) the date when the OSP is required to comply with Phase 1 requirements, or when it does comply with those requirements (whichever is earlier).

³⁴⁵ *NG911 Notice* at *18, para. 45.

³⁴⁶ Colorado PUC NG911 Notice Comments at 8-9 (agreeing with six-month time frames for deployment); Maine PUC NG911 Notice Comments at 2; NENA NG911 Notice Comments at 9; NG911 Service Providers Coalition NG911 Notice Comments at 13 (stating that “[t]he Coalition supports the six-month timeframe for OSPs to deliver SIP-based calls to IP-ready PSAPs”); MSCI NG911 Notice Reply at 6,7 (calling six months “sufficient”); Comtech NG911 Notice Comments at 8 (stating that six months “constitutes ample notice”). *See also* USTelecom NG911 Notice Comments at 5 (stating that six months is reasonable only if 911 Authorities must meet substantial technical readiness requirements, including a demonstration of actual capability to receive and process NG911 IP calls); Mission Critical Partners Comments at 10 (stating that six months is appropriate for SIP-only deployment, but a different timeline may be appropriate to get to full end-state NG911); NASNA NG911 Notice Comments at 9 (agreeing with six-month timeframes but recommending that the Commission adopt a phased approach); Letter from Frank Rainwater, Executive Director, South Carolina RFA, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 2 (filed Apr. 19, 2024) (South Carolina RFA Apr. 19, 2024 *Ex Parte*).

³⁴⁷ Comtech NG911 Notice Comments at 9; NENA NG911 Notice Comments at 9; Intrado NG911 Notice Comments at 9.

³⁴⁸ South Dakota Telecommunication Association NG911 Notice Comments at 13-14 (stating that eighteen months following a request would be reasonable); Rally Networks NG911 Notice Comments at 2-3 (stating that “[m]odernizing a TDM based switch from planning to changeover can take 6-18 months depending on complexity”); South Carolina RFA NG911 Notice Comments at 8 and 11 (recommending that a compliance timeframe of between six and twelve months for a local exchange carrier to convert their technology to IP-based

(continued....)

that local exchange carriers be given between six and twelve months to convert their technology to IP-based transmission.³⁴⁹ NCTA similarly states that “[a] twelve-month transition period should be sufficient for most providers once they receive notice that the 911 Authority has implemented NG911.”³⁵⁰ Some wireline commenters recommend longer timeframes of between two and three years for RLECs, ILECs, or smaller providers.³⁵¹ Several commenters indicate that the time required will be variable based on several factors, including the responsiveness of third-party transport providers, whether the NG911 implementation is standards-based, the availability of suppliers and installation personnel, resource constraint, and supply chain issues.³⁵²

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transmission, and that less than six months may not be enough time for a local exchange carrier to upgrade, and more than twelve months will minimize the incentive for a local exchange carrier to implement network improvements); NCTA NG911 Notice Reply at 2 (stating that “[a] twelve-month transition period should be sufficient for most providers once they receive notice that the 911 Authority has implemented NG911”); Bandwidth NG911 Notice Reply at 4 (stating that twelve to eighteen months is needed to implement delivery of traffic in IP format because 911 Authorities and NG911 vendors lack standardized implementations and because of difficulties coordinating across multiple ESInets and complying with state requirements); ATIS NG911 Notice Comments at 2, 8 (stating that eighteen months should be allowed if implementation of new Legacy Network Gateways and support of associated location data (replacing legacy ALI systems) is required, and that six months is insufficient for implementing functional enhancements or the proposed circuit changes); AT&T NG911 Notice Comments at 10 (stating that eighteen to twenty-four months may be a more reasonable deadline for completing the transition); CTIA NG911 Notice Comments at 7 (recommending eighteen to twenty-four months from PSAP readiness to provide the time needed for OSPs and PSAPs to work through the various implementation issues and testing that will be necessary to deliver 911 calls in IP-format). Texas 9-1-1 Entities states that the 911 Authorities in Texas are “willing to agree to provide for a minimum of eighteen months advance notice.” Texas 9-1-1 Entities NG911 Notice Reply at 16.

³⁴⁹ South Carolina RFA NG911 Notice Comments at 8 and 11.

³⁵⁰ NCTA NG911 Notice Reply at 2.

³⁵¹ Intrado NG911 Notice Reply at 4 (recommending that the Commission adopt rules that incent and accelerate RLECs and ILECs to retire their TDM networks over a reasonable period of time, such as 24 months, with sufficient safeguards to avoid inadvertent impacts to 911 networks); Pennsylvania Telephone Association NG911 Notice Comments at 8 (stating that installing new switches and upgrading to IP format can take between 9 months and 3 years); Alaska Telecom Assoc. NG911 Notice Comments at 8 (“[T]he FCC should afford additional time to smaller providers for any NG911 rules it may adopt.”); Texas 9-1-1 Entities NG911 Notice Reply at 15 (stating that some rural wireline carriers raise concerns that there should be at least 24 months to the transition from being able to use an ALI database); Jonathan Cannon Comments at 2-3 (rec. Aug. 8, 2023) (filed on behalf of Rally Networks) (Rally Networks NG911 Notice Comments) (stating that “[m]odernizing a TDM based switch from planning to changeover can take 6-18 months depending on complexity”); NCTA NG911 Notice Reply at 2, n.7 (stating that the Commission should consider whether different treatment is warranted in extremely remote areas where unique circumstances have impaired the ability of a provider to transition to IP-based network equipment); CCA NG911 Notice Comments at 2-3 (stating that additional time is needed for smaller and rural carriers to comply with new NG911 requirements).

³⁵² Alaska Telecom. Assoc. NG911 Notice Comments at 7; Bandwidth NG911 Notice Reply at 4; Frontier NG911 Notice Reply at 6; WTA NG911 Notice Comments at 7; Pennsylvania Telephone Association NG911 Notice Comments at 8 (“RLECs will often have limited options for third-party transport providers, so timeframes will be dependent on other carriers’ schedules and limitations.”); Verizon NG911 Notice Comments at 5 (“[I]f a PSAP/NG911 provider requests and insists on a non-standards-based NG911 solution or use of a non-standards-based IP format, implementation will require far more than six months given the need to engage in further end-to-end testing.”); Intrado NG911 Notice Comments at 5 (stating that the lack of standardized implementations across 911 Authorities and vendors contributes to varied implementation requirements); ATIS NG911 Notice Comments at 8 (stating that the service provider should be able to receive a waiver if it experiences supply chain issues); CCA NG911 Notice Comments at 2-3 (stating that smaller and rural carriers have significant resource complaints and supply chain challenges that lead them to need additional time and flexibility to comply with FCC requirements);

(continued....)

117. We determine that six months per phase provides adequate time for non-RLEC wireline providers and interconnected VoIP providers to transition first to basic SIP at Phase 1, and second to SIP format that complies with NG911 commonly accepted standards at Phase 2. By splitting the transition into two six-month phases, we provide a longer total transition timeframe for wireline and interconnected VoIP providers than was originally proposed. We find that this approach balances the concerns raised by commenters that sought a longer total timeframe than six months with the need to ensure an expeditious transition, which could be complete under these rules within a year of the 911 Authority's Phase 1 request. The time period we implement for non-RLEC wireline providers and interconnected VoIP providers takes into account the various factors raised by commenters.

118. We adopt an extended timeframe of twelve months per phase for RLECs to complete Phase 1 and Phase 2. As RLEC commenters note, RLECs operate in rural and sometimes remote areas and can face resource limitations and other challenges when transitioning to NG911, e.g., finding vendors that can perform the required work, negotiating and executing contracts, and upgrading networks (e.g., installation of new switches).³⁵³ Compliance with NG911 requirements at each phase may take longer for RLECs to complete given these factors.

119. *CMRS Providers.* In the *LBR Notice*, the Commission proposed that nationwide CMRS providers would have six months and non-nationwide CMRS providers would have twelve months to deliver IP-formatted calls, texts, and location information following the effective date of the rule or a valid request, whichever is later.³⁵⁴ Some commenters support the timelines as proposed in the *LBR Notice*,³⁵⁵ while other commenters support longer timeframes.³⁵⁶ Verizon indicates that a six-month timeline is feasible only if “the PSAP has fully implemented i3 in its network through a NG911 provider

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USTelecom NG911 Notice Reply at 6 (indicating that implementation takes longer than six months if a 911 Authority uses a non-standard IP format or NG911 solution).

³⁵³ See, e.g., Alaska Telecom Assoc. NG911 Notice Comments at 7-9 (stating that smaller providers should be afforded additional time than proposed in the *NG911 Notice*); CCA NG911 Notice Comments at 2-3 (stating that “smaller and rural carriers have significant resource constraints and supply chain challenges that lead them to need additional time and flexibility to comply with FCC requirements”); Five Area Telephone NG911 Notice Comments at 7, 12, 13, 15 (discussing cost recovery concerns and stating that need at least twenty-four months is needed to comply following a 911 Authority request because OSPs must hire contractors or third parties or upgrade their networks); Intrado NG911 Notice Comments at 4 (stating that, except in the case of certain ILECs/RLECs, interconnecting parties typically can establish IP-formatted (i.e., SIP) delivery relatively quickly); Rural Telephone Company Consortium (RTCC) NG911 Notice Comments at 11 n.25 (rec. Aug. 9, 2023) (RTCC NG911 Notice Comments) (discussing the availability of middle-mile transport facilities in an area, the cost of “cross-connects” for transport, and the technical capability of service providers); Pennsylvania Telephone Association NG911 Notice Comments at 8 (stating that installing new switches and upgrading to an IP format can take between nine months and three years); South Carolina NG911 Notice Comments at 7 (discussing the limitations of some current customer premises equipment); South Dakota Telecommunication Association NG911 Notice Comments at 12-14 (discussing the potential need for different customer premises equipment and the technical feasibility of embedding location information in TDM-originated calls); USTelecom NG911 Notice Comments at 3 (discussing issues for some wireline providers to include location information in IP call headers) and WTA Feb. 7, 2024 *Ex Parte*.

³⁵⁴ *LBR Notice*, 37 FCC Rcd 15202, para. 50.

³⁵⁵ Colorado LBR Notice Comments at 9; Comtech NG911 Notice Comments at 9; NENA NG911 Notice Comments at 9; Intrado NG911 Notice Comments at 4

³⁵⁶ AT&T LBR Notice Comments at 7 (stating that “the Commission should allow 18-24 months before requiring provision of LBR information in IP-based format”); Verizon LBR Notice Reply at 4 (stating that “the NPRM’s proposed strict six-month period is not consistent with Verizon’s real-world experience” and “a minimum implementation of 18 months from a request would be reasonable *provided that* the PSAP’s vendor has initiated the most critical hardware, software and network implementation efforts”).

that has deployed its service in coordination with Verizon.”³⁵⁷ Non-nationwide CMRS providers requested longer timeframes to comply with NG911 delivery requirements.³⁵⁸ T-Mobile opposes the implementation of Commission deadlines for the transition to NG911 altogether.³⁵⁹

120. We determine that six months per phase provides adequate time for nationwide CMRS providers to transition to basic SIP in Phase 1 and to SIP format that complies with NG911 commonly accepted standards in Phase 2. By adopting a phased approach, we address concerns raised by commenters while balancing the needs of 911 Authorities to complete the NG911 transition in a timely manner. We also determine that twelve months per phase (for twenty-four months total) provides adequate time for non-nationwide CMRS providers to transition to Phase 1 and 2. This longer timeframe accounts for the unique challenges raised by non-nationwide CMRS providers in their comments, while ensuring that the NG911 transition proceeds in a timely manner. We disagree with T-Mobile’s opposition to implementation deadlines; the record indicates that timelines are needed to provide certainty for both OSPs and 911 Authorities and to expedite the transition to NG911.³⁶⁰

121. *Internet-based TRS providers.* The Commission proposed in the *NG911 Notice* that Internet-based TRS providers would be required to deliver 911 calls in IP format within twelve months after a valid request or twelve months from the effective date of such requirement, consistent with previous Commission action regarding these services.³⁶¹ We determine that twelve months per phase provides adequate time for Internet-based TRS providers to comply with NG911 requirements at Phase 1 and 2. Internet-based TRS providers are primarily small entities and have operational differences that distinguish them from other types of providers,³⁶² warranting a longer timeframe for compliance.

122. *Covered Text Providers.* The Commission proposed in the *LBR Notice* that covered text providers would have six months to deliver IP-formatted texts and location information following the effective date of the rule or a valid request, whichever is later.³⁶³ No commenter to either the *LBR Notice* or *NG911 Notice* addressed compliance timelines for covered text providers to deliver 911 texts to 911 Authorities that have implemented NG911. We therefore adopt the six-month transition timeline at each phase for covered text providers. We believe this timeframe to be reasonable in light of prior Commission transition periods for covered text providers to implement technology changes.³⁶⁴

123. *Sequencing of Phase 1 and Phase 2.* Under the rules we adopt today for all OSPs, compliance with Phase 1 requirements is a prerequisite for Phase 2, meaning that an OSP’s transition to Phase 1 must be completed before the implementation period can start for Phase 2 for a particular requesting 911 Authority. We recognize that the NG911 transition is ongoing and that many OSPs have

³⁵⁷ Verizon LBR Notice Comments at 6.

³⁵⁸ RWA LBR Notice Comments at 3-4 (arguing that non-nationwide CMRS providers should have 30 months from a valid PSAP request); CCA NG911 Notice Comments at 2-3 (“[S]maller and rural carriers have significant resource constraints and supply chain challenges that lead them to need additional time and flexibility to comply with FCC requirements.”).

³⁵⁹ T-Mobile LBR Notice Comments at 12.

³⁶⁰ See, e.g., NASNA Petition at 5.

³⁶¹ *NG911 Notice* at *18, para. 45.

³⁶² See *Kari's Law/RAY BAUM'S Act Order*, 34 FCC Rcd at 6687-89, paras. 208, 210, 21; 47 CFR § 64.601(a)(23), (24), (51).

³⁶³ *LBR Notice*, 37 FCC Rcd at 15202, para. 50.

³⁶⁴ *T911 Second Report and Order* at 9871, para. 47.

already achieved Phase 1 connectivity with NG911 networks.³⁶⁵ In such scenarios, 911 Authorities may initiate a Phase 2 request without having to first issue a Phase 1 request. We decline to adopt NASNA's recommended eighteen-month waiting period between valid requests at each phase, which we believe could unnecessarily slow the transition to NG911.³⁶⁶

124. In other instances, a 911 Authority may have met the conditions for providing a valid request for Phase 2 as well as Phase 1, but an OSP may not yet have implemented either phase of the transition. In such a case, the 911 Authority may send the OSP valid requests for both Phase 1 and Phase 2 simultaneously, or it may send the OSP a Phase 2 valid request after it has issued the Phase 1 request but before the OSP's deadline for complying with it. In such scenarios, the six- or twelve-month period of time for the OSP to come into compliance with the Phase 2 request would begin on the date of its Phase 1 compliance deadline or when it complies with the Phase 1 requirements, whichever is earlier, rather than on the earlier date when the Phase 2 request was issued. For example, if the 911 Authority issues both Phase 1 and Phase 2 requests to a nationwide CMRS provider on January 2, 2026, then the provider's deadline for implementing the Phase 1 request would be six months later (on July 2, 2026), and its deadline for implementing Phase 2 would be six months after that (on January 2, 2027). However, if the nationwide CMRS provider complied with its Phase 1 requirements on June 2, 2026, then its deadline for implementing Phase 2 would be six months after that (on December 2, 2026). This provision should benefit both OSPs and 911 Authorities and could accelerate the implementation of Phase 2 NG911 in some circumstances. It accounts for the practical hurdles facing some OSPs that have not yet implemented the Phase 1 requirements and accommodates their need to do so before they start implementing Phase 2. It also relieves 911 Authorities of a potentially burdensome procedural hurdle by making it unnecessary to issue separate, sequential Phase 1 and Phase 2 requests to OSPs that have not yet implemented Phase 1. A 911 Authority would not need to wait until an OSP finishes implementing the Phase 1 requirements to issue a Phase 2 request to that OSP. Instead, the 911 Authority could issue both valid requests to the OSP simultaneously and establish firm milestone dates for the OSP to comply with both phases in sequence. As discussed in section III.C.3.b, 911 Authorities and OSPs may also reach alternative agreements regarding timelines.

125. As an alternative to setting timelines for OSPs to complete the transition to NG911, AT&T and ATIS propose that we focus our rules on setting timelines for OSPs to take specific affirmative steps toward transitioning to IP delivery, such as placing circuit orders.³⁶⁷ We recognize that setting deadlines for individual implementation steps could provide additional certainty, but focusing on individual steps without requiring completion of all necessary steps is unlikely to achieve our objectives. In addition, the concerns raised by AT&T and ATIS are addressed by other modifications that we have made to our proposals from the *NG911 Notice*, including adopting a two-phase approach and lengthening the amount of time for OSPs to comply with NG911 obligations, ensuring 911 Authority readiness at the time of valid request, and providing flexibility to agree to alternative timelines for compliance with 911 Authorities.

126. Brian Rosen, RWA, and Verizon suggest that OSPs may need a longer timeline to make the required transition the first time that an OSP connects to an ESInet or NG911 vendor. These commenters recommend increasing the time frame for OSPs to connect to the first ESInet and then

³⁶⁵ For example, T-Mobile states that it "has deployed SIP connectivity for a total of 3,415 PSAPs (comprising 1,448 wireless PSAPs and 1,967 VoIP PSAPs), with an additional 1,178 wireless PSAPs that are in the process of or are planning for IP connectivity." T-Mobile NG911 Notice Comments at 1.

³⁶⁶ NASNA NG911 Notice Comments at 9 (indicating that there should be at least eighteen months between requests to OSPs to move between its recommended phases).

³⁶⁷ AT&T NG911 Notice Comments at 10; ATIS NG911 Notice Comments at 8.

retaining a six-month timeline for subsequent connections.³⁶⁸ RWA argues that the Commission should extend the timeline for the first connection to an ESInet but revert to a shorter timeline for subsequent valid requests.³⁶⁹ Verizon similarly indicates that the onboarding process for the first time it connects to an NG911 vendor can take several months to a year, but that lead time is not needed for the vendor's subsequent 911 Authority customers.³⁷⁰ We decline to establish different timelines for "first-time" transition by OSPs. Although such transitions may take longer as OSPs connect with ESInets and NG911 service providers for the first time, our rules provide ample flexibility for OSPs and 911 Authorities to address these issues. We encourage 911 Authorities to collaborate with OSPs that are connecting to ESInets and NG911 vendors in the first instance.

127. Rally Networks proposes that instead of a six-month compliance period, the Commission should require 911 authorities to pre-notify any OSPs that will need technology upgrades in order to comply with the NG911 rules, or that we should allow RLECs to propose and negotiate compliance timelines with 911 Authorities after a 911 Authority request.³⁷¹ With regards to the first proposal, nothing in our rules prevents 911 Authorities from pre-notifying OSPs, including RLECs, as they take steps to prepare for the transition to NG911. In addition, the steps that 911 Authorities take to prepare for NG911, including selecting contractors for their NG911 network, are typically public and accessible on 911 Authorities' websites. We find that these resources are sufficient to provide OSPs with notice of the transition and make it unnecessary to require pre-notification by 911 Authorities before transmittal of a Phase 1 or Phase 2 request. With regards to the second proposal, under the rules that we adopt today, OSPs and 911 Authorities may agree to alternative timelines for compliance with NG911 requirements. Nothing in our rules would prevent an RLEC, for example, from proposing and negotiating compliance timelines with a 911 Authority following the 911 Authority's valid request.

128. Due to unique challenges in Alaska, Alaska Telecom Association (Alaska Telecom Assoc.) requests "an implementation extension or exemption for non-IP networks, or portions of networks" and "longer implementation timelines as well as an opportunity for waivers of timing requirements."³⁷² Alaska Telecom Assoc. also requests that "any NG911 rules should provide carriers in Alaska with a presumptive waiver of mandated IP-delivery deadlines, provided such a carrier can demonstrate that it is working in good faith with the PSAP to complete the request."³⁷³ We observe that NG911 implementation timelines are tied to the readiness of the 911 Authority, and Alaska Telecom Assoc. notes that "PSAPs in Alaska have not yet launched NG911 service."³⁷⁴ We decline to provide additional time specifically for Alaska telecommunications providers as part of these rules, but reiterate that OSPs may negotiate with 911 Authorities for separate compliance timelines under our rules. We also decline to provide a presumptive waiver of compliance deadlines for Alaska OSPs. Providers facing extraordinary circumstances may request relief under the Commission's existing waiver process.³⁷⁵

b. Modification of Deadlines by Agreement

129. We allow 911 Authorities and OSPs to mutually agree on implementation deadlines that

³⁶⁸ Brian Rosen NG911 Notice Reply at 11-12.

³⁶⁹ RWA NG911 Notice at 3.

³⁷⁰ Verizon NG911 Notice Comments at 5-6.

³⁷¹ Rally Networks NG911 Notice Comments at 3.

³⁷² Alaska Telecom Assoc. NG911 Notice Comments at 2.

³⁷³ Alaska Telecom Assoc. NG911 Notice Comments at 7 (alternatively recommending an explicit mention of the option to request a waiver or extension).

³⁷⁴ Alaska Telecom Assoc. NG911 Notice Comments at 2.

³⁷⁵ See 47 CFR § 1.925.

are different from the default compliance deadlines adopted in this *Order*. This approach addresses commenter requests that we allow flexibility in our compliance timelines, and it is supported by AT&T,³⁷⁶ Colorado PUC,³⁷⁷ CTIA,³⁷⁸ Mission Critical Partners,³⁷⁹ NENA,³⁸⁰ and RWA.³⁸¹ This approach is also consistent with the proposals in the *NG911 Notice* and *LBR Notice* to permit the modification of deadlines by agreement.³⁸² We encourage OSPs to communicate with 911 Authorities if they experience situations that may warrant alternative agreements. If an alternative agreement is reached, the OSP must notify the Commission of the key terms of the agreement and the alternative deadline within 30 days of the execution of the agreement so that the Commission is aware of any changes to the default obligations of OSPs. We direct PSHSB to open a new docket and issue guidance to OSPs about notifying the Commission regarding alternative agreements.

130. Mission Critical Partners suggests that there be a mechanism “whereby these agreements could be canceled and a return to the mandated timeline executed if needed.”³⁸³ Although the rules do not provide for cancellation or termination of alternative agreements, there is nothing in the rules prohibiting such an outcome, and parties are free to include a cancellation or termination provision in their agreements as they see fit. We also clarify that, upon cancellation or termination of an alternative agreement, the NG911 rules and deadlines that we adopt today will apply in the absence of any alternative provision.

D. NG911 Delivery Points and Cost Responsibilities

131. We adopt default rules requiring that, starting at Phase 1, OSPs must transmit and deliver 911 traffic to NG911 Delivery Points designated by 911 Authorities and must bear the financial responsibility for such transmission, including costs associated with completing any needed TDM-to-IP translation and the costs of delivering associated routing and location information in the requested IP-based format. Beyond these NG911 Delivery Points, 911 Authorities will be responsible for processing and transmitting such traffic to PSAPs. We emphasize that these are default rules that do not preclude alternative arrangements between 911 Authorities and OSPs at the state or local level. Moreover, our rules presumptively do not alter or invalidate existing agreements between state or local 911 Authorities and OSPs,³⁸⁴ but will apply in the absence of such agreements.

³⁷⁶ AT&T NG911 Notice Comments at 10 (stating that “any rules should permit OSPs and 911 authorities to adopt alternative timetables upon mutual agreement”).

³⁷⁷ Colorado PUC NG911 Notice Comments at 9 (recommending that state and local jurisdictions be allowed to provide reasonable extensions upon request and that this would allow for parties to mutually establish alternative timetables).

³⁷⁸ CTIA NG911 Notice Comments at 7-8 (stating that tolling mechanisms that enable OSPs and PSAPs to collaboratively extend any deadlines as they work through challenges should be permitted).

³⁷⁹ Mission Critical Partners NG911 Notice Comments at 9 (stating that it supports the ability for parties to enter into agreements for other timelines).

³⁸⁰ NENA NG911 Notice Comments at 9 (stating that the rules should permit a more lenient timeline if a state or local 911 Authority determines a different timeline is appropriate).

³⁸¹ RWA NG911 Notice Comments at 3 (stating that it support the proposal for OSPs to be able to enter into agreements with local and state entities to establish an alternate time frame as “a commonsense alternative” to any deadline codified by the rules).

³⁸² *NG911 Notice* at *18, para. 45; *LBR Notice*, 37 FCC Rcd at 15202, para. 50.

³⁸³ Mission Critical Partners NG911 Notice Comments at 10.

³⁸⁴ Our rules do not address NG911-related arrangements previously reached by OSPs and 911 Authorities or their vendors. See CTIA NG911 Notice Comments at 5 (“[T]he Commission should also ensure that any new rules adopted in this proceeding do not undermine existing arrangements between wireless providers and 911

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132. The NG911 traffic delivery and cost responsibility requirements we adopt in this *Order* are essentially the same as those proposed in the *NG911 Notice*, subject to a few modifications in response to the record.³⁸⁵ Specifically, as discussed below, OSPs will be obligated to deliver 911 traffic only to NG911 Delivery Points located in the 911 Authority's state or territory; in providing for such delivery, OSPs retain the right to decide which transmission routes to use and which transport, aggregation, and other services to obtain from third parties, if any. Finally, we clarify that OSPs who use the services of third parties will continue to remain ultimately responsible for any acts of their agents that violate the Commission's 911 rules.

133. We adopt these requirements in light of clear record evidence that the transition to NG911 nationwide is being delayed by uncertainty and disagreements between OSPs and 911 Authorities over the basic terms on which NG911 service is to be provided.³⁸⁶ Many of these disagreements concern the location of delivery points for 911 traffic and the allocation of cost responsibilities in the NG911 environment.³⁸⁷ We find that the default rules adopted in this *Order* will help resolve these disputes by eliminating key points of disagreement and facilitating discussions between OSPs and 911 Authorities concerning the issues that they need to coordinate. As a result, we expect these rules to accelerate the rollout of IP-based NG911 service to 911 callers nationwide.

1. Originating Service Providers' Default Responsibility for Transmitting and Delivering 911 Traffic to NG911 Delivery Points Designated by 911 Authorities

134. Consistent with the proposal in the *NG911 Notice*, our default rule establishes that 911 Authorities may designate the locations of the NG911 Delivery Points where OSPs will be required to transmit and hand off NG911 traffic starting at Phase 1.³⁸⁸ Many commenting parties, including OSP representatives as well as members of the public safety community, support the default delivery rule proposed in the *NG911 Notice*.³⁸⁹ However, a number of parties, including a coalition of RLECs and

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[A]uthorities."); Verizon NG911 Notice Reply at 3 (requesting that existing agreements will not be disrupted by NG911 rules). We realize that some NG911 agreements may include "change in law" or "change in regulation" clauses, which call for changes to an agreement's terms in the event the subject matter of the agreement is affected by newly-enacted laws or regulations. We take no position on the extent to which the NG911 rules should trigger such clauses.

³⁸⁵ See *NG911 Notice* at *11-15, paras. 27-39.

³⁸⁶ The Colorado PUC, for example, reports that "obtaining cooperation and compliance from OSPs" is a "common hurdle that all states must face prior to full implementation of NG911." Colorado PUC NG911 Notice Comments at 2; see also, e.g., Mission Critical Partners NG911 Notice Comments at 12; iCERT Nov. 2, 2023 *Ex Parte* at 2; Intrado NG911 Notice Comments at 1; Comtech NG911 Notice Comments at 7; South Carolina RFA NG911 Notice Comments at 8; Comtech Nov. 6, 2023 *Ex Parte* at Attach. at 5; Livingston Parish NG911 Notice Comments at 1; Brian Rosen NG911 Notice Comments at 7; Comtech NG911 Public Notice Comments at 7; Arizona Department of Administration 9-1-1 Program Office (Arizona Dept. of Administration) NG911 Public Notice Comments at 1 (rec. Jan. 21, 2022); Pennsylvania Emergency Mgmt. Agency NG911 Public Notice Comments at 4-5.

³⁸⁷ See, e.g., Comtech NG911 Notice Comments at 7 ("Comtech supports FCC adoption of the Proposed NG911 Rules as disputes relating to [point of interconnection] locations and cost demarcations are a *major* source of OSP disputes and delays." (emphasis in original)); South Carolina RFA NG911 Notice Comments at 16 (describing two and a half years of ongoing negotiations).

³⁸⁸ *NG911 Notice* at *11, para. 28.

³⁸⁹ See, e.g., BRETSA NG911 Notice Reply at 6 ("The governmental entity with authority over 9-1-1 service in the state, should set the parameters for acceptable POIs with the ESInet, which will constitute the demarcation point between OSP and ESInet/NGCS provider responsibility for routing and delivery of 9-1-1 calls." (emphasis omitted)); NCTA NG911 Notice Reply at 1-2; NENA NG911 Notice Comments at 7-8; South Carolina RFA NG911 Notice Comments at 8; Brian Rosen NG911 Notice Comments at 7; AT&T NG911 Notice Comments at 6-7;

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organizations representing RLECs led by NTCA (collectively, RLEC Coalition), suggest modifications to the proposed rule or argue for alternative approaches.³⁹⁰ Based on the record, we adopt several of the requested modifications to the proposed default rule and decline to adopt others, as discussed below.

135. *Home State NG911 Delivery Points.* First, we modify the proposed default rule to require OSPs to transmit and deliver 911 traffic to NG911 Delivery Points designated by a 911 Authority only if those points are located within the same state or territory as the PSAPs connected to the 911 Authority's ESInet.³⁹¹ This addresses the concern expressed by some RLECs that they could incur unreasonably high transport costs if 911 Authorities had unlimited discretion to require OSPs to deliver traffic to NG911 Delivery Points located anywhere in the country.³⁹² We believe that any such costs would likely be far less substantial than these parties fear, both because the costs of transmitting calls in IP format are not primarily based on the distance the calls must travel and because OSPs could mitigate the distance-related costs to transmit calls in TDM format by converting calls into IP format prior to sending them over any long-distance transmission paths.³⁹³ OSPs could also mitigate their costs by originating calls in IP format before transmitting them anywhere, entering into cost-sharing arrangements, or using other means.³⁹⁴ Nonetheless, requiring OSPs to deliver 911 traffic only to designated NG911 Delivery Points within 911 Authorities' home states or territories will provide OSPs, particularly RLECs, with greater certainty regarding potential costs. This requirement is unlikely to increase costs for 911 Authorities given that the cost of transmitting IP traffic to a potentially distant point in a different state or territory is not appreciably greater than the cost of transmitting such traffic over a shorter distance to locations within the same state or territory.

136. This home-state NG911 Delivery Point qualification also addresses concerns that RLECs could face increased risk of liability if they were required to transport 911 calls to locations in out-of-state jurisdictions.³⁹⁵ As discussed in more detail below, we believe that the obligation to transmit and deliver

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Mission Critical Partners NG911 Notice Comments at 4; Nebraska Public Service Commission (Nebraska PSC) NG911 Notice Comments at 2 (rec. Aug. 9, 2023) (Nebraska PSC NG911 Notice Comments); Oklahoma 9-1-1 Management Authority NG911 Notice Comments at 1 (rec. Aug. 8, 2023).

³⁹⁰ See, e.g., Five Area Telephone NG911 Notice Comments at 8-9; Home Telephone NG911 Notice Comments at 16-18; Letter from Brian Ford, Vice President—Federal Regulatory, NTCA, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 7 (filed Mar. 6, 2024) (RLEC Coalition Mar. 6, 2024 *Ex Parte*); South Carolina RLECs NG911 Notice Comments at 14-16; South Dakota Telecommunications Association NG911 Notice Comments at 10-12.

³⁹¹ NG911 Delivery Points designated by a local, regional, or Tribal 911 Authority will satisfy this criterion even if they are located outside the boundaries of the 911 Authority's local, regional, or Tribal area, so long as they are located in the same state. NG911 Delivery Points designated by a territorial government's 911 Authority must be located within the same territory to qualify.

³⁹² See, e.g., Five Area Telephone NG911 Notice Comments at 8-9 (requesting in-state limitation to limit OSP costs); South Dakota Telecommunications Association NG911 Notice Comments at 10-12.

³⁹³ See, e.g., Letter from Sarah N. Galioto, Director of Regulatory, and Cheng-yi Liu, Senior Regulatory Counsel, MSCI, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 1-3 (filed May 28, 2024) (MSCI May 28, 2024 *Ex Parte*) (demonstrating the cost savings available to OSPs that choose to transport traffic in IP format).

³⁹⁴ See, e.g., Letter from Lauren Kravetz, Vice President, Government Affairs, Intrado, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 2 (filed Jan. 30, 2024) (Intrado Jan. 30, 2024 PSHSB *Ex Parte*) (stating that "the POI cost/distance issue raised by several commenters in the docket will no longer apply because IP circuits are priced based on capacity/bandwidth versus Time Division Multiplexing (TDM) circuits, which are priced based on distance/capacity").

³⁹⁵ See, e.g., South Carolina RLECs NG911 Notice Comments at 14-16; Home Telephone NG911 Notice Comments at 16-18; RLEC Coalition Mar. 6, 2024 *Ex Parte* at 7.

911 calls to NG911 Delivery Points will have little, if any, impact on RLECs' exposure to liability under state tort law.³⁹⁶ Nonetheless, the home-state qualification may make it easier for RLECs to anticipate and manage those risks without having to evaluate differing tort law standards in multiple states. The home-state qualification also should address RLECs' concerns that an obligation to deliver calls out-of-state would compel them to retain third-party long distance transmission vendors and render them potentially liable for 911 rule violations committed by these vendors.³⁹⁷ The home-state qualification will reduce the need for RLECs to retain third-party vendors and make it easier for them to monitor the performance of any third-party vendors they do retain.

137. Finally, we believe it is reasonable to expect 911 Authorities to locate NG911 Delivery Points within the states or territories where they are responsible for the provision of 911 services. By definition, 911 Authorities are state, local, regional, territorial, or Tribal government entities that typically are responsible for implementing NG911 systems that serve PSAPs within an individual state, a local jurisdiction within a state, or territory.³⁹⁸ Moreover, the end users who initiate 911 communications and the PSAPs that those users are seeking to reach typically are located in the same state or territory. Therefore, from a network design and cost perspective, it would appear logical for a 911 Authority to provide an in-state point where OSPs are required to deliver NG911 traffic, particularly for small OSPs that operate only within that state or territory.³⁹⁹ However, our rules do not preclude 911 Authorities and OSPs from mutually agreeing on out-of-state delivery points. For example, if a 911 Authority retains the same ESInet provider that neighboring authorities have retained, that 911 Authority may agree with an OSP in its state that the OSP's existing connections to the ESInet provider's network in the neighboring states are sufficient NG911 Delivery Points.

138. *OSP's Use of Aggregation Services and Other Cost-Saving Measures.* Our default NG911 delivery rule does not prohibit OSPs from using aggregation services, and it allows OSPs to choose the methods of transport they will use to deliver 911 traffic to ESInets. Some RLEC commenters report that ESInet providers have tried to restrict their choices of network arrangements, such as by opposing their shared use of aggregation services.⁴⁰⁰ Such services enable multiple small carriers to bundle their data streams and share the cost of transporting the pooled data stream to a common destination, resulting in lower overall costs than if each OSP paid for separate transport. We agree that OSPs should be allowed to implement such reasonable cost-saving measures, and we find that this approach could help avoid disputes between OSPs and 911 Authorities.⁴⁰¹

³⁹⁶ See *infra* section III.E.

³⁹⁷ See *supra* section III.C.2; *infra* section III.E.4; South Carolina RLECs NG911 Notice Comments at 14-16; Home Telephone NG911 Notice Comments at 16-18; RLEC Coalition Mar. 6, 2024 *Ex Parte* at 7.

³⁹⁸ In rare cases, the PSAPs overseen by a 911 Authority may be physically located in multiple states. In such cases, 911 Authorities may designate NG911 Delivery Points in each state where its PSAPs are located.

³⁹⁹ In rare cases, a 911 Authority may be responsible for 911 traffic bound for PSAPs in multiple states. In such cases, the 911 Authority could establish NG911 Delivery Points in each of the states that it serves in order to ensure that OSPs in each of those states have a home-state NG911 Delivery Point where they will be required to deliver 911 traffic.

⁴⁰⁰ See Pennsylvania Telephone Association NG911 Notice Comments at 7 (“[S]ome RLECs with multiple state presence[s] prefer to aggregate NG911 traffic for multiple states, sharing in transport costs. However, some NG911 service providers are unwilling to allow RLEC third[-]party carrier providers to use these national POIs and require RLEC carrier providers to deliver NG911 traffic within the state.”); South Dakota Telecommunications Association NG911 Notice Comments at 11; Five Area Telephone NG911 Notice Comments at 7-8, 13.

⁴⁰¹ See, e.g., AT&T NG911 Notice Comments at 7 (“Notably, disputes arising over transition costs might also be reduced if local 911 authorities use aggregation services, which would expand the number of POIs available to OSPs.”).

139. We encourage OSPs, NG911 Services Providers, and 911 Authorities to work together to enable OSPs to comply with Phase 1 and 2 delivery obligations. We also expect OSPs to select transport options that are reliable, secure, and comply with industry standards for reliability and security. NTCA, WTA, and Home Telephone argue that the Commission should establish rules requiring the transport of 911 traffic over dedicated SIP lines, and highlight that there are several options available to OSPs to comply with IP delivery rules with varying reliability, including third-party IP transport, dedicated SIP, and public Internet.⁴⁰² We decline to establish the requested rules at this time. We also decline to condition OSP obligations on an ESInet operator permitting VPN/Internet connections, as suggested by Brian Rosen.⁴⁰³ At this time, we provide flexibility to 911 Authorities, in concert with their NG911 vendors, to determine the IP-based SIP format to request from OSPs.

140. *Other Restrictions on Designation of NG911 Delivery Point Locations.* We decline to impose any restrictions on 911 Authorities' selection of NG911 Delivery Point locations other than the home-state qualification discussed above. For example, we disagree with proposals to relieve a LEC of its NG911 traffic delivery obligations unless the 911 Authority establishes at least one NG911 Delivery Point within the LEC's local service area, or within a specified distance of such service area's boundary.⁴⁰⁴ Such a restriction, in effect, would require 911 Authorities in states with many small RLECs to establish individual NG911 Delivery Points for each of those RLECs, which could be inefficient and unreasonably costly to implement.⁴⁰⁵ We decline to adopt a restriction that, in effect, would compel 911 Authorities to structure their networks in a potentially inefficient manner to accommodate the RLECs' historic service area boundaries, rather than in a more efficient and cost-effective manner to ensure the reliable delivery of public safety emergency services.⁴⁰⁶

141. For similar reasons, we reject proposals to restrict the number of NG911 Delivery Points a 911 Authority may designate. While some commenters advocate limiting delivery points to two per OSP, a limited number per state, or two per Local Access and Transport Area (LATA),⁴⁰⁷ we see no

⁴⁰² NTCA NG911 Notice Comments at 4-5 (urging the Commission to consider the costs of routing 911 traffic over a "dedicated connection" as opposed to "'best efforts' public Internet connections"); WTA NG911 Notice Comments at 3-5 (urging the Commission to consider the benefits of dedicated SIP lines, as opposed to standard Internet delivery); Home Telephone NG911 Notice Comments at 10-13 (encouraging the Commission to require "a dedicated physical trunk for both front-end connections and back-end connections"); *see also* APCO Oct. 31, 2023 *Ex Parte* at 3 (identifying as an open issue whether 911 traffic must be delivered over traditional dedicated lines or the Internet).

⁴⁰³ Brian Rosen NG911 Notice Comments at 4-5.

⁴⁰⁴ *See, e.g.*, USTelecom NG911 Notice Comments at 5; Five Area Telephone NG911 Notice Comments at 8-9, 15; South Dakota Telecommunications Association NG911 Notice Comments at 8.

⁴⁰⁵ *See* Colorado PUC NG911 Notice Comments at 6 ("Requiring ESInet design to include potentially dozens of additional points of interface for local wireline providers is simply unreasonable and would greatly add to the costs of implementing and maintaining an ESInet.").

⁴⁰⁶ We also are adopting other measures to address the RLECs' cost concerns, such as permitting OSPs to continue to originate calls in TDM and convert such calls to SIP format that complies with commonly accepted standards. As discussed above, such transitional architectures are permitted under commonly accepted standards. *See, e.g.*, NENA i3 at 3 ("[T]he scope [of i3] includes gateways for legacy wireline and wireless originating networks (the Legacy Network Gateway) used by originating networks that cannot yet create call signaling matching the interfaces described in this document for the ESInet/NGCS."); TFOPA Report at 112-13, 116-17. In addition, we enable RLECs to minimize their costs by protecting their flexibility to select the vendors and routes for transmitting traffic to NG911 Delivery Points.

⁴⁰⁷ *See, e.g.*, Five Area Telephone NG911 Notice Comments at 8-9, 15; South Dakota Telecommunications Association NG911 Notice Comments at 8-9; Brian Rosen NG911 Notice Comments at 7; Verizon NG911 Notice Comments at 3; Mission Critical Partners NG911 Notice Comments at 5; Letter from John Kuykendall, JSI

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reason to limit the flexibility of 911 Authorities to determine the number of delivery points available to OSPs. Increasing the number of delivery points can contribute to the resiliency of NG911 networks by providing more options for routing calls to ESI-nets, while limits on the number of delivery points may create network vulnerabilities or needlessly drive up costs. Moreover, some states have chosen to implement multiple regional ESI-nets, and it would be reasonable for them to designate a greater number of NG911 Delivery Points than states that have implemented a single statewide ESI-net.⁴⁰⁸

142. We also reject proposals to require 911 Authorities to designate NG911 Delivery Points that are “reasonable” or not “excessive” or to require 911 Authorities to negotiate with OSPs “in good faith” over the locations of interconnection points.⁴⁰⁹ While we expect 911 Authorities to act reasonably, codifying such conditions in the rules is unnecessary and likely to lead to protracted negotiations that enable OSPs to delay the NG911 transition by refusing to deliver 911 traffic to states’ and localities’ NG911 networks in a manner that facilitates efficient network design and deployment. The rule we adopt today will reduce uncertainty, assist with resolving deadlocks in negotiations, and expedite the nationwide transition to NG911.⁴¹⁰

143. Finally, we do not adopt a modification requested by one commenter that 911 Authorities be required to provide certain equipment at the NG911 Delivery Point or to comply with the hardware specifications of OSPs or their transport vendors.⁴¹¹ The record lacks evidence that disagreements over connection hardware have interfered with NG911 adoption, and we expect that OSPs and 911 Authorities will continue to be able to coordinate such logistical details on their own without regulatory intervention. We also are concerned that any default rule concerning hardware might interfere with 911 Authorities’ network architecture plans or impose unwarranted burdens on 911 Authorities if we allowed OSPs to

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Regulatory Advisor on behalf of the South Carolina RLECs, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 2 (filed Oct. 12, 2023) (South Carolina RLECs Oct. 12, 2023 *Ex Parte*).

⁴⁰⁸ See, e.g., South Carolina RLECs NG911 Notice Comments at 7 (reporting that South Carolina has selected a primary, statewide ESI-net service provider but that some PSAPs will connect to local ESI-nets or NG911 service solutions).

⁴⁰⁹ See, e.g., Verizon NG911 Notice Comments at 2-4; T-Mobile NG911 Notice Comments at 2-3; CCA NG911 Notice Comments at 5 (warning against “excessive points of delivery”); CTIA NG911 Notice Reply at 8; iCERT NG911 Notice Comments at 8; South Dakota Telecommunications Association NG911 Notice Comments at 9-10 (suggesting duty to negotiate); NCTA NG911 Notice Comments at 3 (rec. Aug. 9, 2023) (NCTA NG911 Notice Comments); South Carolina RLECs NG911 Notice Reply at 9-10; USTelecom NG911 Notice Comments at 5 (suggesting reasonableness requirement); Alaska 9-1-1 Advisory Board NG911 Notice Reply at 3; ATIS NG911 Notice Comments at 1, 3. Public safety commenters strongly disagree, arguing that unreasonable limitations on the selection of NG911 Delivery Points could interfere with 911 Authorities’ autonomy to plan and design their NG911 infrastructures in a way that meets their individualized needs. See, e.g., South Carolina RFA NG911 Notice Comments at 9; NENA NG911 Notice Comments at 8; Texas 9-1-1 Entities NG911 Notice Comments at 12; MSCI NG911 Notice Comments at 5; The Ad Hoc NG911 Service Providers Coalition NG911 Notice Comments at 12-13.

⁴¹⁰ We decline to adopt BRETSA’s suggestion to require national and regional OSPs to establish separate call paths to the data centers operated by providers of NGCS in order to provide additional call-path diversity. See BRETSA NG911 Notice Comments at 3. This proposal is beyond the scope of the *NG911 Notice*. It also conflicts with our decision that NG911 Delivery Points should be located within the same state where a 911 Authority is located; NG911 service providers typically operate only a few data centers in disparate locations across the country, meaning that an OSP potentially would be required to transmit 911 traffic hundreds or thousands of miles to reach the nearest data center serving the relevant 911 Authority. *Id.* (noting the limited number of data center locations). Nonetheless, nothing in our rules would prevent national and regional OSPs from voluntarily establishing connectivity to NGCS core data centers or from negotiating with 911 Authorities to establish such alternative NG911 Delivery Points, and we encourage such steps if doing so would improve 911 resiliency.

⁴¹¹ IT&E NG911 Notice Comments at 2-3.

dictate these decisions in all circumstances. While we do not impose any specific hardware requirements, we note that our default rules assign 911 Authorities the responsibility to furnish all NG911 Delivery Point facilities, which includes the connection hardware necessary to receive 911 traffic from the OSP.

2. Default Cost Responsibilities

144. We adopt the default requirement proposed in the *NG911 Notice* and confirm that OSPs will be responsible for the cost of transmitting 911 traffic from their end users to the points of interconnection designated by 911 Authorities (i.e., NG911 Delivery Points).⁴¹² Conversely, our default rule provides that OSPs are not responsible for the cost of transmitting calls from NG911 Delivery Points to PSAPs or for any reformatting or call translation within the NG911 network beyond the point where the OSP has handed off the call.⁴¹³ To maintain this allocation, OSPs may not charge 911 Authorities or their vendors for providing the NG911 services that our rules require OSPs to provide, and once OSPs hand off 911 traffic to the 911 Authorities, the 911 Authorities and their vendors are responsible for delivering 911 traffic to PSAPs. OSPs must also bear the cost of compatibility testing for connecting to and using facilities at the NG911 Delivery Points to ensure compliance with NG911 commonly accepted standards specified by 911 Authorities. This clear allocation of financial responsibilities should resolve delays in the transition to NG911 caused by OSP uncertainty or unwillingness to take responsibility for the cost of transmitting 911 traffic originated by their own users.⁴¹⁴ Most public safety agencies, NG911 service providers, and OSP industry representatives support this default cost responsibility rule as fair, rational, consistent with longstanding regulatory requirements and industry practice, and conducive to expediting the NG911 transition.⁴¹⁵

⁴¹² *NG911 Notice* at *13-15, paras. 33-39. See also *LBR Notice*, 37 FCC Rcd at 15198, para. 36 (proposing to “identify ESInets as an example of an end point that state or local 911 authorities can designate for delivery of calls where location-based routing is used” and noting that this would not modify CMRS providers’ existing obligations to transmit 911 calls to delivery points designated by 911 authorities, potentially including legacy selective routers); *King County Order on Reconsideration*, 17 FCC Rcd at 14789, 14792-93, paras. 1, 8-10 (establishing that CMRS providers are responsible for cost of transmitting and delivering calls to selective routers).

⁴¹³ In addition, as discussed in greater detail below, OSPs also are responsible for the cost of the hardware and software components needed to transform TDM transmissions into the appropriate IP-based format (if necessary), to retrieve location information, and to route traffic to the appropriate PSAPs. At Phase 1, these components will typically include LNG facilities, ANI/ALI databases, and selective routers; at Phase 2, these components will include NG911 location information-related systems and functionalities. At both phases, however, 911 Authorities, their ESInet vendors, and/or PSAPs will be responsible for deploying, maintaining, or upgrading the NG911 Delivery Point facilities, the transmission of 911 traffic from NG911 Delivery Points to the appropriate PSAPs, PSAP customer premises equipment, and all other NG911 components or functionalities at and beyond the NG911 Delivery Points. Accordingly, OSPs will not be responsible for the costs associated with the latter set of functions unless the parties agree to alternative arrangements. See *infra* Appendix A at § 9.33(b).

⁴¹⁴ See *NG911 Notice* at *13, para. 33 n.118; AT&T NG911 Notice Comments at 7 (“Disputes over the delivery and/or demarcation point and cost allocation have led to delays in NG911 implementation, as the *NPRM* indicates.”).

⁴¹⁵ See, e.g., NCTA NG911 Notice Reply at 2-3 (“[U]sing the 911 Authority’s chosen physical point of demarcation as the demarcation point for purposes of assessing financial responsibility is wholly rational and consistent with industry practice.”); NASNA NG911 Notice Reply at 4; APCO NG911 Notice Comments at 6; Nebraska PSC NG911 Notice Comments at 2; iCERT NG911 Notice Comments at 7; Comtech NG911 Notice Reply at 8-9; Letter from Wesley K. Wright, Counsel on behalf of Inteliquent, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 1 (filed Oct. 10, 2023); CEA NG911 Notice Comments at 7-8; Mission Critical Partners NG911 Notice Comments at 4; Livingston Parish NG911 Notice Comments 2; AT&T NG911 Notice Comments at 6-7 (agreeing “with cost obligations for OSPs extending to the designated demarcation point” and noting that this approach is “consistent with standing precedent in the wireless context established in the *King County Letter*” and “consistent

(continued....)

145. The NG911 cost responsibility default rule we adopt today is analogous to the cost requirement the Commission adopted over two decades ago during the implementation of wireless E911. In its 2002 *King County Order on Reconsideration*, the Commission established a default requirement that CMRS providers bear the costs associated with transmitting 911 calls from their end users to the points where they hand off such calls to the selective routers used to transmit those calls to the appropriate PSAPs.⁴¹⁶ Like those E911 requirements, the NG911 default rule we adopt today reasonably holds OSPs responsible for the costs of complying with their own 911 service obligations.⁴¹⁷ By continuing to adhere to our historical approach to E911 cost responsibility, we ensure that the NG911 transition will proceed on the same core principles that have defined prior iterations of 911 service. We provide continuity to the entities whose customers originate more than 80% of 911 calls – the CMRS providers that have been operating under the comparable E911 cost allocation rule for more than 20 years.

146. Adopting a single default cost standard also promotes our goal to facilitate a technology-neutral implementation of NG911. In NG911 networks, the distinctions between originating service provider types—CMRS, covered text providers, wireline, interconnected VoIP, and Internet-based TRS – disappear, as all providers will terminate 911 traffic in an IP-based SIP format that complies with NG911 commonly recognized standards. This uniformity in service will reduce emergency response times; increase reliability and interoperability; and facilitate the integration of life-saving NGCS into emergency response systems.⁴¹⁸ Adopting an “all-platforms” regulatory approach in our NG911 rulemaking is not only possible, but necessary, and we therefore adopt the default cost rule proposed in the *NG911 Notice* to ensure regulatory parity across service platforms.⁴¹⁹

147. By contrast, we decline to adopt the proposal advanced by the RLEC Coalition, which argues that cost allocation for wireline carriers, and particularly for RLECs, should operate under different rules from those applicable to wireless providers and all other OSPs.⁴²⁰ The RLEC Coalition proposes that for 911 calls originated by RLEC end users, the 911 Authorities, rather than the RLECs themselves, should be financially responsible for the cost of delivering their end user’s 911 traffic from

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with how AT&T has responded (in its OSP capacity) to requests from PSAPs to date”); Maine PUC NG911 Notice Comments at 2-3; Colorado PUC NG911 Notice Comments at 6-7.

⁴¹⁶ *King County Order on Reconsideration*, 17 FCC Rcd at 14789, 14792-93, paras. 1, 8-10. CMRS providers are obligated to provide 911 service to their subscribers and to transmit their subscribers’ 911 calls, together with information regarding subscribers’ location, to the appropriate PSAP, statewide default answering point, or local emergency authority where such emergency calls can be answered. 47 CFR § 9.10(b). The rules identify selective routers as the component of the networks that route E911 calls with location information to PSAPs or other locations where emergency calls can be answered. *See* 47 CFR § 9.3. All other OSPs are subject to the same obligations. *See, e.g.*, 47 CFR §§ 9.4-9.5 (all telecommunications carriers); *id.*, § 9.11(b)(2)(ii) (interconnected VoIP providers).

⁴¹⁷ Our adoption of NG911 default cost responsibilities modeled on the Commission’s *King County* decision is consistent with CSRIC VI’s recommendation that we revisit that ruling “[g]iven the vast changes in technology since the Commission’s original wireless demarcation decision[.]” CSRIC NG911 Transition Report, § 5.1.5, at 37-38 (“Absent the Commission updating the *King County* Ruling to accommodate NG9-1-1 IP environments, [it] exacerbates the debate of ‘who pays.’”).

⁴¹⁸ *See infra* section III.G.1.

⁴¹⁹ *See, e.g.*, Mission Critical Partners NG911 Notice Comments at 5 (supporting “equalizing a demarcation point for all OSPs”); NENA NG911 Notice Comments at 3 (supporting “regulatory parity among originating service providers for the delivery of 9-1-1 calls”); iCERT NG911 Notice Reply at 6; The Ad Hoc NG911 Service Providers Coalition NG911 Notice Comments at 2.

⁴²⁰ *See, e.g.*, Letter from Michael R. Romano, Executive Vice President–Federal Regulatory, NTCA, et al. (RLEC Coalition), to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 1-3, Exh. 1 (filed Feb. 6, 2023) (RLEC Coalition Alternative Proposal).

the RLEC local network to the designated NG911 Delivery Point.⁴²¹ The RLECs justify this proposed approach by suggesting that 911 Authorities (or their ESInet vendors) are the RLECs’ “customers” and therefore should pay for the services that the RLECs provide.⁴²² This mischaracterizes the nature of the relationship between these entities. In the 911 context, the RLECs’ customers are the end users who purchase their communications services and use them to initiate 911 calls, not the PSAPs that receive 911 calls or the ESInet operators that receive and transmit those calls on the PSAPs’ behalf. The D.C. Circuit has previously affirmed the Commission’s E911 requirements that result in CMRS providers bearing financial responsibility for E911 implementation, noting that the Commission has “imposed upon wireless carriers an obligation to implement a service in the public interest,” and “[w]hether it does this directly or with the cooperation of other governmental safety organizations [e.g., PSAPs], it has no obligation to compensate carriers for their costs.”⁴²³ Just as “PSAPs are not the cost causers for wireless E911 implementation,”⁴²⁴ PSAPs (and ESInet vendors that act on their behalf) are not the cost causers for wireline carriers’ NG911 implementation. Indeed, rather than adopting the RLECs’ suggestion that OSPs be treated as *providing* a service to the ESInet vendors, we could reasonably treat the OSPs as *receiving* a service from the ESInet vendors, since it is the ESInet vendors that enable the OSPs to satisfy their own obligation to deliver 911 traffic to PSAPs.⁴²⁵

148. We also reject RLECs’ arguments that it would be unreasonable to require RLECs to bear the cost of transporting 911 traffic to NG911 Delivery Points because 911 Authorities already have paid the ESInet operators to provide the same transport services.⁴²⁶ The record does not reflect the terms of the many contractual arrangements that exist between 911 Authorities and their ESInet vendors, and we decline to speculate about what those contracts do or do not cover or the reasonableness of their terms. Such arrangements also are affected by state laws and regulations, such as requirements regarding permissible expenditures under contracts with state agencies. We will not intrude on states’ 911 implementation regimes; the rules we adopt today are limited to the 911-related services and obligations of OSPs. Moreover, the possibility that some ESInet providers may potentially benefit from our NG911 rules is irrelevant to the Commission’s well-established authority to enact public safety rules as well as the RLECs’ legal obligation to comply with them.

149. We encourage 911 Authorities and their ESInet service providers not to impose unreasonable fees on OSPs for connecting to or using facilities at NG911 Delivery Points.⁴²⁷ This is consistent with historic practice and the *King County Order on Reconsideration*, in which the Commission held that wireless OSPs satisfy their obligation to deliver E911 calls by delivering them to ILEC selective routers and that PSAPs are responsible for all subsequent costs, including the costs to

⁴²¹ See generally *id.*

⁴²² See, e.g., Letter from Brian Ford, Vice President–Federal Regulatory, NTCA, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at Attach. at 5 (filed May 22, 2024) (RLEC Coalition May 22, 2024 *Ex Parte*) (“Ultimately, if a NG911 network provider is not a ‘telecommunications carrier,’ then the only classification left is that the NG911 network provider is a ‘customer’ of the RLEC.”) (emphasis omitted).

⁴²³ *U.S. Cellular Corp. v. FCC*, 254 F.3d 78, 85 (D.C. Cir. 2001); see *id.* at 83-86.

⁴²⁴ *Id.* at 84.

⁴²⁵ 47 CFR § 9.4.

⁴²⁶ See, e.g., NTCA NG911 Notice Comments at 11, 14-16; RTCC NG911 Notice Comments at 7 & n.15; RLEC Coalition May 22, 2024 *Ex Parte* at Attach. at 7.

⁴²⁷ See IT&E NG911 Notice Comments at 3 (expressing concern that “the [NG911 Notice’s] broad language . . . could support a range of charges on [OSP], like PTI, that are not clearly necessary to support the delivery of 911 communications and data to the PSAP demarcation point”).

maintain and upgrade the facility itself and all of its components and functionalities.⁴²⁸

150. The default cost responsibilities of OSPs and 911 Authorities will mirror their respective service obligations at Phase 1 and Phase 2. At Phase 1, our rules require OSPs to deliver 911 traffic in the IP-based SIP format requested by the 911 Authority, using either IP origination or IP translation through an LNG or other solution; obtain and deliver 911 traffic to enable the ESInet and other NG911 network facilities to transmit all 911 traffic to the destination PSAP; and to transmit the 911 traffic to NG911 Delivery Points designated by the 911 Authority, which we anticipate will be located at an ESInet as a general matter.⁴²⁹ We expect that, at Phase 1, OSPs that rely on TDM architecture will continue to obtain location and routing information from ALI/ANI databases connected to selective routers; and accordingly, OSPs will be responsible for the costs of hardware and software components associated with delivering location and routing information, as well as the costs of transmitting 911 traffic to NG911 Delivery Points. At Phase 1, 911 Authorities are responsible for furnishing the necessary infrastructure at the NG911 Delivery Points and for transporting NG911 traffic from the NG911 Delivery Points to the appropriate PSAPs.⁴³⁰ Given these service responsibilities, OSPs will not be responsible for the costs associated with deploying, maintaining, or upgrading the NG911 Delivery Point facilities, transport of 911 traffic to the appropriate PSAPs, PSAP customer premises equipment, or any other components or functionalities at or beyond the NG911 Delivery Points.

151. However, if an OSP relies on IP translation functionalities that a 911 Authority (or its vendor) provides using LNGs or other facilities to comply with its SIP delivery obligation at Phase 1, then the OSP may be required to pay for its use of such facilities. These provisions ensure that OSPs bear the cost of delivering traffic in the required IP-based SIP format. They also give OSPs appropriate incentives to comply with their IP delivery obligation by originating traffic in IP format, since translating TDM calls to IP using LNGs usually will be a more expensive option.

152. At Phase 2, OSPs will be required to deliver all 911 traffic to NG911 Delivery Points in the IP-based SIP format that complies with commonly accepted NG911 standards identified by the 911 Authority, as well complying with the Phase 1 requirements. In addition, OSPs will be required to put into operation a LIS or functional equivalent or to acquire equivalent services.⁴³¹ Accordingly, OSPs will be presumptively responsible for the costs associated with these functions at Phase 2 (as well as the costs associated with their obligations continuing from Phase 1, including IP origination or translation and transport to the input to the NG911 Delivery Point). OSPs, however, will not be responsible for the costs of the functions that 911 Authorities will carry out at Phase 2, such as deploying NGCS. Moreover, as at Phase 1, OSPs will not be responsible for the costs of functions such as furnishing the necessary infrastructure at the NG911 Delivery Points and transmitting 911 traffic beyond the NG911 Delivery Points, which 911 Authorities will continue to carry out at Phase 2.⁴³² As discussed above, OSPs and 911 Authorities may negotiate and agree to alternative financial arrangements that differ from these default responsibilities.

E. Legal Authority

1. The Commission's General Authority to Implement the 911 System and

⁴²⁸ *King County Order on Reconsideration*, 17 FCC Rcd at 14789, 14792-93, paras. 1, 8-10. The interconnection facility at issue in the *King County Order on Reconsideration* was the selective router, which is the equipment in legacy 911 systems that analyzes and distributes E911 caller information. *Id.*, at 14790, para. 4. In NG911 networks, this function typically will be performed by NG911 service providers connected to ESInets.

⁴²⁹ See *infra* Appendix A at § 9.29(a).

⁴³⁰ See *infra* Appendix A at §§ 9.31(a)(1) and 9.33(b).

⁴³¹ See *infra* Appendix A at § 9.29(b)(3).

⁴³² See *infra* Appendix A at §§ 9.31(a)(1) and (b)(1) and 9.33(b).

Promulgate NG911 Rules

153. The rules adopted in this *Order* are grounded in the Commission’s broad authority over the nation’s 911 system. Congress has enacted numerous provisions in the Communications Act of 1934, as amended, and other 911-related statutes “that, taken together, establish an overarching federal interest in ensuring the effectiveness of the 911 system.”⁴³³ To begin with, one of the main purposes of the Act is “promoting safety of life and property through the use of wire and radio communications,”⁴³⁴ and public safety is one of the Commission’s most important responsibilities. Beyond this general mandate, section 251(e)(3) confirms the Commission’s authority and responsibility for designating 911 as the universal emergency telephone number for both wireline and wireless telephone service,⁴³⁵ demonstrating Congress’s intent to grant the Commission broad authority for “ensuring that 911 service is available throughout the country.”⁴³⁶ In a subsequent statute, Congress found that “for the sake of our Nation’s homeland security and public safety, a universal emergency telephone number (911) that is enhanced with the most modern and state-of-the-art telecommunications capabilities possible should be available to all citizens in all regions of the Nation[.]”⁴³⁷ The D.C. Circuit has consistently affirmed the Commission’s duty to consider public safety under the Act and to impose obligations to protect public safety in the public interest.⁴³⁸

154. Other 911-related statutes confirm the Commission’s general authority and responsibility to establish and maintain a comprehensive and effective 911 system.⁴³⁹ The NET 911 Act articulated the congressional goal “[t]o promote and enhance public safety by facilitating the rapid deployment of IP-enabled 911 and E-911 services, encourage the Nation’s transition to a national IP-enabled emergency network, and improve 911 and E-911 access to those with disabilities.”⁴⁴⁰ The CVAA advanced the Commission’s implementation of technologies such as text-to-911 by granting authority to promulgate “regulations, technical standards, protocols, and procedures . . . necessary to achieve reliable, interoperable communication that ensures access by individuals with disabilities to an Internet protocol-enabled emergency network, where achievable and technically feasible.”⁴⁴¹ RAY BAUM’S Act acknowledged the Commission’s authority to adopt rules to ensure that dispatchable location is conveyed

⁴³³ See, e.g., *911 Fee Diversion; New and Emerging Technologies 911 Improvement Act of 2008*, PS Docket Nos. 20-291, 09-14, Report and Order, 36 FCC Rcd 10804, 10810-11, para. 16 & n.41 (2021) (*911 Fee Diversion Order*) (citing, *inter alia*, *Nuvio Corp. v. FCC*, 473 F.3d at 311 (Kavanaugh, J., concurring) (indicating that the FCC may ban VoIP services that lack adequate 911 connections and capabilities)).

⁴³⁴ 47 U.S.C. § 151.

⁴³⁵ 47 U.S.C. § 251(e)(3).

⁴³⁶ *Nuvio Corp.*, 473 F.3d at 311 (Kavanaugh, J., concurring).

⁴³⁷ ENHANCE 911 Act of 2004, Pub L. No. 108-494, § 102, 118 Stat. 3986, 3986 (2004) (codified at 47 U.S.C. § 942 note); see *Nuvio Corp.*, 473 F.3d at 311 (Kavanaugh, J., concurring).

⁴³⁸ See, e.g., *Nuvio Corp.*, 473 F.3d at 307-08 (upholding new E911 requirements on the basis of (among other things) the Commission’s statutory duty to “promot[e] safety of life and property through the use of wire and radio communications” (quoting 47 U.S.C. § 151; emphasis omitted)); see also *U.S. Cellular Corp.*, 254 F.3d at 85 (upholding the Commission’s E911 default cost allocation rule based, in part, on the fact that “the Commission . . . imposed upon wireless carriers an obligation to implement a service in the public interest”).

⁴³⁹ *911 Fee Diversion Order*, 36 FCC Rcd at 10810-11, para. 16 (stating that federal 911-related statutes and Communications Act provisions “establish an overarching federal interest in ensuring the effectiveness of the 911 system”).

⁴⁴⁰ NET 911 Act, Preamble.

⁴⁴¹ 47 U.S.C. § 615c(g).

with 911 calls “regardless of the technological platform used.”⁴⁴²

155. Together, these statutes give the Commission broad authority to ensure that the 911 system is available and functions effectively to process and deliver 911 calls and texts from any type of service.⁴⁴³ The Commission has previously concluded that “[i]n light of these express statutory responsibilities, regulation of additional capabilities related to reliable 911 service, both today and in an NG911 environment, would be well within Commission’s . . . statutory authority.”⁴⁴⁴ The Commission also has stated that “[t]he Commission already has sufficient authority to regulate the 911 and NG911 activity of, *inter alia*, wireline and wireless carriers, interconnected VoIP providers, and other IP-based service providers” and that its jurisdiction to regulate 911 extends to the regulation of NG911 across different technologies.⁴⁴⁵

156. The Commission sought comment on this legal framework in the *NG911 NPRM*, and few commenters disagreed with its analysis or its findings that “Congress has given the Commission broad authority to ensure that the 911 system, including 911, E911, and NG911 calls and texts from all providers, is available and functions effectively,” and that “its jurisdiction to regulate 911 extends to the regulation of NG911 across different technologies.”⁴⁴⁶ The NG911 rules we adopt today are well within the scope of this authority, and we reject arguments to the contrary raised by a minority of commenters for the reasons below.

2. Our Rules Are Not Contrary to Sections 251 and 252

157. We reject the contention of some RLEC commenters that sections 251 and 252 of the Act⁴⁴⁷ govern OSPs’ transmission of 911 traffic to ESInets or that sections 251 and 252 preclude our adoption of these NG911 rules.⁴⁴⁸ In particular, we reject the arguments that those statutory provisions foreclose our default requirement that RLECs must transmit traffic to 911 Authorities’ designated NG911 Delivery Points regardless of whether such delivery points are located outside of the RLECs’ traditional

⁴⁴² RAY BAUM’S Act, Pub. L. No. 115-141, div. P, § 506(a), (c)(1), 132 Stat. 1080, 1095 (2018) (codified at 47 U.S.C. § 615 note).

⁴⁴³ *911 Fee Diversion Order*, 36 FCC Rcd at 10810-11, para. 16.

⁴⁴⁴ *Improving 911 Reliability; Reliability and Continuity of Communications Networks, Including Broadband Technologies*, PS Docket Nos. 13-75, 11-60, Report and Order, 28 FCC Rcd 17476, 17529, para. 150 (2013) (*Improving 911 Reliability Order*).

⁴⁴⁵ 2013 NG911 Framework Report, Section 4.1.2.2 at 28-29; *911 Governance and Accountability; Improving 911 Reliability*, PS Docket Nos. 14-193, 13-75, Policy Statement and Notice of Proposed Rulemaking, 29 FCC Rcd 14208, 14223, para. 34 (2014) (“[T]he Commission has the public safety imperative to oversee each of the increasingly complex component pieces of the nation’s 911 infrastructure.”).

⁴⁴⁶ *NG911 Notice* at *24, para. 61. *See, e.g.*, NENA NG911 Notice Comments at 15 (“NENA agrees that Congress has given the Commission broad authority to ensure that the 9-1-1 system, including 9-1-1, E9-1-1, and NG9-1-1 calls and texts from all providers, is available and functions effectively, and that the FCC’s jurisdiction to regulate 9-1-1 extends to the regulation of NG9-1-1 across different technologies.”); CEA NG911 Notice Comments at 4-5; WTA NG911 Notice Comments at 7.

⁴⁴⁷ 47 U.S.C. §§ 251 and 252.

⁴⁴⁸ *See, e.g.*, RLEC Coalition Alternative Proposal at 3; Kansas RLECs NG911 Notice Reply at 1-2 (rec. Sept. 8, 2023) (Kansas RLECs NG911 Notice Reply). *Contra NG911 Notice* at *21-22, paras. 55-56; Colorado PUC NG911 Notice Comments at 10-11; BRETSA NG911 Notice Reply at 11; Verizon NG911 Notice Reply at 5; Comtech NG911 Notice Comments at 10; Texas 9-1-1 Entities NG911 Notice Comments at 3-4; iCERT Nov. 2, 2023 *Ex Parte* at Attach. at 9.

local service boundaries.⁴⁴⁹

158. These commenters misunderstand the statutory foundation for our actions here, and its relationship to sections 251 and 252 of the Act. In sections 251(a)-(d) and 252 of the Act, Congress adopted a range of obligations for telecommunications carriers focused on the objective of opening the marketplace for telecommunications services to increased competition.⁴⁵⁰ But we are not implementing those provisions of sections 251 and 252 in this *Order*. Rather, as discussed above, we are exercising the Commission's distinct, broad authority over the nation's 911 system.⁴⁵¹ Thus, sections 251(a)-(d) and 252 do not govern our actions as a legal matter. Further, we are not exercising our statutory authority in the advancement of local competition, but to preserve and enhance a vital part of our nation's emergency response and disaster preparedness system, consistent with our statutory 911 authorities,⁴⁵² and also our more general duties under section 1 of the Act.⁴⁵³ As important as local competition is, "whenever public safety is involved, lives are at stake."⁴⁵⁴ Thus, we also are not persuaded that judgments Congress made when calibrating regulatory requirements designed to promote marketplace competition should limit the tools we employ under other statutory provisions that we find necessary to the public safety objectives of 911.⁴⁵⁵

159. We also reject the RLECs' argument that the Commission may not require them to transport 911 traffic to interconnection points outside their state-certificated service areas or that their "network edges" should coincide with the boundaries of those service areas.⁴⁵⁶ The definitions of RLECs' state-certificated service area boundaries are entirely irrelevant to the Commission's authority, under the federal statutory provisions discussed above, to adopt rules concerning the implementation of NG911, including the locations where OSPs must deliver 911 traffic in an IP-based format. Indeed,

⁴⁴⁹ See, e.g., NTCA NG911 Notice Comments at 10-12; South Carolina RLECs NG911 Notice Reply at 5-7; Kansas RLECs NG911 Notice Reply at 1-2.

⁴⁵⁰ See, e.g., *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996: Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, CC Docket Nos. 96-98, 95-185, First Report and Order, 11 FCC Rcd 15499, 15507, para. 6 (1996).

⁴⁵¹ See *supra* section III.E.1.

⁴⁵² See *supra* section III.E.1.

⁴⁵³ 47 U.S.C. § 151 (The Commission was established, among other things, "so as to make available, so far as possible, to all the people of the United States, . . . a rapid, efficient, Nation-wide, and world-wide wire and radio communication service . . . for the purpose of promoting safety of life and property through the use of wire and radio communications").

⁴⁵⁴ *Mozilla Corp. v. FCC*, 940 F.3d 1, 62 (D.C. Cir. 2019).

⁴⁵⁵ We decline to address the argument advanced by some parties that ESInets' NG911-related offerings should be classified as "information services" or as "telecommunications services." See, e.g., Comtech NG911 Notice Reply at 10; Kansas RLECs NG911 Notice Reply at 2; NTCA NG911 Notice Reply at 11-12; Windstream NG911 Notice Reply at 3; South Carolina RLECs NG911 Notice Reply at 6; Pennsylvania PUC NG911 Notice Comments at 6; MSCI NG911 Notice Reply at 1-2; Letter from Brian Ford, Vice President—Federal Regulatory, NTCA, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 3-5 (filed Jun. 17, 2024) (RLEC Coalition Jun. 17, 2024 *Ex Parte*); Letter from John Kuykendall, JSI Regulatory Advisor on behalf of the South Carolina RLECs, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 4-5, 7 (filed Jun. 20, 2024) (South Carolina RLECs Jun. 20, 2024 *Ex Parte*). We need not discuss those issues because they are not necessary to our decision and would have broader implications beyond this proceeding. Accordingly, we make no finding as to the regulatory classification of ESInets or other NG911-related service providers.

⁴⁵⁶ See, e.g., RLEC Coalition Alternative Proposal at Exh. 1 at 1-3; NTCA NG911 Notice Reply at 15-16; South Carolina RLECs Oct. 12, 2023 *Ex Parte* at 2, Attach. at 4-5, 12; Frontier NG911 Notice Reply at 4; Kansas RLECs NG911 Notice Reply at 2; RLEC Coalition May 22, 2024 *Ex Parte* at Attach. at 8-10.

RLECs have long been responsible for ensuring that their subscribers' 911 calls reach their intended destinations whether or not those destinations lie within the RLECs' own service area boundaries.⁴⁵⁷ Moreover, the RLECs mischaracterize the term "network edge." In the Commission's intercarrier compensation precedent, "network edges" need not (and often do not) coincide with service area boundaries. In any event, the default cost rule we adopt today does not require RLECs to extend their physical networks; it only defines their financial responsibilities for the delivery of 911 traffic in the context of NG911 systems. As we make clear above, our NG911 rules do not require RLECs to extend their network facilities; all OSPs are free to satisfy their responsibility for the transmission of 911 calls to the NG911 Delivery Points specified by the 911 Authorities either using the OSPs' own facilities or using transmission services purchased from others.⁴⁵⁸

3. Preservation of State Authority

160. The Commission historically has shared authority over the 911 system with state and local government. State and local governance of 911 is exercised by various types of agencies, including public safety agencies and, in some instances, state public utility commissions (PUCs). The rules we adopt today are consistent with our statutory charge to support 911 Authorities' efforts to ensure that their public safety infrastructures are connected to reliable networks that enable callers to reach public safety agencies by dialing 911.⁴⁵⁹ We find that these NG911 rules "str[ike] [an] appropriate balance between federal guidance and state and local autonomy."⁴⁶⁰ As discussed above, we rely on state and local 911 Authorities to determine the locations where OSPs must deliver 911 calls, to select the NG911 technical standards that OSPs must implement in Phase 2, and to decide when and how they wish to transition to NG911. These rules thus ensure that 911 Authorities will retain broad decision-making authority regarding the configuration, timing, and cost responsibility for NG911 implementation within their jurisdictions.

161. Nor do today's rules intrude upon state PUCs' authority over the "charges, classifications, practices, services, facilities, or regulations for or in connection with intrastate communication service."⁴⁶¹ The rules do not affect state PUCs' authority to "address the terms and conditions and potential additional cost recovery mechanisms that may be necessary for 911-related end-to-end intrastate calls."⁴⁶² The 911 calls subject to these rules are "intrastate," in that the OSP customers who initiate the 911 calls will be located in the same state as the NG911 Delivery Points where OSPs deliver the calls and the PSAPs to which 911 traffic is routed. As a result, the rules governing federal/state cost allocation, jurisdictional separations, and other matters involving rate-of-return regulation will treat the costs of transmitting these calls as jurisdictionally intrastate, and hence, subject to state PUCs' authority.⁴⁶³ Like all of the Commission's 911-related rules, our NG911 rules govern the manner in which OSPs provide 911 services and their responsibilities for transmitting their subscribers' 911 calls. But nothing in the pre-existing 911 rules or in the NG911 rules we adopt today restricts state PUCs' authority to determine whether and how regulated carriers may recover the costs of compliance. The Communications Act and our regulations require all local carriers that qualify for high-cost universal service support (i.e., Eligible Telecommunications Carriers (ETCs)) to provide their subscribers with

⁴⁵⁷ See, e.g., 47 CFR § 9.4.

⁴⁵⁸ See *supra* section III.D.

⁴⁵⁹ 47 U.S.C. §§ 151-152, 251(e)(3), 615.

⁴⁶⁰ CEA NG911 Notice Comments at 5; see also NENA NG911 Notice Comments at 15.

⁴⁶¹ 47 U.S.C. § 152(b).

⁴⁶² RLEC Coalition Alternative Proposal at 3.

⁴⁶³ See, e.g., 47 CFR pts. 32, 36, 61, 65, 69.

access to 911 as part of their basic local telecommunications service offerings,⁴⁶⁴ but these requirements do not interfere with state PUCs' authority over the rates for these local services.

162. We also reject the argument that the Commission rules improperly intrude upon state authority by regulating “the network arrangements associated with . . . purely intrastate 911 calls carried over dedicated 911 trunking.”⁴⁶⁵ This argument is unfounded because our rules do not constrain OSPs' ability to configure their own 911 network arrangements, including dedicated trunking. To the contrary, our rules specifically preserve OSPs' right to make their own decisions about the routing and network facilities they use to deliver 911 traffic to NG911 Delivery Points. Thus, an OSP could comply with any existing or new state requirements that govern the configuration or deployment of its network facilities without violating any Commission rule. There can be no preemption where there is no conflict or inconsistency between federal and state requirements.

163. Finally, some RLECs challenge the proposed NG911 rules on the grounds that the rules will impose substantial costs that effectively would compel RLECs or their regulators to raise subscribers' rates for intrastate services.⁴⁶⁶ There is no basis for this contention. As an initial matter, the RLECs ignore (or decline to dispute) the fact that they have full recourse to address such concerns at the state level, because state PUCs retain full authority to increase, decrease, or allow changes to regulated carriers' rates. More importantly, the RLECs have failed to establish that they will incur higher costs due to these rule changes or that such costs would lead to higher rates. The record in this proceeding gives us no basis for predicting with any confidence whether, and to what extent, NG911 implementation would “affect monthly or annual charges to subscribers” and whether “there [is] a range or specific dollar amount that would be newly reflected on customers' monthly bills”⁴⁶⁷ across the board. This is due in part to the very different ways RLECs are regulated (or deregulated) in various jurisdictions across the country: different state PUCs apply different statutes, regulations, and procedures that affect rate levels, and even in any individual state, various categories of carriers may be subject to different pricing requirements or policies. Moreover, our NG911 rules will affect different carriers' rates differently depending on the factual circumstances. For some carriers, any increased costs to implement one aspect

⁴⁶⁴ See, e.g., 47 U.S.C. § 214(e)(1) (“A common carrier designated as an eligible telecommunications carrier . . . shall, throughout the service area for which the designation is received[,] (A) offer the services that are supported by Federal universal service support mechanisms under section 254(c) of this title.”); 47 CFR § 54.101(a) (“Eligible voice telephony services must provide . . . access to the emergency services provided by local government or other public safety organizations, such as 911 and enhanced 911.”).

⁴⁶⁵ RTCC NG911 Notice Comments at 13.

⁴⁶⁶ See, e.g., NTCA NG911 Notice Comments at 4, 9; NTCA NG911 Notice Reply at 9-10; RLEC Coalition Jun. 17, 2024 *Ex Parte*, at 9-10.

⁴⁶⁷ *NG911 Notice* at *15, para. 38. Commenters that speculated on how the NG911 rules would affect RLECs' rates presumed that we would adopt rules as proposed in the *NG911 Notice*, but the in-state NG911 Delivery Point rule we adopt today substantially reduces any cost increases that RLECs might incur. For example, Kansas RLECs state that customer billing increases for its members, assuming \$5,000 in monthly transport costs, will range between 53 cents per month for its largest RLEC to \$38.76 per month for its smallest member RLEC. Kansas RLECs NG911 Notice Comments at 4 (rec. Aug. 9, 2023) (Kansas RLECs NG911 Notice Comments). However, these estimates were based on Kansas' proposal to “rehome[] Kansas 911 traffic to two of four disparate points outside of the state[]s plan,” including NG911 Delivery Points in California and Texas. *Id.* at 2-3. In addition, we find that other assumptions underlying these commenters' estimates do not reflect foreseeable conditions in the real world, and we thus do not find them to be credible. See, e.g., South Carolina RLECs NG911 Notice Comments at 10 & n.17 (arguing that landline carriers cannot recover 911 costs from customers); Kansas RLECs NG911 Notice Comments at 3-5 (arguing RLECs cannot recover costs, but also explaining the processes for RLECs to petition the Kansas Corporation Commission to increase rates or recover costs). While carriers may be prohibited from imposing separate per-call or per-minute charges for 911 calls, the cost of providing 911 service is part of the total cost they incur to provide local exchange service to their subscribers.

of the NG911 rules may be offset by cost savings due to some other impact of these rules. Other carriers' costs may not change at all, or change only minimally, because they have already implemented the network upgrades or other changes needed to comply with 911 Authorities' valid requests and are already transporting 911 traffic to locations outside their service areas. Finally, we believe it is unlikely that any entity's rates would increase substantially as a result of the rules we adopt today because, as discussed in the cost/benefit analysis below, we expect that any cost increase is likely to be minimal.

164. In any event, the Commission is under no obligation to protect carriers from each and every policy change that might have a collateral impact on subscribers' rates.⁴⁶⁸ As discussed below, any adverse cost impacts of our rules are likely to be far outweighed by their substantial benefits to the public. Depending on the circumstances, the same conclusion that we reach for the country as a whole may also apply to specific geographic areas served by any given RLEC. Telecommunications consumers in rural areas ought to receive the same benefits of a modernized 911 system as consumers in other parts of the country.

4. Other Challenges to the Commission's Authority are Unsound

165. *Sections 201 and 202.* We reject the argument that our NG911 rules would burden RLECs with unjust and unreasonable transport costs in violation of sections 201(b) and 202(a) of the Act.⁴⁶⁹ The provisions in those sections regarding unjust and unreasonable rates and terms⁴⁷⁰ pertain only to common carriers' interstate services, not intrastate 911 transmission services that OSPs will provide to their subscribers under these rules. There is thus no need for us to conduct a supplemental "Section 201-202 analysis" before enacting the rules.⁴⁷¹

166. *Cost responsibility.* We disagree with the argument made by the RLEC Coalition that we have no authority to cause RLECs to bear costs associated with providing NG911 service.⁴⁷² The Coalition overlooks, for example, the CVAA's authorization for us to enact "any . . . regulations" needed to "achieve reliable, interoperable communication that ensures access by individuals with disabilities to

⁴⁶⁸ See *United States Cellular Corp. v. FCC*, 254 F.3d 78, 84-85 (D.C. Cir. 2001) (holding that, where "it is the Commission's Order that requires wireless carriers to provide E911 services in the public interest," the Commission "has no obligation to compensate carriers for their costs[.]" and "it is ludicrous to suggest that government cannot pass these costs along to regulated entities.").

⁴⁶⁹ See, e.g., RTCC NG911 Notice Comments at 15 ("No showing has been made that the *NPRM*'s default cost recovery framework that would assign NG911-related transport costs to the RLECs, results in 'just and reasonable' charges as required by 47 U.S.C. § 201(b)."); NTCA NG911 Notice Reply Comments at 14; South Carolina RLECs NG911 Notice Comments at 8.

⁴⁷⁰ 47 U.S.C. § 201(b) ("All charges, practices, classifications, and regulations for and in connection with such communication service, shall be just and reasonable."); 47 U.S.C. § 202(a) ("It shall be unlawful for any common carrier to make any unjust or unreasonable discrimination in charges, practices, classifications, regulations, facilities, or services for or in connection with like communication service."); see also 47 U.S.C. § 152(b) (restricting Commission's authority over rates and terms for carriers' intrastate communications services). The Supreme Court has made clear that, while the "unjust and unreasonable" restrictions in the first proviso of section 201(b) apply only to the rates, terms and conditions of carriers' *interstate* services, not their *intrastate* services, the final proviso in section 201(b) authorizes the Commission to "prescribe such rules and regulations as may be necessary in the public interest" to carry out *any* of the provisions of the Communications Act, including those pertaining to intrastate services (such as the provisions that pertain to the *intrastate* 911 traffic at issue here). See *AT&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366, 377-81 (1999); 47 U.S.C. § 201(b).

⁴⁷¹ NTCA NG911 Notice Reply at 14 (quoting RTCC NG911 Notice Comments at 14-15).

⁴⁷² See, e.g., RLEC Coalition Alternative Proposal, Exh. 1 at 6-9.

an Internet protocol-enabled emergency network, where achievable and technically feasible.”⁴⁷³ The regulations we adopt today to advance the nationwide transition to NG911 will significantly promote and enable vital 911 access for individuals with disabilities, including through Internet-based TRS and video/data capabilities. Communications Equality Advocates supports the Commission’s proposed regulations, noting the importance of NG911 implementation to the disabled community’s access to 911, and agreeing that “ubiquitous deployment of NG911 will yield many benefits, including . . . support for transmission of texts, photos, videos, and data, all of which are essential for CEA’s constituents.”⁴⁷⁴ Thus, as this example further demonstrates, the Commission has clear statutory authority to adopt these NG911 regulations. Moreover, rural wireless carriers presented essentially the same arguments to challenge the Commission’s E911 rules, and those arguments were squarely rejected. The D.C. Circuit held that the Commission was not required to ensure that states maintained a funding mechanism to support rural wireless carriers’ provision of E911 and observed that it was “ludicrous to suggest that government cannot pass these costs along to regulated entities.”⁴⁷⁵

167. *Takings*. We disagree with the assertion of some commenters that the NG911 rules constitute a taking of property in violation of the Fifth Amendment.⁴⁷⁶ First, our rules do not represent a physical or per se taking because they do not appropriate property owned by OSPs or deny them all economically beneficial use of their property.⁴⁷⁷ They also do not represent a regulatory taking. The principal factors that courts review in determining whether a governmental regulation effects a taking are: (1) the character of the governmental action; (2) the economic impact of the regulation on the claimant; and (3) the extent to which the regulation has interfered with distinct investment-backed expectations.⁴⁷⁸ Regarding the first factor, as noted above, the rules adopted here do not appropriate any property for government use, but instead promote a significant common good by promoting life and safety and enhancing the capabilities and reliability of the nation’s 911 system.⁴⁷⁹ With respect to the second factor, a “mere diminution in the value of property, however serious, is insufficient to demonstrate a taking.”⁴⁸⁰

⁴⁷³ 47 U.S.C. § 615c(g). We note that the discussion in this *Order* and the record as a whole amply demonstrate that the regulations adopted today are “achievable and technically feasible.” *Id.* See also CEA NG911 Notice Comments at 8 (noting CVAA requirements that the Commission adopt such regulations and saying [s]uch objectives are now both achievable and technically feasible and thus should be mandated without further delay”).

⁴⁷⁴ CEA NG911 Notice Comments at 1-2, 5, 12.

⁴⁷⁵ *U.S. Cellular Corp.*, 254 F.3d at 80, 85.

⁴⁷⁶ Home Telephone NG911 Notice Comments at 21-22 (claiming the NG911 rules would “arbitrarily ‘take’ from RLECs” and “force RLECs to purchase services that it [sic] is then required to provide for free to a governmental entity”). The Takings Clause states: “nor shall private property be taken for public use, without just compensation.” U.S. Const. amend. V.

⁴⁷⁷ See, e.g., *Horne v. Dep’t. of Agric.*, 576 U.S. 350, 352, 359-61 (2015) (stating that per se takings implicated when the government appropriates real or personal property for its own use); *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1019 (1992) (stating that a real property owner “has suffered a taking” if he “has been called upon to sacrifice all economically beneficial uses in the name of the common good, that is, to leave his property economically idle”).

⁴⁷⁸ *Penn Cent. Transp. Co. v. City of New York*, 438 U.S. 104, 124-25 (1978).

⁴⁷⁹ *Penn Cent. Transp. Co.*, 438 U.S. at 124 (stating that, as to the first factor, a taking “may more readily be found when the interference with property can be characterized as a physical invasion by government . . . than when interference arises from some public program adjusting the benefits and burdens of economic life to promote the common good”) (citation omitted).

⁴⁸⁰ *Concrete Pipe & Prods. of Cal., Inc. v. Constr. Laborers Pension Tr. for S. Cal.*, 508 U.S. 602, 645 (1993); see also *A&D Auto Sales, Inc. v. United States*, 748 F.3d 1142, 1157 (Fed. Cir. 2014) (“In order to establish a regulatory taking, a plaintiff must show that his property suffered a diminution in value or a deprivation of economically beneficial use. . . . ‘[I]f the regulatory action is not shown to have had a negative economic impact on the

(continued....)

Nor will our rules interfere with reasonable investment-backed expectations under the third factor. OSPs' networks have long been subject to Commission 911-related regulations, including analogous requirements to transmit 911 calls in specified formats to locations designated by 911 Authorities.⁴⁸¹ The Supreme Court has recognized that, for property that has "long been subject to federal regulation," there is no "reasonable basis to expect" that the regulatory regime will not change,⁴⁸² and the D.C. Circuit has held that the Commission may properly require OSPs to incur the costs of providing 911 service without ensuring them compensation.⁴⁸³ Particularly in light of "the heavy burden placed upon one alleging a regulatory taking," we find no basis to find a regulatory taking on the record here.⁴⁸⁴

168. *Liability.* We disagree with some commenters' claims that the NG911 rules will unreasonably expose RLECs to significantly greater liability risks, and hence unjustified costs. RLEC commenters express concern that they will face increased liability costs for 911 call failures occurring within the networks of the third-party transport services they will retain to deliver 911 calls beyond their service areas, "particularly to distant, out-of-state interconnection points."⁴⁸⁵ As discussed above, the home-state qualification addresses the concern that RLECs could face liability under out-of-state tort law. More fundamentally, RLECs have failed to provide any record support for their purported tort liability concerns. State statutes generally grant liability protections to parties involved in transmitting and responding to 911 calls, including not only OSPs but also their third-party vendors, and federal law guarantees parity in liability protection within the state for all OSPs.⁴⁸⁶ To illustrate, the South Carolina RLECs characterize their state's statute as providing "broad immunity from liability," and indicate the statute's protections extend to the "officers, employees, assigns, [and] agents" of an OSP.⁴⁸⁷ Against this backdrop, no commenter has identified any instance of a state court judgment in which an OSP has been held liable under tort law for failing to deliver 911 calls.

169. Even assuming there is some increased risk of liability, RLECs may mitigate that risk by more closely monitoring their vendors' network performance or by increasing their insurance coverage, as

(Continued from previous page) _____
[plaintiffs] property, there is no regulatory taking." (quoting *Hendler v. United States*, 175 F.3d 1374, 1385 (Fed. Cir. 1999)).

⁴⁸¹ See, e.g., 47 CFR §§ 9.10(i)(2)(ii)(G), 9.11, 9.14 (E911 provisions requiring transmission of the caller's location and phone number); *id.* §§ 9.4, 9.5 (requiring all telecommunications carriers to "transmit all 911 calls to a PSAP, to a designated statewide default answering point, or to an appropriate local emergency authority as set forth in § 9.5").

⁴⁸² *Concrete Pipe & Prods.*, 508 U.S. at 645-46 (discussing degree of interference with "reasonable investment-backed expectations" and noting that "those who do business in the regulated field cannot object if the legislative scheme is buttressed by subsequent amendments to achieve the legislative end" (quoting *FHA v. Darlington, Inc.*, 358 U.S. 84, 91 (1958))).

⁴⁸³ *U.S. Cellular Corp.*, 254 F.3d at 85.

⁴⁸⁴ *Keystone Bituminous Coal Ass'n v. DeBenedictis*, 480 U.S. 470, 493 (1987).

⁴⁸⁵ South Carolina RLECs NG911 Notice Comments at 14-16; see also, e.g., NTCA NG911 Notice Comments at 4-8 (IP 911 call delivery poses risks for OSP call delivery by too widely expanding the use of third-party networks); Windstream NG911 Notice Reply at 2-3; Home Telephone NG911 Notice Comments at 16-18; RLEC Coalition Mar. 6, 2024 *Ex Parte* at 7; South Carolina RLECs Jun. 20, 2024 *Ex Parte*, at 5-6.

⁴⁸⁶ 47 U.S.C. § 615a(a).

⁴⁸⁷ South Carolina RLECs NG911 Notice comments at 14-16 (discussing S.C. Code Ann. § 23-47-70(A)). We do not offer our own legal interpretation of the South Carolina statute, nor will we state that liability for a third party's actions or inactions can never lead to liability, as some commenters request. We note, however, that no commenter explains why an OSP's transport services provider, as the OSP's agent, would not be covered by such liability protection provisions.

one commenter suggests.⁴⁸⁸ Commenters do not provide estimates of the costs of these mitigation measures, however, much less demonstrate that these costs would be significant. And as discussed above, if an RLEC faces increased exposure to liability for dropped 911 calls, it may seek authorization from its state PUC to recover these costs in the same manner as other incremental cost increases resulting from its implementation of NG911.

170. Most importantly, the implementation of NG911 is far more likely to reduce the risk of dropped 911 calls than to increase it. OSPs that make the necessary changes to fully implement NG911 will be able to leverage improvements to 911 security and reliability, including the ability to reroute 911 calls in response to network congestion or outages. Indeed, OSPs may face greater exposure to liability due to the risk of dropped 911 calls if they fail to implement NG911 in a timely and prudent manner as the NG911 rules require. Finally, certain commenters suggest that we should apply 911 network reliability and PSAP outage notification requirements to additional categories of service providers in an NG911 environment.⁴⁸⁹ We defer consideration of such issues to a future proceeding.

F. Other Proposals

171. Several commenters raised additional issues or proposals in response to the *NG911 Notice*. We discuss each of these issues or proposals in turn below.

172. *Interoperability*. Some commenters suggest that we take additional action in this proceeding with respect to NG911 interoperability. APCO proposes that in addition to focusing on the delivery of 911 traffic by OSPs, the Commission should take the “next step toward achieving public safety’s vision for NG9-1-1” by initiating a further notice of proposed rulemaking to address “interoperability requirements for 9-1-1 service providers and other elements of the emergency communications chain.”⁴⁹⁰ Texas 9-1-1 Entities propose that “separate from this NPRM, the Commission should consider a notice of inquiry regarding interoperability between NG911 service providers, with emphasis on 911 call transfers between ESInets and within ESInets.”⁴⁹¹ Google and NENA urge us to consider the implementation of new interoperable messaging protocols.⁴⁹² Because these proposals are beyond the scope of this proceeding, we decline to address them here. However, we agree with these commenters that facilitating interoperability between 911 service providers and in all portions of the NG911 emergency communications chain are important goals that warrant further scrutiny. We therefore encourage 911 Authorities, NG911 service providers, and OSPs to support conformance and compliance testing, functional testing of network connections between NG911 systems, appropriate business and policy implementation, and continued standards development.

173. *Cybersecurity and Privacy*. In its comments to the *NG911 Notice*, the Electronic Privacy Information Center (EPIC) suggests that the Commission adopt additional cybersecurity and privacy

⁴⁸⁸ Home Telephone NG911 Notice Comments at 17 & n.9.

⁴⁸⁹ See, e.g., Windstream NG911 Notice Reply at 2-3 (NG911 traffic aggregators should be subject to the Commission’s rules relating to disruption notification requirements, which currently apply to OSPs); Home Telephone NG911 Notice Comments at iii, 13 & n.6; see also NTCA NG911 Notice Reply at 7-8.

⁴⁹⁰ APCO Apr. 18, 2024 *Ex Parte* at 2. APCO previously urged the Commission to require interoperability between OSPs and NG911 service providers as part of the current proceeding. APCO NG911 Notice Comments at 2-4. However, in its latest ex parte, APCO expresses support for moving forward with the OSP requirements that the Commission proposed in the *NG911 Notice*. APCO Apr. 18, 2024 *Ex Parte* at 1.

⁴⁹¹ Texas 9-1-1 Entities NG911 Notice Reply at 17.

⁴⁹² Google NG911 Notice Comments at 9-11; NENA NG911 Notice Reply at 9-10.

measures in this proceeding.⁴⁹³ We believe it is premature to consider additional measures at this time, but we will continue to monitor the implementation of cybersecurity measures in NG911 networks. We also note that the Commission has previously adopted privacy protections for personal information used to support 911, and that these protections will continue to protect the privacy of such information in the NG911 environment.⁴⁹⁴ We encourage 911 Authorities, NG911 service providers, and OSPs to take steps that support the security, and specifically the cybersecurity, of these systems during the transition to NG911. In particular, we encourage OSPs and 911 Authorities to implement the cybersecurity recommendations and best practices put forward by TFOPA and CSRIC VII. Both TFOPA and CSRIC VII recommended adherence to the recognized and widely adopted approach to cyber defense detailed in the National Institute of Standards and Technology (NIST) Cybersecurity Framework (NCF).⁴⁹⁵ CSRIC VII also recommended that 911 Authorities implement specific cybersecurity mitigation techniques, including: continuous cyber monitoring, regular vulnerability assessments, minimum backups, a written cyber response plan, cyber-hygiene training, and other techniques.⁴⁹⁶ Finally, we encourage 911 Authorities, NG911 service providers, and OSPs to leverage resources made available by other federal agencies, most notably CISA, to foster and enhance public safety cybersecurity.⁴⁹⁷

174. *Over-the-Top Services.* NENA asks the Commission to consider extending some requirements for NG911 to over-the-top messaging services, which “provide robust multimedia capabilities and would enhance NG9-1-1 availability to individuals regardless of their underlying telecommunications/internet provider.”⁴⁹⁸ Because the Commission only considered requirements for OSPs in the *NG911 Notice*, the role of providers of over-the-top services is outside the scope of this proceeding, as NENA acknowledges,⁴⁹⁹ and we therefore decline to consider this request at this time.

175. *Additional Accessibility Proposals.* Several parties urge the Commission to expand this proceeding to consider NG911 accessibility issues beyond the scope of the proposals in the *NG911 Notice*. CEA encourages the Commission to seek further comment on requiring that “NG911 systems be capable of handling text, data, and video communications that are accessible to members of the Deaf, Deaf Disabled, DeafBlind, Hard of Hearing, and Late-Deafened communities.”⁵⁰⁰ Hamilton Relay

⁴⁹³ EPIC NG911 Notice Comments at 3 (stating that the Commission “should require improved cybersecurity practices, assessed as part of a readiness determination,” and provide guidelines for the collection and use of NG911 data).

⁴⁹⁴ *LBR Order* at *35, para. 102; *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Fifth Report and Order and Fifth Further Notice of Proposed Rulemaking, 34 FCC Rcd 11592, 11614-16, paras. 49-52 (2019), corrected by Erratum (PSHSB Jan. 15, 2020).

⁴⁹⁵ TFOPA Optimal Cyber Security Approach for PSAPs Supplemental Report at 24-25; CSRIC VII Report on 911 Security Risks and Best Practices for Mitigation at 25.

⁴⁹⁶ CSRIC VII, Report Measuring Risk Magnitude and Remediation Costs in 9-1-1 and Next Generation 9-1-1 (NG911) Networks at 25-27 (Mar. 10, 2021), <https://www.fcc.gov/file/20607/download> (CSRIC VII 911 Risk and Remediation Report).

CSRIC VII Report on 911 Security Risks and Best Practices for Mitigation at 82.

⁴⁹⁷ See, e.g., Cybersecurity & Infrastructure Security Agency, *911 Cybersecurity Resource Hub*, <https://www.cisa.gov/911-cybersecurity-resource-hub> (last visited Apr. 11, 2024).

⁴⁹⁸ NENA NG911 Notice Comments at 6; see also APCO Oct. 31, 2023 *Ex Parte* at 3 (“[W]e discussed the value of engaging with companies that provide over-the-top solutions that enable the receipt, processing, and sharing of ‘Next Generation’ data such as multimedia communications from 9-1-1 callers to ECCs.”)

⁴⁹⁹ NENA NG911 Notice Comments at 6 (acknowledging that the request is “far afield of the Commission’s current scope under this proceeding”).

⁵⁰⁰ CEA NG911 Notice Comments at 11-12.

requests that the Commission adopt a 2019 proposal that would require IP CTS providers transmitting 911 calls to provide a call-back telephone number while also ensuring that the user receives captions on the callback.⁵⁰¹ Richard Ray requests that the FCC collaborate with the Federal Emergency Management Agency, the U.S. Department of Transportation's National 911 Program, and the U.S. Department of Justice to implement Next Generation 911 features that will "ensure effective communication with individuals with disabilities in NG9-1-1 environments."⁵⁰² Because these proposals are beyond the scope of this proceeding, we decline to address them here. However, we will continue to monitor the development of NG911 systems and technologies and are prepared to take steps as necessary to ensure that NG911 is fully accessible to all.

G. Benefits and Costs

176. We find that the benefits of the rules we adopt today will overwhelmingly exceed the costs. As discussed below, we have extensive evidence that supports this conclusion, and we reject parties' unsupported arguments to the contrary. We estimate that today's rules will generate substantial improvements in the efficiency and reliability of the 911 public safety response system that will likely result in a reduction of mortality risk equivalent to saving over 16,800 lives per year after the end of the fifth year following the effective date of this *Order*.⁵⁰³ As a result, we estimate that the rules will save more than 84,000 lives within a ten-year period after the effective date of the rules, conservatively

⁵⁰¹ Hamilton Relay NG911 Notice Comments at 2-3 n.4; *see also Misuse of Internet Protocol (IP) Captioned Telephone Service; Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, CG Docket Nos. 13-24 and 03-123, Report and Order, Further Notice of Proposed Rulemaking, and Order, 34 FCC Rcd 691, 710, para. 38 (2019) (setting forth the 2019 Commission proposal referenced by Hamilton Relay).

⁵⁰² Filing from Richard Ray, PS Docket No. 21-479, at 3, 7-8 (Sept. 15, 2023) (Richard Ray Sept. 15, 2023 *Ex Parte*). These recommendations include, for example, that the Department of Justice update its Americans with Disabilities Act regulations to require public entities, including 911 services, to communicate with persons with disabilities using direct Synchronous Communication and equally effective Telecommunication Technologies. *Id.* at 3. Richard Ray also states that in 2011, the Commission established an Emergency Access Advisory Committee (EAAC) as required by the CVAA, which recommended that Media Communication Line Services (MCLS) become a nationally recognized certified standard service in NG911 environments. *Id.* at 7-8 ("MCLS is a translation service for people with disabilities and telecommunicators using video, voice, text, and data during NG9-1-1 calls."); *see also* FCC, Emergency Access Advisory Committee (EAAC) Working Group 3 Recommendations on Current 9-1-1 and Next Generation 9-1-1: Media Communication Line Services Used to Ensure Effective Communication with Callers with Disabilities at 4-5, 12 (2013), <https://docs.fcc.gov/public/attachments/DOC-319394A1.pdf>.

⁵⁰³ These benefits are based on an extremely conservative assumption that the benefits resulting from this *Order* will not begin to accrue until the end of the fifth year after the effective date, even though benefits actually will likely start to accrue sooner. We estimate that, nationwide, both NG911 transition phases will be complete within five years, due in significant part to the provisions of this *Order* that remove obstacles to completion of the transition, but this estimate is quite conservative because the full transition will likely be completed sooner in many states and regions. Consistently, several 911 Authorities indicate that they have already completed all or parts of the necessary NG911 technology acquisition on their end for Phase 1 readiness or beyond; the six-month and one-year deadlines that we adopt for OSPs to satisfy these entities' Valid Requests will enable these entities (as well as the OSPs and PSAPs that serve their citizens) to complete the NG911 transition significantly more quickly than the five-year benchmark on which we base our estimates of the benefits resulting from this *Order*. Minnesota DPS-ECN NG911 Notice Comments at 2; Livingston County Parish NG911 Notice Comments at 1-2; Letter from Susan C. Ornstein, Senior Director, Legal & Regulatory Affairs, Comtech, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, Attach. at 2 (filed Mar. 25, 2024) (Comtech March 25, 2024 *Ex Parte*); *see also* Intrado Mar. 26, 2024 *Ex Parte*, at 3 (estimating that the NG911 transition could be completed within three to five years).

estimating that most benefits will begin to accrue at the end of the fifth year.⁵⁰⁴ In addition, these improvements will likely reduce nonfatal injuries and property damage by even larger amounts that we have not attempted to quantify.

177. By contrast, applying conservative assumptions, we estimate that OSPs will incur total costs of no more than \$321 million over the same ten-year period to implement the rules. These expenditures would be fully justified even if they resulted in reducing mortality risks equivalent to preventing the loss of only 26 lives.⁵⁰⁵ This cost estimate at the nationwide aggregate level is based on an assessment that the cost to OSPs of implementing Phase 1 will be approximately \$4.4 million in total one-time non-recurring costs and no more than \$5.5 million in annual recurring costs, and that OSPs will incur non-recurring one-time costs of approximately \$24 million and approximately \$50 million per year to implement Phase 2 requirements, for a total net present value of \$321 million over a ten-year period to implement the rules required for both phases. Taking into account these estimated benefits and costs, it is evident that the benefits far exceed the costs. We discuss each of these findings below.

1. Benefits

178. Evidence in the record strongly supports our tentative conclusion in the *NG911 Notice* that the benefits of accelerating the overall NG911 transition will include real-time call routing flexibility, faster call delivery, and improved service reliability.⁵⁰⁶ For example, data from Indiana confirm that 911 calls have been delivered substantially more quickly following Indiana's initial deployment of NG911.⁵⁰⁷ Further, we find APCO's observation that NG911 implementation will greatly improve neighboring PSAPs' ability to transfer calls to one another and improve interoperability to be highly credible.⁵⁰⁸ Likewise, NENA, APCO, and Peninsula Fiber Network demonstrate that legacy PSAP call transfers are slow and cumbersome and that the improvements to this process resulting from NG911 will be

⁵⁰⁴ We estimate the ten-year benefit of reducing the mortality risk to be around \$617 billion (including \$616 billion from faster emergency medical responses and \$840 million from reduction in call failures) using a 7% discount rate, or \$834 billion using a 3% discount rate for ten years following past Orders. *See, e.g., Implementation of the National Suicide Hotline Improvement Act of 2018*, WC Docket No. 18-336, Report and Order, 35 FCC Rcd 7373, 7416-17, para. 75 & n.332 (2020) (estimating the present value of benefits over ten years using a 7% discount rate).

⁵⁰⁵ *See infra* section III.G.2.

⁵⁰⁶ *See, e.g., NG911 Notice* at *25, para. 65; Comtech NG911 Public Notice Reply at 4 (rec. Feb. 3, 2022) (stating the "incredible benefits" of NG911 systems include "real-time call routing flexibility, faster call delivery, additional data for improved situational awareness, capabilities such as integrated text messages (and other multi-media messages soon), and significantly improved service reliability"); BRETSA NG911 Public Notice Reply at 4-7 (rec. Feb. 3, 2022) (detailing benefits including conferencing-in telephone or video relay and language interpretation services during 911 call setup, interstate 911 call transfer and CAD incident data transfer, geospatial routing, and transfer of CAD data with call transfer); NTCA NG911 Public Notice Comments at 2 (rec. Jan. 19, 2022) (indicating that NG911 will provide increased situational awareness to first responders, which will benefit rural consumers).

⁵⁰⁷ National 911 Program, *NG911 for Fire Service Leaders* at 9 (undated), https://www.911.gov/assets/National_911_Program_NG911_Guide_for_Fire_Service_Leaders.pdf (*NG911 for Fire Service Leaders*) ("The year before Indiana began the transition to NG911, a citizen dialing 911 waited 23 to 27 seconds for the call to be routed to a 911 operator. With NG911, that's now less than three seconds.").

⁵⁰⁸ APCO, *APCO International's Definitive Guide to Next Generation 9-1-1* at 33-34 (2022), https://www.apcointl.org/ext/pages/APCOng911Guide/APCO_NG911_Report_Final.pdf (*APCO NG911 Guide*) ("NG9-1-1 technology will make marked improvements in the ability and ease of transferring information between ECCs and responders in the field. . . . Not only will ECCs be capable of transferring CAD and 9-1-1 information to other ECCs, but they will also be capable of sending that information to multiple agencies, regardless of jurisdictional boundaries.").

significant.⁵⁰⁹ The use of NG911 features to transfer and share incident information seamlessly and in real time will not only reduce response times, but it also will improve the quality of response by ensuring that the right assets are dispatched as quickly as possible once the need for them is identified. Currently, emergency responses are typically “upgraded” (i.e., public safety resources are added or the level of priority is increased) only after the first unit arrives on the scene. If an incident requires action by multiple PSAPs and/or emergency response agencies, then all the information (including caller and incident specifics) must be coordinated among these PSAPs and emergency responders by telephone, radio, and/or mobile data terminals. The ability to use NG911 features to share that information more quickly and accurately through immediate transfers, rather than through a chain of intermediate communications methods, will substantially improve response quality and outcomes. No commenter argues that the NG911 transition will not result in substantial overall benefits.

179. These benefits are confirmed by numerous commenting parties. For example, Rally Networks states that “[r]ural communities will receive significant benefits from the transition” because, “[i]n a rural community, it takes longer for emergency responders to arrive on scene and evaluate and request the additional emergency response resources that may be required,” and “NG911 provides an opportunity for resources to be more appropriately dispatched before first responders arrive on scene and evaluate the need.”⁵¹⁰ Comtech agrees that the enormous technology benefits of NG911 will “dramatically improve emergency response.”⁵¹¹ Brian Rosen states that interconnected ESInets enable call transfers beyond local areas, and allow the transfer of “much richer data” than in a legacy environment.⁵¹²

180. We estimate the public safety benefits based on three types of impacts of the accelerated NG911 implementation that likely will result from the rules we adopt today: (1) increased network reliability and resiliency, which will reduce the number of dropped 911 calls; (2) more efficient routing and delivery of 911 calls as a result of introducing new policy routing capabilities; and (3) improvements in the delivery of location information with 911 calls. We also note that additional benefits (or avoided costs) will be realized by 911 Authorities, PSAPs, and some OSPs due to retiring legacy 911 network facilities that are costly to operate.

181. *Network Reliability and Resiliency.* The record confirms our tentative conclusion in the *NG911 Notice* that the NG911 transition will improve the reliability of the 911 system, and thus improve public safety. Accelerating the implementation of NG911 will reduce the likelihood of 911 service outages because it will facilitate deployment of new facilities to replace the aging and failure-prone infrastructure used to operate the legacy 911 system.⁵¹³ NASNA reports that a recent study of California

⁵⁰⁹ NENA LBR Public Notice Comments at 4, 11 (rec. July 11, 2022) (NENA LBR Public Notice Comments) (saying “the general anecdotal consensus was that a call transfer typically takes ‘about a minute,’” and NG911 Policy Routing Functions avoid the need for a transfer because they “evaluate[] various conditions and *may* make a Policy Routing decision that supplements or overrides an LBR query [] [d]epending on conditions and Policy Routing rules”); APCO LBR Public Notice Comments at 2-3 (rec. July 11, 2022) (transfers take “a minute or longer,” and “NG9-1-1 needs to mean the ability of ECCs to . . . share incident data in a fully interoperable manner”); Peninsula Fiber Network LBR Public Notice Comments at 1 (rec. July 8, 2022) (“Each transfer takes between 15 to 90 seconds to set up and complete.”); *see also NG911 for Fire Service Leaders* (“NG911 will improve response times when calls are transferred from other referring agencies, because a caller’s location is automatically matched to the appropriate 911 call center, or public safety answering point (PSAP), serving that area—limiting delays and misdirected calls.”).

⁵¹⁰ Rally Networks NG911 Notice Comments at 1.

⁵¹¹ Comtech NG911 Notice Comments at 1 (quoting Press Release, FCC, FCC Chairwoman Proposes Plan for Next Gen 911, 2022 WL 565819 (Feb. 22, 2022), <https://docs.fcc.gov/public/attachments/DOC-380566A1.pdf>).

⁵¹² Brian Rosen NG911 Notice Comments at 3-4.

⁵¹³ *See, e.g., NG911 Notice* at *26, para. 67.

911 calls showed that “[i]n 2017[,] the average number of minutes of outage was 17,000 minutes per month, but in 2022 the average increased to over 59,000 outage minutes per month.”⁵¹⁴ NASNA states that legacy 911 call routing and network infrastructure “is beyond end-of-life and has an increasing failure rate.”⁵¹⁵ Intrado confirms that establishing direct OSP connectivity via SIP to ESInets “will materially reduce the number of 911 outages through improved network reliability and availability.”⁵¹⁶ Comtech agrees that full implementation of NG911 will eliminate the need for maintaining both legacy and IP-based systems for the delivery of 911 traffic, which involves significant costs and creates “increased vulnerability and risk of 911 outages.”⁵¹⁷

182. The Commission has previously observed that an aging legacy 911 system is prone to increasing failures.⁵¹⁸ Today’s rules will accelerate the full retirement of the legacy TDM-based 911 system and facilitate use of an NG911 architecture that uses newer and less failure-prone facilities. Selective routers will be replaced with NGCS IP routing at the ESInet, ALI/ANI databases will be replaced with IP-based systems with more precise location information, TDM trunks will be replaced with IP transmission to provide faster connections, and traffic will be routed to more reliable and efficient IP-based NG911 Delivery Points. Migrating 911 call traffic from aging legacy infrastructure to newer IP infrastructure creates a reliability benefit of traffic delivery by newer and more recently built facilities.⁵¹⁹ Furthermore, the more extensive use of IP routing in the Phase 2 architecture is inherently more reliable than legacy TDM selective routing because of the greater capability of IP traffic to be dynamically re-routed among various available paths.⁵²⁰

⁵¹⁴ NASNA LBR Notice Comments at 7-8 (Feb. 16, 2023) (NASNA LBR Notice Comments); *NG911 Notice* at *26, para. 67 (noting the California data cited by NASNA).

⁵¹⁵ NASNA LBR Notice Comments at 7; *NG911 Notice* at *26, para. 67.

⁵¹⁶ Intrado Oct. 24, 2023 *Ex Parte* at 1; *see also* Intrado Mar. 26, 2024 *Ex Parte* at 1 (“NG911 materially reduces the number of 911 outages by improving network availability and reliability as IP allows for greater redundancy. It provides greater geodiversity for PSAPs – no longer will there be a single point of failure at a selective router. It also increases the speed of delivery for location information because location information is part of Emergency Services IP Network (ESInet) design and adds the ability for secure VPN, encryption, and certification.”); iCERT NG911 Notice Comments at 1 (confirming that the transition to NG911 will provide greater 911 system resilience).

⁵¹⁷ Comtech NG911 Notice Reply at 4 (quoting MSCI NG911 Notice Comments at 2 and *NG911 Notice* at *1, para. 1).

⁵¹⁸ *See, e.g., Improving 911 Reliability Order*, 28 FCC Rcd at 17477, para. 2 (stating “the unanticipated ‘derecho’ storm in June 2012,” which left millions of Americans without 911 service, “reveal[ed] significant, but avoidable, vulnerabilities in 911 network architecture, maintenance, and operation”); *see also* NASNA LBR Notice Comments at 7 (“The transition to NG911 is no longer a choice; legacy 911 call routing and legacy network infrastructure is beyond end-of-life and has an increasing failure rate.”); Minnesota DPS-ECN NG911 Public Notice Comments at 1 (stating that “the LSRs [legacy selective routers] are end-of-service, end-of-life and starting to fail”); Texas 9-1-1 Entities NG911 Public Notice Reply at 4 (rec. Feb. 3, 2022). *See generally* *NG911 Notice* at *26, para. 67 (“The proposed actions will move 911 calls off of the aging legacy 911 system that commenters indicate is increasingly unreliable, thus improving public safety.”).

⁵¹⁹ *See, e.g., APCO, Broadband Implications for the PSAP: Analyzing the Future of Emergency Communications* at 52 (2017), <https://www.apcointl.org/~documents/report/p43-report-broadband-implications-for-the-psap?layout=default> (*APCO Broadband Implications for the PSAP*) (“In a next generation environment, PSAPs can transition premises-based call handling to distributed systems using ESInet connectivity to establish a robust and unified system among numerous PSAPs. This configuration enables a higher level of reliability by placing core systems at redundant hosted locations to protect operational continuity from local outages to large-scale disasters.”).

⁵²⁰ *Improving 911 Reliability; Reliability and Continuity of Communications Networks, Including Broadband Technologies*, PS Docket Nos. 13-75 and 11-60, Order on Reconsideration, 30 FCC Rcd 8650, 8656, para. 15 (2015).

183. *NG911 IP Policy Routing Capabilities.* The implementation of NG911 will facilitate greater use of policy routing—i.e., systems that enable calls to be diverted automatically from their default routing paths to alternative paths for dynamic reasons, such as congestion or call volume surges.⁵²¹ In the 911 context, policy routing can also be used to implement failover plans so that calls can be directed to alternative PSAPs in instances when temporary surges in call volumes exceed the capability of 911 telecommunicators at the default PSAPs.⁵²² Policy routing thus can be used to enable the best situated PSAPs to receive calls and direct emergency responses.⁵²³

184. We find that the improved policy routing that NG911 makes possible will result in substantial improvements over legacy TDM selective routers, which will reduce 911 call failures and save lives. NG911 architecture provides far more routing options than legacy TDM because IP traffic is not constrained by the location of the caller or the PSAP that serves the caller.⁵²⁴ In legacy 911 networks, selective routers must be relatively close to the PSAPs they serve, whereas in NG911, traffic can be easily rerouted to servers and locations outside the affected area, providing more resiliency and redundancy in disaster situations.⁵²⁵ APCO has observed that IP-based NG911 systems' policy routing functions will significantly improve local authorities' emergency response capabilities.⁵²⁶ Mission Critical Partners states that Phase 2 NG911 will improve the reliability of 911 call routing,⁵²⁷ further facilitating interoperability between ESNets and allowing for the retirement of legacy network elements. First, NG911 facilitates more precise routing than legacy selective routers using ALI/ANI location information because NG911 systems can implement “geospatial routing” and update GIS data more frequently than legacy location databases.⁵²⁸

185. Furthermore, as NENA explains, NG911 policy routing rules facilitate automated “mutual aid agreements” between PSAPs that allow intelligent call diversion processes for 911 calls to be

⁵²¹ NENA, NENA NG9-1-1 Policy Routing Rules Operations Guide (NENA-INF-011.2-2020) at 9-10 (2020), https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/nena-inf-011.2-2020_ng_prr_o.pdf (NENA NG911 Policy Routing Guide); Comtech LBR Public Notice Comments at 9-10 (rec. July 11, 2022) (Comtech LBR Public Notice Comments) (“NG911 systems have flexible policies with granular control for delivering 911 calls to a PSAP (i.e., alternate routing).”).

⁵²² NENA NG911 Policy Routing Guide at 2 (PSAP call diversion can ensure 911 calls are answered during “significant spikes for incoming 9-1-1 calls due to a large-scale disaster.”).

⁵²³ *Id.* (Policy routing allows calls to be automatically re-routed to different PSAPs based on, e.g., “when a PSAP needs to be evacuated for an environmental building issue (e.g., odor of smoke in the building). . . . The legacy method of diverting calls is a less flexible capability than what is envisioned in NG9-1-1. The ability to enable a multi-layered call treatment policy for call diversion within NG9-1-1 using Policy Routing Rules (PRRs) provides more options to a PSAP to institute consideration of multiple conditions (e.g., policies), with greater flexibility, and to adjust the call diversion policies on a near real-time basis when needed.”).

⁵²⁴ NG911 NOI, 25 FCC Rcd at 17879-81, paras. 26, 29.

⁵²⁵ *Id.*

⁵²⁶ See, e.g., APCO NG911 Guide at 11 (“NG9-1-1 will facilitate the dynamic routing of emergency service requests to alternate ECCs based on a variety of factors. For example, ECCs could establish an overflow condition in which a maximum capacity of requests has been reached, a wait time threshold for answer or hold has been met, or during an outage or damage to an ECC’s operational capability.”); APCO Broadband Implications for the PSAP at 51 (“In an IP environment, however, calls can be rerouted quickly and easily based upon established call handling system capabilities in conjunction with policies that are designed to distribute call loads efficiently and effectively across numerous PSAPs as desired by the 9-1-1 authority.”).

⁵²⁷ Mission Critical Partners NG911 Notice Comments at 6.

⁵²⁸ LBR Notice, 37 FCC Rcd at 15202, para. 48 & n.130 (citing Comtech LBR Public Notice Comments at 9).

re-directed or redistributed among PSAPs based on outages, maintenance, or other emergencies.⁵²⁹ NG911 policy routing also “provides more options to a PSAP to institute consideration of multiple conditions (e.g., policies), with greater flexibility, and to adjust the call diversion policies on a near real-time basis . . . to address a wide range of operational situations to ensure 9-1-1 calls are delivered to a PSAP that can provide assistance consistent with established mutual aid agreements.”⁵³⁰ NG911 thus will “help jurisdictions realize . . . enhanced policy routing functions,” which “flexibly route[] calls to PSAPs based on variables such as call volume, available telecommunicator resources, or the need for specialized response to particular emergencies.”⁵³¹ Those “specialized responses” could include advanced automatic policy routing directives to send certain 911 calls straight to call handlers with American Sign Language expertise, foreign language skills, or real-time text capabilities, which would dramatically reduce the response times to many 911 calls.⁵³²

186. *Improved Delivery of Caller Location Information.* In NG911 systems, the legacy ALI/ANI caller location technology will be replaced with IP-based LVF and LIS for the verification of customer records and delivery of caller location information to PSAPs. This will facilitate full use of the functional elements of NG911, which can deliver higher-quality actionable information to PSAPs than legacy ALI/ANI databases, even after CMRS providers finish implementing location-based routing under existing rules.⁵³³ Mission Critical Partners states that full NG911 will reduce location delivery failures because it is more reliable than the current legacy system dependent on ALI data.⁵³⁴ MSCI argues that

⁵²⁹ *NENA Policy Routing Guide* at 2 (“PSAPs sometimes establish mutual aid agreements (or Inter-Agency agreements) with other jurisdictions to take calls under certain conditions when the PSAP is unable to take calls. These mutual aid agreements vary in nature but often cover pre-planned conditions (e.g., scheduled equipment maintenance windows, or after-hours coverage for a smaller PSAP where normal staffing levels are reduced). Many outage conditions, however, are unscheduled and are due to unforeseen equipment breakdowns and network outages, significant spikes for incoming 9-1-1 calls due to a large-scale disaster, or when a PSAP needs to be evacuated for an environmental building issue (e.g., odor of smoke in the building). When the calls originally meant for one PSAP need to be sent to another PSAP, Call Diversion is the generally adopted term for this conditional situation.”).

⁵³⁰ *Id.* at 2-3. Even during transitional NG911 phases, Legacy PSAP Gateways will be able to automatically notify the NGCS Policy Routing Function if the PSAP becomes unavailable, allowing for instant re-routing of 911 calls and texts to avoid network disruptions. *Id.* at 25-26 (“In the transition period, a legacy PSAP would be connected to the NGCS/ESInet via a Legacy PSAP Gateway (LPG). The LPG would, by definition, provide ‘State’ to the PRF [Policy Routing Function] of the NGCS and thus could implement some basic PRRs [Policy Routing Rules]. One of the PRRs a PRF could implement for a legacy PSAP would be to know the availability of a PSAP (by using SIP OPTIONS message to determine if a PSAP was reachable). Knowing if a PSAP is reachable would allow the PRF to make a routing decision on whether to send Calls to the legacy PSAP.”).

⁵³¹ *LBR Notice*, 37 FCC Red at 15202, para. 48 & n.130-31 (citing Comtech LBR Public Notice Comments at 9-10); NENA LBR Public Notice Comments at 11-12.

⁵³² NENA LBR Public Notice Comments at 11-12 (“For example, the Policy Routing Function could determine that the call only supports American Sign Language over video, and based on this information the system can make an informed routing decision that better accommodates the caller. This could drastically reduce the time involved in handling calls from the deaf and hard of hearing. Policy Routing decisions could be made based on other factors. Calls can be routed to a telecommunicator who understands the caller’s native language; a call may signal that the speaker prefers Spanish, but understands English, and make a routing decision based on that. RTT calls may be routed to a call queue dedicated to RTT, reducing call handling time.”).

⁵³³ See Mission Critical NG911 Notice Comments at 6; Motorola LBR Notice Reply at 2; see generally *LBR Order*.

⁵³⁴ Mission Critical Partners NG911 Notice Comments at 6 (“Currently, MCP has observed most ESInet to ESInet transfers are using transitional methods which require both systems to maintain duplicate legacy ALI records. The use of legacy methods along with interim, transitional, and/or proprietary interface protocols can create uncertainty When the solution is migrated to full NG911 using SIP with routing and location information, it is more reliable than the present workaround . . . and it eliminates the need to maintain legacy ALI records.”).

the NG911 IP caller location delivery systems will standardize location information delivery, improving PSAP use of caller location data over the legacy ALI/ANI system.⁵³⁵

187. Additionally, the location data transmitted via IP features such as LIS databases will enable PSAPs and other public safety agencies to utilize GIS technology more extensively to give emergency responders the capacity to visually map caller locations for more precise and accurate emergency responses.⁵³⁶ Upgrading 911 location technology from ALI/ANI servers to LIS or comparable IP databases will also enable the implementation of PIDF-LO technology. PIDF-LO embeds location information into IP-based NG911 calls, allowing “instant, accurate location provisioning as a caller moves around a campus or high-rise environment”⁵³⁷ for hyper-targeted emergency response from public safety agencies.

188. *Calculation of Public Safety Benefits.* We conclude, based on the available evidence, that the expeditious implementation of NG911 will yield enormous public safety benefits. We estimate these benefits by assessing the likely number of lives saved in 911 emergency responses due to the more efficient and reliable delivery of actionable information with 911 calls due to the factors described above—i.e., the greater reliability and resilience of 911 facilities, the increased use of policy routing, and possibly the delivery of higher-quality location information. As noted above, a study in Indiana showed that “[t]he year before Indiana began the transition to NG911, a citizen dialing 911 waited 23 to 27 seconds for the call to be routed to a 911 operator. With NG911, that’s now less than three seconds.”⁵³⁸ These improvements to the 911 systems will reduce the 911 routing time by an appreciable amount and thus will enable 911 call responders to dispatch ambulances more rapidly in response to 911 callers’ requests for emergency medical assistance.

189. The Commission has previously relied on a study examining 73,706 emergency incidents in the Salt Lake City area that found that, on average, a one-minute decrease in ambulance response times would reduce the total number of post-incident deaths from 4,386 deaths to 3,640 deaths within 90 days after the incident (746 lives saved), representing a 17% reduction in mortality.⁵³⁹ If reducing the response time by *one minute* results in reducing mortality rates by 17%, then we can estimate that reducing the response time by *one-third of a minute* (20 seconds) could lead to a reduction in mortality by *one-third of 17%*—i.e., 5.67% per year—because the regression in the Salt Lake City Study is linear.

⁵³⁵ MSCI LBR Notice Reply at 2 (“Requiring delivery of 911 calls in IP-based format . . . standardizes delivery of location information, and promotes interoperability.”).

⁵³⁶ See Next Generation Advanced (NGA), *NG911 GIS: The Role of Geographic Information Systems in Next Generation 911* (July 17, 2023), <https://nga911.com/blogs/post/ng911-gis-role-geographic-information-systems-next-generation-911> (“GIS is a powerful tool that can be used to provide accurate and precise location data for emergency services. By combining GIS with NG9-1-1, the public safety industry has a system capable of accurately pinpointing a caller’s location and providing responders with vital information about the surrounding area, such as the location of fire hydrants or the fastest route to someone in need”).

⁵³⁷ See RFC 4119; Bandwidth, *Presence Information Data Format Location Object (PIDF-LO)* (Jan. 23, 2024), <https://www.bandwidth.com/glossary/presence-information-data-format-location-object-pidf-lo/>.

⁵³⁸ *NG911 for Fire Service Leaders* at 9 .

⁵³⁹ See Elizabeth Ty Wilde, *Do Emergency Medical System Response Times Matter for Health Outcomes?*, 22(7) Health Econ. 790-806 (2013), <http://www.ncbi.nlm.nih.gov/pubmed/22700368> (*Salt Lake City Study*). The study examined 73,706 emergency incidents during 2001 in the Salt Lake City area. *Id.* at 794. The study found that the one-minute increase in response time caused mortality to increase 17% at 90 days past the initial incidence, i.e., an increase of 746 deaths, from a mean of 4,386 deaths to 5,132 deaths. *Id.* at 795. Because the regression is linear, this result implies that a one-minute reduction in response time also saves 746 lives, i.e., a 17% reduction from a mean of 4,386 deaths to 3,640 deaths. *LBR Notice*, 37 FCC Rcd at 15206-07, para. 61 & n.159 (“The Salt Lake City Study shows a one-minute decrease in ambulance response times reduced the likelihood of 90-day mortality from approximately 6% to 5%, representing a 17% reduction in the total number of deaths.”).

190. According to the National Association of State Emergency Medical Services Officials (NASEMSO), local Emergency Medical Services (EMS) agencies respond to nearly 28.5 million 911 dispatches each year.⁵⁴⁰ In the *LBR Order*, we relied on calculations set forth in the *LBR Notice* that assumed 80% or more of the total calls to 911 annually are from wireless devices.⁵⁴¹ Since the *LBR Order* already accounts for some benefits accrued from faster emergency medical service responses to wireless 911 calls with improved location information, we conservatively consider the impact to wireline and VoIP calls only to estimate the benefits of improved 911 responses due to the NG911 rules. According to calculations based on the data in the Fifteenth Annual 911 Fee Report, approximately 17.5% (or 5 million) of all EMS dispatches are associated with wireline and VoIP 911 calls.⁵⁴² While we do not know when the transition to NG911 will be completed, we estimate that, if approximately 6% of emergency medical dispatches would have resulted in a death, a 5.67% reduction in mortality is equivalent to saving at least 16,868 lives per year as a result of the NG911 rules.⁵⁴³ This implies a total of 84,340 lives saved over the entire ten-year period following the effective date of the rules.⁵⁴⁴

⁵⁴⁰ EMS1 (Laura French), *National Association of State EMS Officials releases stats on local agencies, 911 Calls* (April 10, 2020), <https://www.ems1.com/ambulance-service/articles/national-association-of-state-ems-officials-releases-stats-on-local-agencies-911-calls-LPQTHJrK2oIpxuR1/>.

⁵⁴¹ See *LBR Order* at *40, para. 119, n.388 (“Assuming that 80% of these calls are from wireless devices . . .”).

⁵⁴² The Commission, in its Fifteenth Annual 911 Fee Report, reported that at least 21,194,035 and 12,262,577 voice calls made to 911 in 2022 originated from wireline and VoIP phones, respectively. Fifteenth Annual 911 Fee Report at 16, tbl.3. These figures likely understate the actual numbers of wireline and VoIP calls, because they do not include counts from Delaware, Georgia, Tennessee, and the U.S. Virgin Islands, which did not break down service categories separately. *Id.* at 13. This is equivalent to approximately 17.5% of all 911 voice calls when divided by the total number of wireline, wireless, and VoIP 911 calls from states which reported break out service categories ((21,194,035 wireline calls + 12,262,577 VoIP calls) / (21,194,035 wireline calls + 157,999,298 wireless calls + 12,262,577 VoIP calls) = 17.474% ≈ 17.5%). See Fifteenth Annual 911 Fee Report at 16, tbl.3—Total 911 Calls by Service Type and 911 Texts. We assume that the share of the 28.5 million EMS dispatches each year that can be attributed to wireline and VoIP is the same as the share of all 911 calls attributed to wireline and VoIP, i.e., 17.5%, or 5 million (28,500,000 × 17.5% = 4,987,500 ≈ 5 million dispatches).

⁵⁴³ We calculate the reduction in deaths as follows: 5 million dispatches × 5.95% (90 day mortality in Salt Lake City Study) × 5.67% (mortality reduction) = 16,868 lives saved. In order to arrive at an even more conservative estimate of the benefits, we also estimate the reduction in deaths for a one-second decrease in ambulance response time. If reducing the response time by one minute results in reducing mortality by 17%, then we can estimate that reducing the response time by one second could lead to a reduction in mortality by one-sixtieth of 17%, i.e., 0.28% per year. We find that a one-second reduction in ambulance response time is equivalent to saving approximately 833 lives (5 million dispatches × 5.95% (90 day mortality in Salt Lake City Study) × 0.28% (mortality reduction) = 833 lives saved).

⁵⁴⁴ Although we believe the benefit due to the improvements in public safety would start accruing in the first year after the effective date of the rules (“year 1”), as some states are more advanced in migrating to NG911, we conservatively assume that all life-saving benefits would only accrue starting in year six through year ten. With 16,868 lives saved per year, we estimate that the total lives saved during years 6 through 10 would be 84,340 lives (16,868 lives per year × 5 years = 84,340 lives). While we do not attempt to place a value on human life, we note that the amount consumers are willing to pay to reduce mortality risk is approximately \$12.5 million, using a methodology developed by the U.S. Department of Transportation (DOT) that we have relied on in past orders. See, e.g., *LBR Order* at *39, para. 118 & n.384 (citing the value of \$12.5 million in 2022 based on U.S. Department of Transportation, *Departmental Guidance on Valuation of a Statistical Life in Economic Analysis* (May 7, 2024), <https://www.transportation.gov/office-policy/transportation-policy/valuedata>, <https://www.transportation.gov/office-policy/transportation-policy/valuedata>). This implies a present value of the reduction of mortality risk to be at approximately \$616 billion, a figure calculated using a 7% discount rate, consistent with Office of Management and Budget (OMB) guidance. See OMB, Circular A-4, *Regulatory Analysis*, Section E, Discount Rates, Real Discount Rates of 3 Percent and 7 Percent (Sept. 17, 2003),

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191. The improvements to the 911 system associated with implementation of NG911 also will reduce 911 call failures and outages. We estimate that, from 2019 through 2023, an average of 4.1 billion user-hours of telecommunication voice service outages per year were reported to the Commission.⁵⁴⁵ If these 4.1 billion user-hours of outages were distributed evenly across the total U.S. population (approximately 335 million people),⁵⁴⁶ this is equivalent to each person in the country experiencing an average of 12 hours of voice telecommunications service outages per year.⁵⁴⁷ Hence, we estimate that on average, consumers experience telecommunications outages 0.14% of the time per year.⁵⁴⁸ As noted above, available evidence shows that 911 calls resulted in 28.5 million EMS dispatches per year during the most recent year when data was available. If service outages prevent 0.14% of these 911 calls from going through, that means 39,900 potentially life-saving emergency 911 calls would be dropped per year as a result of legacy 911 system failures.⁵⁴⁹ If we conservatively estimate that our rules speeding the NG911 transition result in improved 911 emergency system reliability and thus reduce the number of 911 outages and call failures by just 1%, this would translate to an additional reduction in mortality risks associated with emergency medical situations for which ambulances were dispatched in response to 911 calls roughly equivalent to 23 lives saved per year (i.e., up to 115 lives saved over a five-year period).⁵⁵⁰ Moreover, these benefits will continue to accrue beyond the completion of the transition of both phases.

192. We believe that our calculations above are likely a significant underestimate of the benefit of today's rules and that the actual life-saving rate from improved emergency responses will likely be higher than that used in our calculations. Whereas our analysis is based on saved lives in the context of emergency medical response, it does not account for lives saved due to more expeditious dispatch of

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https://obamawhitehouse.archives.gov/omb/circulars_a004_a-4/ (“As a default position, . . . a real discount rate of 7 percent should be used as a base-case for regulatory analysis.”) .

⁵⁴⁵ We estimate the average time consumers were affected by outages was approximately 4.1 billion user-hours per year based on data from the Commission's Network Outage Reporting System (NORS) between 2019 and 2023. Staff calculation. FCC, *Network Outage Reporting System (NORS)* (Nov. 30, 2023), <https://www.fcc.gov/network-outage-reporting-system-nors>.

⁵⁴⁶ See U.S. Census Bureau, *National Population Totals and Components of Change: 2020-2023* (Dec. 18, 2023), <https://www.census.gov/data/tables/time-series/demo/popest/2020s-national-total.html> (*Census Population Estimates*) (referring to Annual Estimates of the Resident Population for the United States, Regions, States, District of Columbia and Puerto Rico: April 1, 2020 to July 1, 2023 (NST-EST2023-POP) on the page, which estimates U.S. population around 334,914,895 as of July 1, 2023).

⁵⁴⁷ We calculate the average outages a U.S. resident experience as follows: 4.1 billion user-hours / 335 million residents = 12.24 hours per resident, which we round to 12 hours.

⁵⁴⁸ We estimate the average percentage of time U.S. consumers experience telecommunication network outages as follows: average 12.24 hours of outages / (24 hours per day × 365 days per year) = 0.14% outage per year.

⁵⁴⁹ We estimate the life-threatening emergency 911 calls that would be dropped due to call failures or system outages as: 28.5 million EMS dispatches × 0.14% outages = 39,900 potentially life-saving emergency 911 calls dropped per year.

⁵⁵⁰ A 1% reduction in call failures results in 23 lives saved (39,900 dropped calls per year × 1% reduction in call failures × 5.95% (90 day mortality in *Salt Lake City Study*) = 23.74, rounded down to 23). Note that this calculation conservatively equates a dropped call with an approximately 3.5-second savings in response time based in the *Salt Lake City Study*. The study finds that the one-minute increase in response time caused mortality to increase 17% at 90 days past the initial incidence, meaning that a 3.5-second increase in response time would cause a 1% (roughly 3.5/60 × 17%) mortality increase. The equivalent present value of the reduction in mortality risk is \$840 million, calculated as follows: (23 lives × \$12.5 million)/(1+7%)⁶ + (23 lives × \$12.5 million)/(1+7%)⁷ + . . . + (23 lives × \$12.5 million)/(1+7%)¹⁰ = \$840 million. This uses the 7% discount rate. If we instead discount the life-saving benefit using a 3% discount rate, the estimated benefit would be \$1.14 billion.

police, firefighters, and other first responders in response to 911 emergency calls.⁵⁵¹ Also, our estimate of the life-saving benefits of more expeditious and accurate completion of 911 calls (discussed above) excludes benefits from improvements to wireless 911 calls. The improved NG911 systems also are likely to yield benefits that go beyond the lives saved due to improved emergency medical responses (the primary basis for the benefit estimates discussed above); the analysis does not account for injuries prevented, other improved public health outcomes, and averted property damage due to quicker response to 911 calls associated with non-life-threatening events. Finally, our estimate includes 911 voice calls only and does not include text-to-911.

193. *911 Authorities' Cost Savings from Retiring Legacy 911 Network Components.* Several commenting parties submit information indicating that our rules will enable 911 Authorities to realize cost savings by more rapidly decommissioning expensive legacy 911 network elements and replacing them with more cost-efficient IP networks. For instance, South Carolina RFA estimates that, when the NG911 transition is complete, enabling it to transmit all 911 traffic over its ESInet, it will no longer need to pay for the legacy selective routers, circuits, and trunks to provide TDM connectivity, which currently costs the state approximately \$1.4 million per year.⁵⁵² Minnesota DPS-ECN estimates the proposed rules will save the state over \$1.1 million per year by avoiding paying for legacy 911 facilities that will become unnecessary when the NG911 transition is complete.⁵⁵³ The Ad Hoc NG911 Service Providers Coalition estimates that Florida will be able to avoid paying \$1.6 million annually for selective routers and ANI/ALI databases supplied by the state's largest carrier once the NG911 transition is complete.⁵⁵⁴ Extrapolating these figures from commenters, we estimate the total cost saving nationwide would be between \$24 million to \$87 million per year.⁵⁵⁵ Assuming these cost savings will not materialize until end of the fifth year following the effective date of the rules, we estimate that the present value of this cost-saving benefit over ten years, using a 7% discount rate, is approximately \$69 million to \$255 million.⁵⁵⁶

⁵⁵¹ See, e.g., Gregory DeAngelo, Marina Toger, & Sarit Weisburd, *Police Response Time and Injury Outcomes*, 133 *The Economic Journal* 2147 (2023); Brandon del Pozo, *Reducing the Iatrogenesis of Police Overdose Response: Time Is of the Essence*, 112(9) *American Journal of Public Health* 1236 (2022).

⁵⁵² South Carolina RFA NG911 Notice Comments at 4.

⁵⁵³ Minnesota DPS-ECN NG911 Notice Comments at 3 (stating that Minnesota spent \$2.2 million on both legacy (LNG/LSR) and next generation (POIs) network components in 2022, with over 50% of the cost coming from supporting the legacy components).

⁵⁵⁴ The Ad Hoc NG911 Service Providers Coalition NG911 Notice Comments at 11-12.

⁵⁵⁵ We calculate the range of cost savings by extrapolating from the figures reported by commenters. We divide each commenter's state level estimates by its state population to estimate the cost saving per person and multiply it by the U.S. population to get the nationwide cost-saving estimate. The upper bound of the range is calculated by dividing South Carolina FFA's cost saving estimate by its population: $(\$1,400,000/5,373,555 \text{ South Carolina population}) \times 334,914,895 \text{ U.S. population} = \$87,257,105$, rounded to \$87 million. See South Carolina RFA NG911 Notice Comments at 4 (estimating the cost saving to be around \$1.4 million per year); see also *Census Population Estimates* (estimating South Carolina population around 5,373,555 and the U.S. population around 334,914,895 as of July 1, 2023). The lower bound of the range is calculated by dividing NG911 Service Providers Coalitions cost saving estimate for Florida by its population: $(\$1,600,000/22,610,726 \text{ Florida population}) \times 334,914,895 \text{ U.S. population} = \$23,699,541$, rounded to \$24 million. See the Ad Hoc NG911 Service Providers Coalition NG911 Notice Comments at 11-12 (estimating a cost saving of \$1.6 million per year); see also *Census Population Estimates* (estimating Florida population around 22,610,726 persons and the U.S. population around 334,914,895 persons as of July 1, 2023).

⁵⁵⁶ To be conservative with the benefits estimates, we assume no accrual of benefits up to the end of year five, i.e., benefits only accrue from year six through year ten. The present value of the upper bound of total cost savings, using a 7% discount rate, is calculated as: $\$87,257,105/(1+7\%)^6 + \$87,257,105/((1+7\%)^7) + \dots + \$87,257,105/((1+7\%)^{10}) = \$255,086,034 \approx \$255 \text{ million}$. The lower bound of the range is calculated using Florida's

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2. Costs

194. We sought comment on the costs that the 2,327 OSPs in the country would incur to comply with our proposed rules,⁵⁵⁷ and multiple parties submitted information in response. Based on information in the record and from other public sources, as well as data in service providers' most recent Form 477 filings,⁵⁵⁸ we conservatively estimate that, at the nationwide level, affected OSPs will likely incur approximately \$4.4 million in one-time costs and \$5.5 million in annual recurring costs to implement Phase 1, and \$24 million in one-time costs and \$50 million in annual recurring costs to implement Phase 2 following adoption of our rules.⁵⁵⁹ Using a 7% discount rate, we estimate the present value of the total cumulative costs over the next 10 years to be approximately \$321 million.⁵⁶⁰ These expenditures would be fully justified even if they resulted in reducing mortality risks equivalent to preventing the loss of only 26 lives.⁵⁶¹ Considering the substantial benefits to the improvement in public safety attributable to the rules, we conclude that the total benefits significantly outweigh the total costs.⁵⁶²

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cost saving estimated by the Ad Hoc NG911 Service Providers Coalition: $\$23,699,541/(1+7\%)^6 + \$23,699,541/((1+7\%)^7) + \dots + \$23,699,541/((1+7\%)^{10}) = \$69,282,861 \approx \$69$ million. See the Ad Hoc NG911 Service Providers Coalition NG911 Notice Comments at 11-12. Using a 3% discount rate, the present value over ten years is approximately \$94 million to \$345 million.

⁵⁵⁷ *NG911 Notice* at *27-29, paras. 69-74.

⁵⁵⁸ Based on FCC Form 477 data as of June 2023, there are a total of 2,287 OSPs, including 1,996 small/medium OSPs that serve up to 10,000 subscribers each and 291 large OSPs that serve more than 10,000 subscribers each. The 1,996 small/medium OSPs include 16 wireline OSPs that do not offer any form of IP services (e.g., broadband or VoIP services), 394 wireline OSPs that also provide broadband services, 14 Internet-based TRS OSPs, 1,554 VoIP OSPs, and 18 wireless OSPs. Among the 291 large OSPs, there are 2 wireline OSPs that do not offer any form of IP services (e.g., broadband or VoIP services), 20 wireline OSPs that also provide broadband services, 232 VoIP OSPs, and 37 wireless OSPs. Staff Calculation. FCC Form 477 Data as of June 2023. See also FCC, *Internet-Based TRS Providers*, <https://www.fcc.gov/general/internet-based-trs-providers> (last visited June 5, 2024) (the 14 certified Internet-based TRS providers include: CaptionCall, CaptionMate, ClearCaptions, Global Caption, Hamilton Relay, InnoCaption, Nagish, NexTalk, Rogervoice, T-Mobile USA, Convo Communications, Sorenson Communications, Tive, ZP Better Together).

⁵⁵⁹ We note that our cost estimates do not account for the fact that a number of OSPs have already complied with Phase 1 and/or Phase 2. To the extent that some OSPs have complied, there would be a reduction in estimated costs.

⁵⁶⁰ We assume that it takes two years to complete Phase 1 and three years to complete Phase 2. To be conservative with the cost estimates, we assume all the costs of Phase 1 occur by the end of year one and the costs of Phase 2 occur by the end of year 3 instead of spreading it out through the remaining years during each phase. We calculate the present value of the total costs over a ten-year period using a 7% discount rate as follows:

Phase 1 one-time cost $\$4,408,583/(1+7\%) = \$4,120,171$;

Phase 1 annual costs $\$5,544,000/(1+7\%) + \$5,544,000/((1+7\%)^2) + \dots + \$5,544,000/((1+7\%)^{10}) = \$38,938,736$;

Phase 2 one-time cost $\$23,590,000/((1+7\%)^3) = \$19,256,467$; and

Phase 2 annual costs $\$49,539,000/((1+7\%)^3) + \dots + \$49,539,000/((1+7\%)^{10}) = \$258,373,794$.

The present value of total costs over the ten years is approximately \$321 million ($\$4,120,171 + \$38,938,736 + \$19,256,467 + \$258,373,794 = \$320,689,168$, rounded to \$321 million). If we instead discount the costs by 3%, the present value of the total costs over the next ten years is \$401 million.

⁵⁶¹ We estimate that an expenditure of \$321 million would justify the reduction of mortality risk by over 26 lives ($\$321 \text{ million}/\$12.5 \text{ million} = 25.68$, rounded up to 26). If we calculate the total costs using a 3% discount rate, the present value of total costs increases to \$401 million, which requires reducing mortality risks by 33 lives ($\$401 \text{ million}/\$12.5 \text{ million} = 32.08$, rounded up to 33) to justify the adoption of the rules. We note that, using a 3% discount rate, the corresponding increase in benefits is even greater than the increase in costs.

⁵⁶² Our analysis does not include costs that 911 Authorities and other entities that have overwhelmingly supported the Proposals in the *NG911 Notice* have or would need to incur to effectuate the transition to NG911, including installing and placing into operation infrastructure needed to receive 911 traffic in an IP-based SIP format (Phase 1)

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195. Significantly, we believe that all of the quantitative cost estimates below are likely to be overstated, for several reasons. First, they do not take into account the fact that 911 calls make up only a very small portion of the overall number of voice calls that these OSPs will transmit using some of the same infrastructure. Second, they are based on estimated expenditures that cannot reasonably be attributed entirely to our NG911 rules because most OSPs are already on the path of transitioning to full modern IP networks for other reasons.⁵⁶³ Third, the assumed incremental expenditures for IP conversion may not materialize because many of the OSPs that have not yet completed IP network upgrades are likely to complete them before the deadlines for complying with any 911 Authorities' Valid Requests.

196. *Phase 1 Recurring Costs: Transport for IP Delivery Costs.* OSPs will be required to transmit 911 calls to designated NG911 Delivery Points in IP format over SIP trunks within a specified period of time after 911 Authorities issue valid Phase 1 requests. Because CMRS providers, interconnected VoIP providers, Internet-based TRS providers, and non-RLEC wireline providers are already delivering most calls in IP format, typically transported through SIP trunks,⁵⁶⁴ we believe that the Phase 1 IP transport requirement would not impose material incremental costs on these OSPs.

197. Nonetheless, we recognize that some OSPs – primarily RLECs – will incur some incremental recurring cost of IP transport via SIP trunks, even if those RLECs already have IP switches, can convert TDM to IP on their own networks, and can provide broadband service using their own IP switching facilities. As some parties point out, these RLECs might incur some SIP call transport costs if they do not have settlement-free peering agreements and cannot hand off IP voice traffic to existing interconnection partners.⁵⁶⁵ We estimate that the total of these costs will be below \$5.5 million per year.

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and in an IP-based SIP format that complies with NG911 commonly accepted standards (Phase 2). We emphasize that the rules that we adopt encourage 911 Authorities to effectuate the transition. As such, we do not include these additional costs in our analysis. Moreover, the rules that we adopt are contingent on the transition to NG911 by 911 Authorities and the benefits and costs that we calculate cannot occur without said transition.

⁵⁶³ See *infra* para. 215.

⁵⁶⁴ Based on FCC Form 477 data as of June 2023, there are a total of 2,287 OSPs, including 1,996 small/medium OSPs that serve up to 10,000 subscribers each and 291 large OSPs that serve more than 10,000 subscribers each. The 1,996 small/medium OSPs include 16 wireline OSPs that do not offer any form of IP services (e.g., broadband or VoIP services), 394 wireline OSPs that also provide broadband services, 14 Internet-based TRS OSPs, 1,554 VoIP OSPs, and 18 wireless OSPs. Among the 291 large OSPs, there are 2 wireline OSPs that do not offer any form of IP services (e.g., broadband or VoIP services), 20 wireline OSPs that also provide broadband services, 232 VoIP OSPs, and 37 wireless OSPs. Staff Calculation. FCC Form 477 Data as of June 2023. TelecomTrainer, *What is VoLTE, and how does it enable voice communication in 4G networks?* (Jan. 8, 2024), <https://www.telecomtrainer.com/what-is-volte-and-how-does-it-enable-voice-communication-in-4g-networks/> (“Voice over Long-Term Evolution (VoLTE) is a technology standard that allows voice calls to be transmitted over 4G LTE (Long-Term Evolution) networks, which are primarily designed for high-speed data transmission. VoLTE replaces the traditional circuit-switched voice calls used in older 2G and 3G networks with packet-switched data to enable voice communication over LTE networks.... VoLTE relies on an IP (Internet Protocol) network to transmit voice data.”); TechTarget, *What is 4G (fourth-generation wireless)?*, <https://www.techtarget.com/searchmobilecomputing/definition/4G> (“4G is also an all-IP (internet protocol)-based standard for both voice and data, different from 3G, which only uses IP for data, while enabling voice with a circuit-switched network.”) (visited June 18, 2024); Jessica Dine and Joe Kane, *The State of US Broadband in 2022: Reassessing the Whole Picture*, Information Technology & Innovation Foundation (Dec. 5, 2022), <https://itif.org/publications/2022/12/05/state-of-us-broadband-in-2022-reassessing-the-whole-picture/> (“U.S. mobile coverage is ubiquitous. 4G covers almost 100 percent of the population.”); CTIA, *What to Know About the Sunset of 2G/3G Networks in Preparation for 5G*, <https://www.ctia.org/what-to-know-about-the-sunset-of-2g-3g-networks-in-preparation-for-5g> (“Today, fewer than 9% of U.S. wireless connections are 2G or 3G subscriptions.”) (visited June 18, 2024).

⁵⁶⁵ See RTCC NG911 Notice Comments at 23-24; NTCA NG911 Notice Comments at 6-7; Frontier NG911 Notice Reply at 3-4.

This estimate is based on assumptions that the transport cost would be \$2,000 per month for the 16 OSPs that currently only offer TDM-based voice services (i.e., they do not offer broadband or VoIP services) and serve fewer than 10,000 subscribers, and 50% more (i.e., \$3,000 per month) for the two OSPs that provide no broadband or VoIP but serve more than 10,000 subscribers.⁵⁶⁶ We further assume that the 414 OSPs that offer both voice and broadband services – including the 394 that serve fewer than 10,000 subscribers and the 20 that serve 10,000 or more subscribers – would incur 50% of the transport cost because they are already delivering a portion of their regular calls in IP format via SIP trunks.⁵⁶⁷

198. We conclude that most of the RLECs' and other commenting parties' estimates of the recurring costs of IP transport⁵⁶⁸ to NG911 Delivery Points are unduly high. Almost all of these cost estimates for 911 IP transport are premised on assumptions that OSPs will be required to transmit 911 calls over long distances across multiple states to faraway NG911 Delivery Points.⁵⁶⁹ These assumptions

⁵⁶⁶ Comtech estimates that the transport cost per IP POI would be between \$678.39 and \$977.84 per month and the total interconnection cost to be \$19,672.51 for 12 RLECs (\$19,672.51/12 ~ \$1,639.38 per RLEC), and MSCI estimates the IP transport cost per POI is \$400 per month. See Letter from Susan C. Ornstein, Senior Director, Legal & Regulatory Affairs, Comtech, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479 at 11 (filed Mar. 8, 2024) (Comtech Mar. 8, 2024 *Ex Parte*) (estimating the IP-based connectivity cost per LEC POI site is between \$678.39 and \$977.84); Comtech Mar. 25, 2024 *Ex Parte* at 22 (estimating a total cost, including NRC, MRC #1, and MRC #2, of 12 RLEC interconnections to be \$19,672.51); Letter from Bennett L. Ross, Counsel on behalf of MSCI, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at Attach. at 6 (filed Apr. 17, 2024) (MSCI Apr. 17, 2024 *Ex Parte*); MSCI May 28, 2024 *Ex Parte*. We find the cost estimates submitted by Comtech and MSCI credible. To be conservative, we assume the SIP transport cost to be \$2,000 per month for each small/medium OSP that serves no more than 10,000 subscribers, and \$3,000 per month for a large OSP that serve more than 10,000 subscribers. These estimates are consistent with those proposed by the majority of commenters. See Kansas RLECs NG911 Notice Comments at 2, 4 (rec. Aug. 9, 2023) (Kansas RLECs NG911 Notice Comments) (estimating between \$1,200 and \$5,000 per month in IP transport costs for its members); Home Telephone NG911 Notice Comments at 10, n. 4 (estimating third-party IP transport of \$1,500 to \$3,000 per month); NTCA NG911 Notice Comments at 3 (stating the cost is \$1,400 for an RLEC in rural Kansas to deliver IP formatted 911 traffic to delivery points in California or Texas); South Dakota Telecommunications Association NG911 Notice Comments at 11-12 (IP transport costs per RLEC could be between \$1,000 and \$13,000 per month per connection depending on distance); RTCC NG911 Notice Comments at 25 (Nebraska RLECs would each have to pay approximately \$1,350 per month for reliable SIP transport to connect to the IP delivery points in Colorado and Illinois).

⁵⁶⁷ The figures on the number of OSPs that do not offer any form of IP services (e.g., broadband or VoIP services), and the numbers of subscribers that these and other OSPs serve are based on FCC Form 477 data as of June 2023. We calculate the recurring cost as follows: (\$2,000 per month × 12 months × 16 small/medium telephone voice only wireline OSPs) + (\$3,000 per month × 12 months × 2 large telephone voice only wireline OSPs) + (\$2,000 per month × 12 months × (50% partial transport) × 394 small/medium telephone voice and broadband wireline OSPs) + (\$3,000 per month × 12 months × (50% partial transport) × 20 large telephone voice and broadband wireline OSPs) = \$5,544,000, rounded to \$5.5 million.

⁵⁶⁸ See, e.g., Kansas RLECs NG911 Notice Comments at 2, 4 (estimating between \$1,200 and \$5,000 per month in IP transport costs for its members); Home Telephone NG911 Notice Comments at 10, n. 4 (estimating third-party IP transport of \$1,500 to \$3,000 per month); Letter from John Kuykendall, JSI Regulatory Advisor on behalf of the South Carolina Telephone Coalition, and Margaret M. Fox, Counsel to South Carolina Telephone Coalition, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 1-2 (filed Nov. 17, 2023) (MSCI Nov. 17, 2023 *Ex Parte*) (asserting that South Carolina RLEC Sandhill Telephone Cooperative got estimates of approximately \$2,700 per month and \$3,500 per month for third-party IP transport).

⁵⁶⁹ Five Area Telephone NG911 Notice Comments at 9, 11 (estimating almost \$3,000 per month for transport to ESInet points “hundreds of miles away in other states” which would cost OSPs collectively over \$83 million annually nationwide); NTCA NG911 Notice Comments at 3 (stating an RLEC in rural Kansas has been ordered by the 911 authority to deliver IP formatted 911 traffic to delivery points in California or Texas, which would cost \$1,400 per month); South Dakota Telecommunications Association NG911 Notice Comments at 11-12 (stating that IP transport costs per RLEC could be between \$1,000 and \$13,000 per month per connection depending on distance,

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are unfounded in light of the rules we adopt today, which require OSPs to transport 911 calls only to in-state NG911 Delivery Points designated by 911 Authorities. Moreover, most of these cost estimates assume that the cost of IP transport is distance-sensitive. This assumption is clearly incorrect. Indeed, given the ample evidence showing that IP transport costs are significantly lower than TDM transport costs, we believe that the rules we adopt today might actually reduce the overall transport costs for OSPs. For example, South Carolina RFA submits data indicating that IP transport of 911 traffic is generally 27% cheaper than TDM call delivery, regardless of where the calls are delivered.⁵⁷⁰ iCERT points out that, to avoid the higher cost of transporting TDM calls, RLECs could convert their traffic from TDM to IP format prior to transporting them.⁵⁷¹ Five Area Telephone also points out that OSPs could significantly lower the overall costs of transmitting 911 calls to ESInets by taking advantage of third-party aggregators' services.⁵⁷²

199. *Phase 1 Non-Recurring Costs: Reconfiguring Network Facilities for IP Delivery.* We estimate Phase 1 non-recurring costs based on an assumption that some OSPs will incur some material and labor costs prior to initiating IP transport. We estimate a total of \$4.4 million in one-time material and labor costs, including approximately \$4 million to convert TDM calls to IP format and \$343,000 to configure the delivery to new NG911 Delivery Points. Because the majority of OSPs are capable of transmitting calls in IP format, we estimate that only a subset of OSPs that do not offer full IP-related services would need to incur the cost of facilities needed to convert TDM calls to IP format; other OSPs that already originate traffic in IP format would incur no up-front IP conversion costs. We conservatively estimate an upper bound of the IP conversion cost to be no more than \$17,600 for voice-only OSPs with no more than 10,000 subscribers,⁵⁷³ a 50% higher unit cost for voice-only OSPs with more than 10,000

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and that cost could increase at least 30% for out-of-state connections); USTelecom NG911 Notice Comments at 4 (indicating that distance impacts IP transport prices, and one carrier is paying \$750,000 in annual cost (or equivalent to \$62,500 per month) to deliver 911 traffic to the state-designated delivery point hundreds of miles away); RTCC NG911 Notice Comments at 25 (stating that Nebraska RLECs would each have to pay approximately \$1,350 per month for reliable SIP transport to connect to the IP delivery points in Colorado and Illinois, with an aggregate cost of \$360,000 per year for the 24 RLECs); WTA NG911 Notice Comments at 6 (stating that it is not possible to fairly estimate transport costs without knowing where the delivery points are located and at what distance from RLECs).

⁵⁷⁰ South Carolina RFA NG911 Notice Comments at 4-5 (stating that the network transport costs for ILECs in its state to deliver TDM traffic to two delivery points inside South Carolina are approximately \$236,000 per year, while its analysis of the transport costs for the same South Carolina ILECs to deliver SIP traffic even further to two delivery points in Dallas, Texas and Raleigh, North Carolina are less – \$172,000 per year, resulting in a 27% cost saving utilizing SIP). Comtech similarly estimates that transport costs for OSPs are likely to be far lower than the estimates provided in the record by RLECs. Comtech Mar. 25, 2024 *Ex Parte* at 22-23.

⁵⁷¹ iCERT Dec. 13, 2023 Office of Commissioner Gomez *Ex Parte* at 2; Mission Critical Partners NG911 Notice Comments at 5; MSCI Apr. 17, 2024 *Ex Parte* Attach. at 5 (estimating the annual transport cost for one POI through TDM is \$42,810, compared to \$4,800 for the transport through IP).

⁵⁷² Five Area Telephone NG911 Notice Comments at 13.

⁵⁷³ Five Area Telephone asserts that the up-front costs for RLECs to connect to ESInets are \$17,600 each, including “establishing network connectivity, procurement of private line circuits, configuration assistance, switching equipment configuration, testing, cutover, and final testing.” Five Area Telephone NG911 Notice Comments at 11. We believe this estimate would be an upper bound, as OSPs may, instead of upgrading their systems with new circuits and switching equipment, choose to acquire an LNG gateway at a much lower cost to convert calls from TDM to IP format. Brian Rosen NG911 Notice Reply at 2 (“The RLECS commenting on this proceeding wildly overestimate the cost of the gateway required to convert TDM to SIP. An Audiocodes Mediant 500 gateway, for example, costs approximately \$1000, and a Mediant 1000, which has much more capability than a smaller carrier requires is approximately \$5000. There will need to be some software, which could run on a commodity server . . . which would add to the costs, and these carriers may not have enough expertise . . . necessitating a support contract with an appropriate vendor.”).

subscribers; and half of these amounts for OSPs that offer broadband as well as voice services and likely have some capability to convert TDM calls to IP format but might need to acquire more. We estimate that the total one-time cost that all OSPs would incur to obtain the facilities needed to convert TDM calls to IP format would be approximately \$4 million, including \$334,400 for the 18 OSPs that do not offer any IP services and \$3.7 million for the 414 OSPs that offer broadband as well as voice services.⁵⁷⁴ We believe that our estimate is conservative because it does not take into account the many non-911 calls that these OSPs would transmit using the same equipment.

200. We use Five Area Telephone’s estimate of \$17,600 as the upper bound for the up-front equipment costs for small OSPs to connect to ESInets – an estimate that, according to Five Area Telephone, includes the costs of “establishing network connectivity, procurement of private line circuits, configuration assistance, switching equipment configuration, testing, cutover, and final testing,” equaling over \$40 million if applied to all 2,327 carriers.⁵⁷⁵ We believe that this estimate substantially overstates the cost of the network equipment required to convert TDM calls to IP format, because it assumes a major system upgrade would be required, and we reject Five Area Telephone’s assertion that the total cost would exceed \$40 million because that erroneously assumes that all 2,327 OSPs would incur the same amount. Nonetheless, we apply Five Area Telephone’s \$17,600 one-time cost estimate as the basis to calculate the upper bound of our IP conversion cost estimate, because other commenters’ estimates are even less credible. Most of them include the non-recurring cost of system upgrades that are not required by the rules; many of them rely on unsupported cost figures for specific OSPs without providing any basis for us to examine whether these costs are typical; and some include no cost figures at all.⁵⁷⁶

201. We estimate that the one-time costs of reconfiguring and changing 911 traffic delivery points would require all affected OSPs to incur labor costs totaling \$343,000. This is based on the Bureau of Labor Statistics’ estimate that the average wage for telecommunications equipment installers and repairers is \$32.26 per hour,⁵⁷⁷ as well as an estimate, based on evidence in the record, that OSPs serving

⁵⁷⁴ We calculate the recurring cost as follows: (\$17,600 per OSP × 16 small/medium telephone voice only wireline OSPs) + (\$17,600 per OSP × (1 + 50% for large OSP) × 2 large telephone voice only wireline OSPs) + (\$17,600 per OSP × (50% partial transport) × 394 small/medium telephone voice and broadband wireline OSPs) + (\$17,600 per OSP × (1 + 50% for large OSP) × (50% partial transport) × 20 large telephone voice and broadband wireline OSPs) = \$4,065,600, which we round to \$4 million.

⁵⁷⁵ Five Area Telephone NG911 Notice Comments at 11.

⁵⁷⁶ See, e.g., Kansas RLECs NG911 Notice Comments at 2 (contending that one NG911 service provider (AT&T) has proposed a plan that could require some Kansas RLECs to acquire SIP equipment at a cost of \$50,000); RWA NG911 Notice Comments at 2 (contending that the Commission’s estimate ignores the possibility that a small CMRS carrier would first need to obtain and install a session border control gateway for a cost of \$100,000 to allow for the connection from the carrier’s IP-cable network to a PSAP that remains only TDM-capable); USTelecom NG911 Notice Comments at 4-5 (asserting that one Northern California carrier, prior to initiating IP transport, would need to expend an “initial cost of \$378,000 to aggregate traffic from multiple exchanges”); Frontier NG911 Notice Reply at 3-4 (stating that central office facilities upgrades plus labor is in the “millions” to begin delivering IP call traffic outside its footprints, and equipment costs for SIP delivery are substantial); Alaska Telecom Assoc. NG911 Notice Comments at 4-5 (identifying costs for “creating a dedicated IP trunk group to the ESInet,” along with wireline network reconfigurations to reroute calls to the carriers’ IP switch, updating the routing for subscriber lines, and similar SIP network architecture reconfigurations for wireless carriers).

⁵⁷⁷ See Bureau of Labor Statistics, *Occupational Employment and Wages, May 2023*, <https://www.bls.gov/oes/current/oes492022.htm> (last visited June 6, 2024). According to the Bureau of Labor Statistics, as of December 2023, civilian wages and salaries averaged \$31.29/hour and benefits averaged \$14.13/hour. Total compensation therefore averaged \$31.29 + \$14.13 = \$45.42. See Press Release, Bureau of Labor Statistics, Employer Costs for Employee Compensation – December 2023 at 1 (Mar. 13, 2024), <https://www.bls.gov/news.release/pdf/eccc.pdf>. Using these figures, benefits constitute a markup of \$14.13/\$31.29 = 45%. We therefore mark up wages by 45% to account for benefits. \$32.26 x 1.45 = \$46.78, which we round to \$47.

fewer than 10,000 subscribers would need to pay for up to three hours of labor and OSPs serving more than 10,000 subscribers would need to pay 50% more in labor costs due to the potentially more complex tasks these entities might need to undertake to reconfigure, and change the delivery points for their 911 traffic. We rely on the assertion of RWA that “the number of person-hours required will typically be closer to two or three,”⁵⁷⁸ rather than the one hour estimated in the *NG911 Notice*,⁵⁷⁹ and we adjust this amount upward by 50% more for OSPs serving more than 10,000 subscribers to account for the greater complexity of the task. Based on these assumptions, we arrive at the total one-time labor cost of \$343,000 for all the OSPs to change the delivery points.⁵⁸⁰

202. *Phase 2 Costs.* We estimate that wireline carriers, interconnected VoIP providers, and other OSPs that are not CMRS providers (and thus not subject to the *LBR Order*) will incur approximately \$24 million in one-time costs and \$50 million in annual recurring costs to comply with 911 Authorities’ Phase 2 requests to transmit and maintain accurate location information with 911 calls in IP format using LIS databases. Today’s rules allow OSPs to use “LIS as a service” from a third-party vendor as an option instead of creating their own LIS or equivalent databases. This LIS service may either involve native IP LIS or LIS equivalent database population, or a database conversion of OSPs’ existing ALI/ANI/MSAG data to LIS formats. CSRIC explains that LIS as a service is contemplated as an NG911 solution at “minimal expense” to small OSPs, as it relieves OSPs of most costs beyond monthly services, and an LNG and can be provided either by a commercial vendor or the 911 authority.⁵⁸¹ This is a substantial cost-savings measure, especially for smaller OSPs with TDM networks, who may not be ready to decommission older legacy equipment and modernize their networks for IP/VoIP.⁵⁸²

203. We conservatively base these figures on Five Area Telephone’s estimates that, to comply with location-based routing-type requirements to insert location information into call paths, wireline and VoIP providers would need to incur non-recurring costs of approximately \$10,000 and monthly recurring costs of \$1,750.⁵⁸³ Extrapolating these statistics and increasing the costs by 50% for larger OSPs serving more than 10,000 subscribers, we estimate that compliance with the Phase 2 rules would require non-

⁵⁷⁸ RWA NG911 Notice Comments at 2, n.5; South Carolina RLECs NG911 Notice Comments at 9-10 (arguing that one hour of labor to change delivery points is unrealistic, as this task requires “consulting with the ESInet regarding technical requirements, figuring out how transport will be handled and an appropriate demarcation point, procuring transport circuits to connect, configuring the lines and switching equipment, and then managing cut over of existing 911 traffic and testing to ensure the trunk is operable”). Frontier’s assertion that the costs of labor plus facilities upgrades needed to begin delivering IP call traffic outside its network footprint will be “millions” is unfounded and implausible. See Frontier NG911 Notice Reply at 3-4.

⁵⁷⁹ *NG911 Notice* at *27, para. 71.

⁵⁸⁰ We calculate the total one-time IP delivery configuration cost in Phase 1 as follows: (\$47/hour × 3 hours × 1,996 small/medium OSPs serving no more than 10,000 subscribers) + (\$47/hour × 3 hours × (1 + 50%) × 291 large OSPs serving more than 10,000 subscribers) = \$342,982.50, rounding to \$343,000.

⁵⁸¹ CSRIC NG911 Transition Report at 26, 27 n.21 (“LIS or equivalent elements may be operated directly by originating service providers, by their chosen vendors, or possibly by a 9-1-1 Authority, a set of 9-1-1 Authorities, or their vendors as a service to carriers.”).

⁵⁸² See, e.g., Brian Rosen NG911 Notice Reply at 17 (“The LNG contains the Location Database (LIS) which is analogous to the ALI in that there is a record per subscriber (for wireline subscribers) typically indexed by telephone number. The TDM signaling contains all the information needed for the LNG to retrieve the location from its database and insert it in the SIP signaling towards the ESInet. As above, there are data format and provisioning changes wireline OSPs will need to make, but there are many ESInets with functioning LNGs that handle RLECs well. And, as above, wireline OSPs will continue to use street address (civic) location formats, albeit those formats are different than the current MSAG based standards.”).

⁵⁸³ Five Area Telephone NG911 Notice Comments at 6.

CMRS OSPs to incur a total of \$24 million in one-time costs and \$50 million in annual recurring costs.⁵⁸⁴ We conclude that the location information requirement does not result in any additional costs for CMRS providers because they will have already implemented such upgrades.⁵⁸⁵

204. We reject AT&T's cost estimate submitted in the record. AT&T alleges that "requiring the introduction of a Location Information Server ('LIS') would be extremely expensive and inefficient" for carriers with legacy TDM switching facilities and "could cost several billion dollars on an industry-wide basis."⁵⁸⁶ AT&T, in its role as the lead NGCS and ESInet contractor in Virginia,⁵⁸⁷ has already provided a solution that allows legacy OSP wireline ALI and MSAG location data to be used for NG911-compliant LIS as a service,⁵⁸⁸ which eliminates TDM OSPs' needs to upgrade their networks to IP. We therefore find AT&T's record assertion no was based on an assumption of an IP origination requirement, which today we decline to impose.⁵⁸⁹

205. Our Phase 2 cost estimate does not include the costs of originating traffic in IP format. WTA claims that "obtaining the full benefits of NG911 service will not be possible unless 911 calls originate in IP format," and that converting networks from TDM to IP carries "not only significant network and customer equipment changes and reconfigurations, but also substantial customer service and education costs."⁵⁹⁰ Although we agree that converting TDM networks to IP networks can be costly, we reject the contention that such system upgrade costs should be attributed to the requirements in these rules. The transition from TDM to IP technology has been ongoing for over a decade as the subscriptions to voice-only local exchange telephone service (switched access lines) has fallen from nearly 141 million

⁵⁸⁴ We calculate the one-time cost as follows: (\$10,000 per OSP × 1,978 small/medium wireline and VoIP OSPs) + (\$10,000 × (1 + 50%) × 254 large wireline and VoIP OSPs) = \$23,590,000. Staff Calculation. FCC Form 477 Data as of June 2023. We calculate the annual cost following the same approach: (\$1,750 per month × 12 months × 1,978 small/medium wireline and VoIP OSPs) + (\$1,750 per month × 12 months × (1 + 50%) × 254 large wireline and VoIP OSPs) = \$49,539,000, rounding to \$50 million.

⁵⁸⁵ *LBR Notice*, 37 FCC Rcd at 15210, para. 70 n.176 ("AT&T's implementation of location-based routing uses Intrado's 'Locate Before Route' feature and 'implemented several timer changes in the GMLC housing AT&T [Location Information Server (LIS)],'" citing AT&T LBR Public Notice Comments at 2, 5 (rec. July 11, 2022)); T-Mobile July 26, 2023 *Ex Parte*, Exh. B (asking if the PSAP requesting NG911 service is served by an ESInet/NGCS capable of supporting standards based NG911 connectivity to T-Mobile's LIS).

⁵⁸⁶ AT&T NG911 Notice Comments at 4 n.7.

⁵⁸⁷ Virginia Department of Emergency Management, *NG9-1-1 Deployment—Summary of the project*, <https://ngs.vdem.virginia.gov/pages/ng9-1-1-deployment> (last visited June 21, 2024) ("The project contractor, AT&T, tracks status for 19 project items, such as AVPN ordered and trunk complete."); see also Virginia Department of Emergency Management (VDEM) 9-1-1 and Geospatial Services Bureau (NGS), [no title] (Aug. 29, 2022), https://gismaps.vdem.virginia.gov/websites/ngs/NG9-1-1%20Deployment/documents/FFXVBComp_NGS.pdf (summarizing "high level information about the Fairfax County and VA Beach Next Generation 9-1-1 (NG9-1-1) contracts").

⁵⁸⁸ Virginia Department of Emergency Management, *MSAG and ALI Maintenance After Next Generation 9-1-1 Go-Live* at 1 (Nov. 2022), <https://gismaps.vdem.virginia.gov/Websites/PSC/RegionalAdvisoryCommittee/Documents/20221117MSAGALIMaint.pdf> ("Wireline phone providers require the MSAG and ALI information until they upgrade their systems to the NG9-1-1 end state environment. Therefore, after NG9-1-1 go live, Virginia localities must continue to maintain MSAG and ALI databases, now in the AT&T and Intrado environment"); *id.* at 3 (describing solution for "when a PSAP is live on NG9-1-1 and their legacy 9-1-1 provider still requires a legacy ALI database").

⁵⁸⁹ See *supra* section III.C.1.c.i.

⁵⁹⁰ WTA NG911 Notice Comments at 8.

lines in December 2008 to 27 million in June 2022.⁵⁹¹ A linear model predicts that switched access lines will be fully phased out in the near future.⁵⁹² Therefore, since we can reasonably expect that these system upgrades will occur organically as part of the natural technological evolution, regardless of whether OSPs are required to comply with Phase 2 requests, the cost of the upgrades cannot be attributed to these requirements. Instead, they should be considered baseline costs of operating telecommunications business. Furthermore, even if a handful of RLECs delayed their system upgrades for idiosyncratic reasons, the 6- to 12-month timeline to comply with the requirements for each of the two phases would be sufficient for RLECs to move away from the legacy systems that are beyond end of their life.

206. We emphasize that the rules do not require OSPs to originate 911 calls in IP format, and hence OSPs can choose other alternative solutions to send 911 calls in the format that can be interoperable with the industry standards in Phase 2. Moreover, our rules do not preclude OSPs from negotiating with 911 Authorities for alternative arrangements. If the costs of upgrading network systems are as high as some OSPs claim, those entities could offer 911 Authorities alternative, less costly arrangements, such as offering to pay the 911 Authorities to maintain the costly legacy conversion components for these OSPs to use in order to fulfill the requirements. Nonetheless, in light of the ample record evidence that most 911 Authorities are eager to decommission these legacy facilities due to the high cost of maintaining them (as well as the limitations on these facilities' functionality), we believe it is highly unlikely that any OSP would find such an arrangement to be cost-effective, especially when compared with the cost of upgrading their own networks – upgrades that they almost certainly will need to implement within the applicable time frame for reasons that have nothing to do with these NG911 rules.

H. Implementation, Monitoring, and Compliance

207. In the *NG911 Notice*, the Commission sought comment on whether the Commission should implement any new data collections to assist in monitoring compliance with our proposed rules for NG911.⁵⁹³ The Commission tentatively concluded that public safety entities and members of the public seeking to report non-compliance with the proposed rules would be able to file complaints via the Public Safety and Homeland Security Bureau's Public Safety Support Center or through the Commission's Consumer Complaint Center.⁵⁹⁴ The Commission did not propose any rule for monitoring the transition

⁵⁹¹ See FCC, *Voice Telephone Services Report*, (Aug. 18, 2023), <https://www.fcc.gov/voice-telephone-services-report> (linking to Nationwide and State-Level Data for 2008-Present (Zip), https://www.fcc.gov/sites/default/files/vts_june_22_hist.zip (containing "VTS_subscriptions_hist.csv;" Reference row 13 "Local exchange telephone service (Switched Access Lines)" shows that there were 140,958,000 subscriptions in December 2008 which declined steadily year-over-year to 27,207,000 subscriptions in June 2022..)).

⁵⁹² A linear model estimates $Expected\ Subscriptions = 17,117,250.6 - 8,455.4\ Year$, which implies the $Expected\ Subscriptions = 0$ when $Year = 2024.4$ (or May in 2024 because $0.4 \times 12\ months = 4.8\ months$). The linear model fits the data well with a $R^2 = 0.97$, meaning 97% of the data variation is explained by the linear model. A linear model predicts the switched access lines would have been fully phased out in May 2024. Therefore, if the system upgrades would have happened organically as part of the natural technological evolution, they should be considered costs of operating telecommunications business. Furthermore, even if a handful of RLECs delayed their system upgrades for idiosyncratic reasons, the 6- to 12-month timeline to comply with the requirements for each of the two phases would be sufficient for RLECs to move away from the legacy systems that are beyond end of their life.

⁵⁹³ *NG911 Notice* at *22, para. 57.

⁵⁹⁴ *Id.* at para. 58. The Public Safety Support Center is a web-based portal that enables PSAPs and other public safety entities to request support or information from the Public Safety and Homeland Security Bureau and to notify it of problems or issues impacting the provision of emergency services. *Public Safety and Homeland Security Bureau Announces Opening of Public Safety Support Center*, Public Notice, 30 FCC Rcd 10639 (PSHSB 2015); FCC, Public Safety Support Center, <https://www.fcc.gov/general/public-safety-support-center> (last visited June 6, 2024). The Consumer Complaint Center handles consumer inquiries and complaints, including consumer

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to NG911 or addressing compliance with the new requirements.

208. We believe the existing complaint mechanisms should be sufficient and that the Commission would be able to address complaints in a timely manner. A handful of commenters state that existing mechanisms of oversight should be sufficient.⁵⁹⁵ AT&T and Hamilton Relay agree that the Commission should decline to adopt any new data collections.⁵⁹⁶ Colorado PUC states that the Commission “should be prepared to engage with complaints in a timely manner.”⁵⁹⁷ WTA, on the other hand, requests that the Commission “establish one or more mechanisms that will encourage and enable the negotiation of and dispute resolution for more efficient and equitable ESInet location arrangements and/or more equitable distribution of or compensation for the additional costs of the ultimate NG911 configuration.”⁵⁹⁸ As we discuss above, we establish a procedure in which an OSP, within 60 days of the receipt of a Phase 1 or Phase 2 valid request, may submit a petition to PSHSB asserting that the 911 Authority has failed to meet the requirements of a Phase 1 or 2 valid request.⁵⁹⁹ In cases where OSPs and 911 Authorities negotiate alternative arrangements, we require that OSPs notify the Commission of any alternative agreement and the pertinent terms of that agreement.⁶⁰⁰ This requirement ensures the Commission maintains proper oversight of the nationwide NG911 transition and awareness of any technical implementation issues that may arise. Furthermore, in addition to the OSP petition procedure we adopt, we believe that the existing avenues within the Commission, as well as the rules, are sufficient for monitoring the transition and compliance, and for addressing disputes.

209. Finally, Comtech “urges the Commission to place formal complaints regarding OSP noncompliance on the Commission’s Accelerated Docket[.]”⁶⁰¹ which is a complaint mechanism that is available for selected formal complaints.⁶⁰² Proceedings on the Accelerated Docket must be concluded within 60 days, and are therefore subject to shorter pleading deadlines and other modifications to the procedural rules that govern formal complaint proceedings.⁶⁰³ Given that our rules afford Commission staff the discretion to decide whether a complaint, or portion of a complaint, is suitable for inclusion on

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complaints about access to 911 emergency services. See FCC, Consumer Complaint Center, <https://consumercomplaints.fcc.gov/hc/en-us> (last visited June 6, 2024).

⁵⁹⁵ Maine PUC NG911 Notice Comments at 3 (“[E]xisting mechanisms of oversight should be sufficient.”); NASNA NG911 Notice Comments at 11 (“NASNA agrees that existing mechanisms of oversight should be sufficient. However, in the event actual implementation of the States’ NG911 deployments are delayed and existing mechanisms are found to be ineffective, NASNA will urge the Commission’s reconsideration.”); see AT&T NG911 Notice Comments at 11 (indicating that additional compliance reporting is not required).

⁵⁹⁶ AT&T NG911 Notice Comments at 3, 10-11; Hamilton Relay NG911 Notice Comments at 7.

⁵⁹⁷ Colorado PUC NG911 Notice Reply at 11 (stating that “COPUC believes that states and jurisdictions are in the best position to monitor compliance and inform the Commission if there are providers who refuse to comply”).

⁵⁹⁸ WTA NG911 Notice Comments at 7 (suggesting that the Commission “could establish a process whereby a state’s voice service providers could request and obtain Commission oversight and mediation of negotiations regarding proposed revisions to a state or regional ESInet location plan”).

⁵⁹⁹ See *supra* section III.C.2.f.

⁶⁰⁰ *Id.*

⁶⁰¹ Comtech NG911 Notice Comments at 11 (“Specifically, Comtech encourages the Commission to establish an expedited process when formal complaints are filed related to disputes in order to minimize extensive delays in the deployment of NG911 services.”).

⁶⁰² FCC, A Guide to Public Safety Enforcement, <https://www.fcc.gov/reports-research/guides/guide-public-safety-enforcement> (last visited June 6, 2024); see 47 CFR § 1.736.

⁶⁰³ 47 CFR § 1.736(a).

the Accelerated Docket,⁶⁰⁴ we decline Comtech's suggestion to default to the Accelerated Docket for complaints regarding OSP noncompliance.

I. Promoting Digital Equity and Inclusion

210. As noted in the *NG911 Notice*, the Commission is engaged in a continuing effort to advance digital equity for all, 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.⁶⁰⁵ The *NG911 Notice* invited comment on equity-related considerations and benefits, if any, that may be associated with the proposals and issues under consideration.⁶⁰⁶ Specifically, the Commission sought comment on how its proposals may promote or inhibit advances in diversity, equity, inclusion, and accessibility.⁶⁰⁷

211. Several parties submitted comments indicating that the transition to NG911 would promote digital equity and inclusion. Richard Ray "support[s] the implementation and deployment of NG9-1-1 to provide direct, equal, and meaningful access to emergency services for everyone, including individuals with disabilities, using all four elements: voice, video, text, and data."⁶⁰⁸ CEA concurs with a previous Commission statement that adding video, text, and image capabilities to the 911 system will "make the system more accessible to the public," including "for people with disabilities[.]"⁶⁰⁹ NENA states that NG911 introduces a variety of capabilities to support persons with disabilities and marginalized groups.⁶¹⁰ NASNA states that it "believes in providing equal access to 911 services to all citizens through local NG911 systems."⁶¹¹ The regulations we adopt today to advance the nationwide transition to NG911 will significantly promote and enable vital 911 access for individuals with disabilities, including through Internet-based TRS and video/data capabilities.⁶¹²

212. Certain RLEC commenters contend that the NG911 rules will have adverse effects on one particular group included in the Commission's initiative to promote digital equity and inclusion: persons who live in rural areas. South Carolina Telephone Coalition argues that imposing additional costs on RLECs without simultaneously changing high-cost universal service support would result in "a system that disproportionately benefits wireless callers through enhanced texting and video capabilities makes no sense and will ultimately hurt rural Americans."⁶¹³ South Dakota Telecommunications Association states that requiring "transport to out-of-state points of interconnection (POIs) will add cost,

⁶⁰⁴ 47 CFR § 1.736(d).

⁶⁰⁵ *NG911 Notice* at *24, para. 63.

⁶⁰⁶ *Id.*

⁶⁰⁷ *Id.*

⁶⁰⁸ Richard Ray Sept. 15, 2023 *Ex Parte* at 3; *id.* at 8 ("When NG9-1-1 is deployed, it will give individuals who are deaf, deafblind, late-deafened, hard of hearing, or who have speech disabilities the opportunity to call a PSAP directly rather than via Internet-based relay services such as Video Relay Service and Internet Protocol Relay Service.").

⁶⁰⁹ CEA NG911 Notice Comments at 10 (quoting *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications, Framework for Next Generation 911 Deployment*, PS Docket Nos. 11-153 and 10-255, Notice of Proposed Rulemaking, 26 FCC Red 13615, 13616, para. 1 (2011)).

⁶¹⁰ NENA NG911 Notice Comments at 14-15 (discussing an NG911 capability that allows callers to directly connect with a caller that supports their language and media).

⁶¹¹ NASNA NG911 Notice Comments at 11.

⁶¹² *See supra* Section III.C.1.e.

⁶¹³ South Carolina Telephone Coalition NG911 Notice Comments at 11.

which will need to be recovered from either the Universal Service Fund (USF) or the end-user's customers."⁶¹⁴ As we discuss above, we are tempering costs to RLECs and other OSPs by requiring 911 Authorities to designate NG911 Delivery Points within their own states.⁶¹⁵ Moreover, the rules we adopt do not require RLECs and other OSPs to extend their physical networks, and RLECs and other OSPs may retain other entities to transmit 911 traffic to the NG911 Delivery Points specified by the 911 Authorities.⁶¹⁶ Accordingly, we expect that RLECs' increased NG911-related costs are likely to be relatively modest, thus limiting the cost increases to be passed on to rural subscribers.⁶¹⁷

213. On the other hand, Rally Networks argues that, especially in rural communities, "NG911 provides an opportunity for resources to be more appropriately dispatched before first responders arrive on scene and evaluate the need."⁶¹⁸ We agree. As we discuss above, NG911 implementation will yield substantial benefits to consumers, including rural subscribers, due to the improved functionalities it supports, its capacity to deliver a greater range of information from 911 callers to PSAPs and first responders, the increased security, reliability, and interoperability of NG911 networks, and the likelihood that 911 calls will be delivered to first responders more rapidly and accurately, thus saving lives.⁶¹⁹ We conclude that our NG911 rules would advance digital equity for all, including for persons who live in rural areas.

214. In sum, we acknowledge the importance of the continuing effort to advance digital equity for all. We believe that the rules we adopt today, requiring OSPs to take actions to start the transition to NG911 in coordination with 911 Authorities, will help to advance those goals.

IV. PROCEDURAL MATTERS

215. *Regulatory Flexibility Act.* The Regulatory Flexibility Act of 1980, as amended (RFA),⁶²⁰ 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."⁶²¹ Accordingly, we have prepared a Final Regulatory Flexibility Analysis (FRFA) concerning the possible impact of the rule changes contained in this *Report and Order* on small entities. The FRFA is set forth in Appendix B.

216. *Congressional Review Act.* [The Commission will submit this draft *Report and Order* to the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, for concurrence as to whether this rule is "major" or "non-major" under the Congressional Review Act, 5 U.S.C. § 804(2).] The Commission will send a copy of this *Report and Order* to Congress and the Government Accountability Office pursuant to 5 U.S.C. § 801(a)(1)(A).

217. *Paperwork Reduction Act of 1995 Analysis.* This document contains new information collection requirements in section 9.31, paragraphs (a), (b), and (c), and section 9.34, paragraphs (a) and (b),⁶²² that are subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. It will be

⁶¹⁴ South Dakota Telecommunications Association NG911 Notice Comments at 6.

⁶¹⁵ See *supra* section III.D.1.

⁶¹⁶ See *supra* section III.D.1.

⁶¹⁷ See *supra* section III.G.2.

⁶¹⁸ Rally Networks NG911 Notice Comments at 1.

⁶¹⁹ See *supra* section III.G.1.

⁶²⁰ See 5 U.S.C. § 604. The RFA, 5 U.S.C. §§ 601-612. The RFA was amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

⁶²¹ 5 U.S.C. § 605(b).

⁶²² See *infra* Appendix A.

submitted to the Office of Management and Budget (OMB) for review under section 3507(d) of the PRA.⁶²³ OMB, the general public, and other federal agencies will be invited to comment on the new information collection requirements contained in this proceeding. In addition, we note that, pursuant to the Small Business Paperwork Relief Act of 2002,⁶²⁴ we previously sought specific comment on how the Commission might further reduce the information collection burden for small business concerns with fewer than 25 employees. We received a few such comments. South Carolina states that “a simple certification by providers that they are in compliance with requirements for delivery of calls in IP format to the designated demarcation points is sufficient rather than creating additional burdens on the providers for reporting requirements.”⁶²⁵ As we indicate above, we are not imposing requirements to report compliance with the rules.⁶²⁶ We received a comment relevant to our new information collection requirement⁶²⁷ for OSPs and 911 Authorities that enter into agreements, which requires the OSP to notify the Commission. Alaska Telecom Assoc. “agrees” that providing OSPs and 911 Authorities “the flexibility to negotiate an alternative time frame” is “a significant step to minimize the economic impact for small entities.”⁶²⁸ The Commission does not believe that the new information collection requirements in section 9.31, paragraphs (a), (b), and (c), and section 9.34, paragraphs (a) and (b), will be unduly burdensome on small businesses. We describe impacts that might affect small businesses, which includes most businesses with fewer than 25 employees, in the FRFA in Appendix B.

218. *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).

219. *Additional Information.* For additional information on this proceeding, contact John Evanoff of the Public Safety and Homeland Security Bureau, Policy and Licensing Division, at John.Evanoff@fcc.gov or (202) 418-0848.

V. ORDERING CLAUSES

220. Accordingly, IT IS ORDERED, pursuant to sections 1, 2, 4(i), 201, 214, 222, 225, 251(e), 301, 303, 316, and 332 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 201, 214, 222, 225, 251(e), 301, 303, 316, 332; the Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, 47 U.S.C. §§ 615 note, 615, 615a, 615b; and section 106 of the Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. No. 111-260, 47 U.S.C. § 615c, that this *Report and Order* IS ADOPTED.

221. IT IS FURTHER ORDERED that the amendments to part 9 of the Commission’s rules, as set forth in Appendix A, ARE ADOPTED, effective sixty (60) days after publication in the *Federal Register*. Compliance will not be required for paragraphs (a), (b), and (c) of section 9.31 and paragraphs (a) and (b) of section 9.34 until after any review by the Office of Management and Budget that the Public Safety and Homeland Security Bureau deems necessary. The Commission delegates authority to the Public Safety and Homeland Security Bureau to publish a document in the *Federal Register* announcing that compliance date and revising paragraph (d) of section 9.31 and paragraph (c) of section 9.34.

⁶²³ 44 U.S.C. § 3507(d).

⁶²⁴ Pub. L. No. 107-198, 116 Stat. 729 (2002) (codified at 44 U.S.C. § 3506(c)(4)).

⁶²⁵ South Carolina RFA NG911 Notice Comments at 12.

⁶²⁶ See *supra* section III.G.

⁶²⁷ See *infra* Appendix A at § 9.34(b).

⁶²⁸ Alaska Telecom Assoc. NG911 Notice Comments at 9 (also stating that even if the FCC provides such flexibility, “the FCC should still adopt longer implementation timeframes than proposed in the NPRM” for smaller providers”).

222. IT IS FURTHER ORDERED that the Commission's Office of the Secretary, Reference Information Center, SHALL SEND a copy of this *Report and Order*, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

223. IT IS FURTHER ORDERED that the Office of the Managing Director, Performance Program Management, SHALL SEND a copy of this *Report and Order* in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, 5 U.S.C. § 801(a)(1)(A).

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

Appendix A**Final Rules**

The Federal Communications Commission amends part 9 of Title 47 of the Code of Federal Regulations as follows:

PART 9 – 911 REQUIREMENTS

1. The authority citation for part 9 continues to read as follows:

Authority: 47 U.S.C. 151–154, 152(a), 155(c), 157, 160, 201, 202, 208, 210, 214, 218, 219, 222, 225, 251(e), 255, 301, 302, 303, 307, 308, 309, 310, 316, 319, 332, 403, 405, 605, 610, 615, 615 note, 615a, 615b, 615c, 615a–1, 616, 620, 621, 623, 623 note, 721, and 1471, and Section 902 of Title IX, Division FF, Pub. L. 116–260, 134 Stat. 1182, unless otherwise noted.

2. Revise § 9.1 to read as follows:

§ 9.1 Purpose.

The purpose of this part is to set forth the 911, E911, and Next Generation 911 service requirements and conditions applicable to telecommunications carriers (subpart B); commercial mobile radio service (CMRS) providers (subpart C); interconnected Voice over Internet Protocol (VoIP) providers (subpart D); Internet-based providers of telecommunications relay services (TRS) for persons with disabilities (subpart E); multi-line telephone systems (MLTS) (subpart F); and Mobile-Satellite Service (MSS) providers (subpart G). The rules in this part also include requirements to help ensure the resiliency, redundancy, and reliability of 911 communications systems (subpart H), acceptable obligations and expenditures of 911 fees (subpart I), and Next Generation 911 obligations (subpart J).

3. Add subpart J to read as follows:

Subpart J –Next Generation 911

Sec.

9.27 Applicability, scope, and purpose.

- 9.28 Definitions.
- 9.29 Next Generation 911 transition requirements.
- 9.30 Next Generation 911 implementation deadlines.
- 9.31 Valid requests for delivery of 911 traffic in Internet Protocol-based formats.
- 9.32 Designation of NG911 Delivery Points.
- 9.33 Cost responsibilities.
- 9.34 Modification of NG911 requirements by mutual agreement.

§ 9.27. Applicability, scope, and purpose.

- (a) The purpose of this subpart is to set forth requirements and conditions in order to facilitate the transition to Next Generation 911 (NG911), and to assist with creating an NG911 architecture that is secure, interoperable, and based on commonly accepted standards.
- (b) The rules in this subpart apply to “originating service providers” as defined in § 9.28 of this subpart.
- (c) An originating service provider subject to the rules in this subpart shall be considered to have delivered 911 traffic to a public safety answering point (PSAP) if the originating service provider’s 911 traffic is delivered to NG911 Delivery Points designated by the 911 Authority pursuant to § 9.32 and the other requirements in this subpart are satisfied.

§ 9.28. Definitions. For purposes of this subpart, the terms in this section have the following meanings set forth in this section—

911 Authority. A state, territorial, regional, Tribal, or local governmental entity that operates or oversees a communications network for the receipt of 911 traffic at NG911 Delivery Points and for the transmission of such traffic from that point to PSAPs.

911 traffic. Transmissions consisting of all 911 calls (as defined in §§ 9.3, 9.11(b)(2)(ii)(A), 9.14(d)(2)(iii)(A), and 9.14(e)(2)(ii)(A)) and/or 911 text messages (as defined in § 9.10(q)(9)), as well

as information about calling parties' locations and originating telephone numbers and routing information transmitted with the calls and/or text messages.

Commonly accepted standards. The technical standards followed by the communications industry for network, device, and Internet Protocol connectivity that—

(1) enable interoperability; and

(2) are—

(i) developed and approved by a standards development organization that is accredited by a United States standards body (such as the American National Standards Institute) or an equivalent international standards body in a process that— (A) is open to the public, including open for participation by any person; and (B) provides for a conflict resolution process;

(ii) subject to an open comment and input process before being finalized by the standards development organization;

(iii) consensus-based; and

(iv) made publicly available once approved.

Covered text provider. The term “covered text provider” has the meaning given such term under § 9.10(q)(1).

Emergency Services Internet Protocol Network (ESInet). An Internet Protocol (IP)-based network that is managed or operated by a 911 Authority or its agents or vendors and that is used for emergency services communications, including Next Generation 911.

Functional Element. A set of software features that may be combined with hardware interfaces and operations on those interfaces to accomplish a defined task.

Location Information Server (LIS). A Functional Element that provides locations of endpoints. A LIS can provide Location-by-Reference or Location-by-Value, and, if the latter, in geodetic or civic forms. A LIS can be queried by an endpoint for its own location, or by another entity for the location of an endpoint.

Location Validation Function (LVF). A Functional Element in an NG911 Core Services (NGCS) consisting of a server where civic location information is validated against the authoritative Geographic Information System (GIS) database information. A civic address is considered valid if it can be located within the database uniquely, is suitable to provide an accurate route for an emergency call, and is adequate and specific enough to direct responders to the right location.

Nationwide CMRS provider. The term “nationwide CMRS provider” has the meaning given such term under § 9.10(i)(1)(iv).

Next Generation 911 (NG911). An Internet Protocol-based system that—

- (1) ensures interoperability;
- (2) is secure;
- (3) employs commonly accepted standards;
- (4) enables emergency communications centers to receive, process, and analyze all types of 911 requests for emergency assistance;
- (5) acquires and integrates additional information useful to handling 911 requests for emergency assistance; and
- (6) supports sharing information related to 911 requests for emergency assistance among emergency communications centers and emergency response providers.

NG911 Delivery Point. A geographic location, facility, or demarcation point designated by a 911 Authority where an originating service provider shall transmit and deliver 911 traffic in an IP format to ESInets or other NG911 network facilities.

Non-nationwide CMRS provider. The term “non-nationwide CMRS provider” has the meaning given such term under § 9.10(i)(1)(v).

Non-rural wireline provider. A wireline provider that is not a rural incumbent local exchange carrier (as defined in § 54.5 of this chapter).

Originating service providers. Providers that originate 911 traffic, specifically wireline providers; commercial mobile radio service (CMRS) providers, excluding mobile satellite service (MSS)

operators to the same extent as set forth in § 9.10(a); covered text providers, as defined in § 9.10(q)(1); interconnected Voice over Internet Protocol (VoIP) providers, including all entities subject to subpart D of this part; and Internet-based Telecommunications Relay Service (TRS) providers that are directly involved with routing 911 traffic, pursuant to subpart E of this part.

Rural incumbent local exchange carrier (RLEC). The term “rural incumbent local exchange carrier” or “RLEC” has the meaning given such term under § 54.5 of this chapter.

Session Initiation Protocol (SIP). A signaling protocol used for initiating, maintaining, modifying, and terminating communications sessions between Internet Protocol (IP) devices. SIP enables voice, messaging, video, and other communications services between two or more endpoints on IP networks.

Wireline provider. A local exchange carrier (as defined in 47 U.S.C. 153(32)) that provides service using wire communication (as defined in 47 U.S.C. 153(59)).

§ 9.29 Next Generation 911 transition requirements.

(a) *Phase 1.* Upon receipt of a 911 Authority’s valid request, an originating service provider that is subject to the rules in this subpart shall, by the relevant deadline specified in § 9.30(a)(1) or (b)(1)—

(1) Deliver all 911 traffic bound for the relevant PSAPs in the IP-based SIP format requested by the 911 Authority;

(2) Obtain and deliver 911 traffic to enable the ESInet and other NG911 network facilities to transmit all 911 traffic to the destination PSAP;

(3) Deliver all such 911 traffic to NG911 Delivery Points designated by the 911 Authority pursuant to § 9.32; and

(4) Complete connectivity testing to confirm that the 911 Authority receives 911 traffic in the IP-based SIP format requested by the 911 Authority.

(b) *Phase 2.* Upon receipt of a 911 Authority’s valid request, an originating service provider that is subject to the rules in this subpart shall, by the relevant deadline specified in § 9.30(a)(2) or (b)(2)—

- (1) Comply with all Phase 1 requirements set forth in paragraph (a) of this section;
- (2) Deliver all 911 traffic bound for the relevant PSAPs to NG911 Delivery Points designated by the 911 Authority pursuant to § 9.32 in the IP-based SIP format that complies with NG911 commonly accepted standards identified by the 911 Authority, including having location information embedded in the call signaling using Presence Information Data Format – Location Object (PIDF-LO) or the functional equivalent;
- (3) Install and put into operation all equipment, software applications, and other infrastructure, or acquire all services, necessary to use a Location Information Server (LIS) or its functional equivalent for the verification of its customer location information and records; and
- (4) Complete connectivity testing to confirm that the 911 Authority receives 911 traffic in the IP-based SIP format that complies with the identified NG911 commonly accepted standards.

§ 9.30 Next Generation 911 implementation deadlines.

(a) Non-rural wireline providers, nationwide CMRS providers, covered text providers, and interconnected VoIP providers shall—

- (1) Comply with the Phase 1 requirements set forth in § 9.29(a) by six months after receiving a Phase 1 valid request from a 911 Authority, as set forth in § 9.31(a); and
- (2) Comply with the Phase 2 requirements set forth in § 9.29(b) by:
 - (i) Six months after receiving a Phase 2 valid request from a 911 Authority, as set forth in § 9.31(b); or
 - (ii) If the 911 Authority's Phase 2 valid request is made before the originating service provider is compliant with the Phase 1 requirements or is made before the Phase 1 implementation deadline, six months after the earlier of:
 - (A) The date when the originating service provider is compliant with the Phase 1 requirements set forth in § 9.29(a); or
 - (B) The implementation deadline set forth in paragraph (a)(1) of this section.

- (b) RLECs, non-nationwide CMRS providers, and Internet-based TRS providers shall—
- (1) Comply with the Phase 1 requirements set forth in § 9.29(a) by 12 months after receiving a Phase 1 valid request from a 911 Authority, as set forth in § 9.31(a); and
 - (2) Comply with the Phase 2 requirements set forth in § 9.29(b) by:
 - (i) 12 months after receiving a Phase 2 valid request from a 911 Authority, as set forth in § 9.31(b); or
 - (ii) If the 911 Authority's Phase 2 valid request is made before the originating service provider is compliant with the Phase 1 requirements or is made before the Phase 1 implementation deadline, 12 months after the earlier of:
 - (A) The date when the originating service provider is compliant with the Phase 1 requirements set forth in § 9.29(a); or
 - (B) The implementation deadline set forth in paragraph (b)(1) of this section.

§ 9.31 Valid requests for delivery of 911 traffic in Internet Protocol-based formats.

- (a) *Phase 1 valid request.* A 911 Authority's request for delivery of 911 traffic in the manner specified in § 9.29(a) is a Phase 1 valid request if the requesting 911 Authority—
- (1) Certifies that it has installed and placed into operation all of the infrastructure needed to receive 911 traffic in an IP-based SIP format and transmit such traffic to the PSAP(s) connected to it;
 - (2) Certifies that it has obtained commitments from any ESInet provider, Next Generation 911 Core Services provider, and/or call handling equipment provider needed to facilitate and complete connectivity testing within the compliance timeframe applicable to the originating service provider;
 - (3) Certifies that it is authorized to submit a valid request for the NG911 network to receive 911 traffic in an IP-based SIP format;
 - (4) Identifies the NG911 Delivery Point(s) designated pursuant to § 9.32; and
 - (5) Provides notification to the originating service provider that includes the information and certifications set forth in paragraphs (a)(1) through (4) of this section. Notification by the 911

Authority via a registry made available by the Commission in accordance with requirements established in connection therewith, or any other written notification reasonably acceptable to the originating service provider, shall constitute sufficient notification for purposes of this paragraph.

(b) *Phase 2 valid request.* A 911 Authority's request for delivery of 911 traffic in the manner specified in § 9.29(b) is a Phase 2 valid request if the requesting 911 Authority—

(1) Certifies that it has installed and placed into operation all of the infrastructure needed to receive 911 traffic in an IP-based SIP format that complies with NG911 commonly accepted standards and transmit such traffic to the PSAP(s) connected to it;

(2) Certifies that its ESInet is connected to a fully functioning Next Generation 911 Core Services network that can provide access to a Location Validation Function and interface with a Location Information Server or its functional equivalent provided by the originating service provider;

(3) Certifies that it has obtained commitments from any ESInet provider, Next Generation 911 Core Services provider, and/or call handling equipment provider needed to facilitate and complete connectivity testing within the compliance timeframe applicable to the originating service provider;

(4) Certifies that it is authorized to submit a valid request for the NG911 network to receive 911 traffic in an IP-based SIP format that complies with NG911 commonly accepted standards;

(5) Identifies the NG911 Delivery Point(s) designated pursuant to § 9.32; and

(6) Provides notification to the originating service provider that includes the information and certifications set forth in paragraphs (b)(1) through (5) of this section. Notification by the 911 Authority via a registry made available by the Commission in accordance with requirements established in connection therewith, or any other written notification reasonably acceptable to the originating service provider, shall constitute sufficient notification for purposes of this paragraph.

(c) *Originating service providers' petitions challenging 911 Authorities' requests.* Within 60 days of the receipt of a Phase 1 or 2 request from a 911 Authority, an originating service provider may submit a petition to the Public Safety and Homeland Security Bureau asserting that the 911 Authority's request does not satisfy a condition set forth in paragraph (a) or (b) of this section for a Phase 1 or Phase 2 valid

request. The Public Safety and Homeland Security Bureau may review the petition and determine whether to pause the implementation deadline for that originating service provider, affirm the request of the 911 Authority as valid, or take other action as necessary.

(1) The petition process shall be subject to the procedural requirements set forth in §§ 1.41, 1.45, and 1.47 of this chapter.

(2) The petition must be in the form of an affidavit signed by a director or officer of the originating service provider, documenting:

(i) The basis for the originating service provider's assertion that the 911 Authority's request does not satisfy one or more of the conditions set forth in paragraphs (a) or (b) of this section for a Phase 1 or Phase 2 valid request.

(ii) Each of the specific steps the originating service provider has taken to implement the Phase 1 requirements set forth in § 9.29(a) or the Phase 2 requirements set forth in § 9.29(b).

(iii) The basis for the originating service provider's assertion that it cannot make further implementation efforts until the 911 Authority satisfies the conditions set forth in paragraphs (a) or (b) of this section for a Phase 1 or Phase 2 valid request.

(iv) The specific steps that remain to be completed by the originating service provider and, to the extent known, the 911 Authority or other parties before the originating service provider can implement the Phase 1 requirements set forth in § 9.29(a) or the Phase 2 requirements set forth in § 9.29(b).

(3) All affidavits must be correct. The originating service provider's director or officer who signs the affidavit has the duty to personally determine that the affidavit is correct. If the affidavit is incorrect, he or she, as well as the originating service provider, may be subject to enforcement action.

(4) An originating service provider may not file an inadequate or incomplete petition. If an originating service provider's petition is inadequate and/or incomplete and the originating service provider has not met its obligations as set forth in § 9.29(a) or (b) at the time of the relevant deadline,

the originating service provider may be considered noncompliant with the applicable rules as if the petition had not been filed.

(5) An originating service provider may not challenge a 911 Authority's valid request unless it has completed all necessary steps toward implementing the Phase 1 requirements set forth in § 9.29(a) or the Phase 2 requirements set forth in § 9.29(b) that are not dependent on the readiness of the 911 Authority.

(6) The 911 Authority may file an opposition to the originating service provider's petition and the originating service provider may file a reply to the opposition in accordance with § 1.45 of this chapter. A copy of the document (petition, opposition, or reply) must be served on the other party (911 Authority or originating service provider) at the time of the filing in accordance with § 1.47 of this chapter.

(d) Paragraphs (a), (b), and (c) of this section may contain information collection and recordkeeping requirements that require review by the Office of Management and Budget. Compliance with those paragraphs will not be required until this paragraph (d) is removed or contains a compliance date.

§ 9.32 Designation of NG911 Delivery Points.

A 911 Authority may designate one or more NG911 Delivery Points where originating service providers must deliver 911 traffic to the ESInet pursuant to § 9.29, provided that—

(a) Each NG911 Delivery Point is located in the same state or territory as the PSAPs connected to the ESInet; and

(b) The 911 Authority or the ESInet provides facilities at the input to the NG911 Delivery Point to receive 911 traffic in accordance with the applicable phase.

§ 9.33 Cost responsibilities.

(a) Originating service providers are responsible for the costs of complying with the applicable Phase 1 and Phase 2 requirements assigned to them under § 9.29, including the costs of—

- (1) Transmitting 911 traffic to NG911 Delivery Points;
 - (2) Delivering 911 traffic in the required IP-based SIP format at each phase, including the cost of IP conversion using a Legacy Network Gateway or the functional equivalent, if necessary; and
 - (3) Obtaining and delivering location and routing information using ALI/ANI databases, selective routers, or other means at Phase 1, and using LIS functionalities or other equivalent means at Phase 2.
- (b) Originating service providers are not responsible for the costs of furnishing, maintaining, or upgrading NG911 Delivery Points, ESInets, Next Generation 911 Core Services networks, or PSAPs.

§ 9.34 Modification of NG911 requirements by mutual agreement.

- (a) Nothing in this subpart shall prevent 911 Authorities and originating service providers from establishing, by mutual consent, terms different from the requirements set forth in §§ 9.29 through 9.33.
- (b) If a 911 Authority and an originating service provider enter into an agreement pursuant to paragraph (a) of this section, within 30 days of the date when any such agreement is executed, the originating service provider must notify the Commission of the agreement. The notification must identify with specificity each requirement in the rules that is impacted by the agreement and must state with specificity how the terms of the agreement differ from each impacted rule. The same notification is required if the 911 Authority and originating service provider amend, modify, or terminate the agreement.
- (c) Paragraphs (a) and (b) of this section may contain information collection and recordkeeping requirements that require review by the Office of Management and Budget. Compliance with those paragraphs will not be required until this paragraph (c) is removed or contains a compliance date.

Appendix B

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Facilitating Implementation of Next Generation 911 Services (NG911)* Notice of Proposed Rulemaking (*NG911 Notice*) adopted in June 2023.² The Federal Communications Commission (Commission) sought written public comment on the proposals in the *NG911 Notice*, including comments on the IRFA. One comment was filed addressing the IRFA.³ This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.⁴

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

2. In the *NG911 Notice*, the Commission proposed a framework to advance the nationwide transition to Next Generation 911 (NG911). Like communications networks generally, dedicated 911 networks are evolving from Time Division Multiplexing (TDM)-based architectures to Internet Protocol (IP)-based architectures. With the transition to NG911, 911 Authorities (i.e., a state, territorial, regional, Tribal, or local governmental entity that operates or oversees a communications network for the receipt of 911 traffic at NG911 Delivery Points and for the transmission of such traffic from that point to the PSAPs) will replace the circuit-switched architecture of legacy 911 networks with IP-based technologies and applications, which provide new capabilities and improved interoperability and system resilience. Most states have invested significantly in NG911, but some report that they are experiencing delays in providers connecting to these IP-based networks. As a result of these delays, the transition to NG911 is being delayed, and state and local 911 authorities incur prolonged costs because of the need to maintain both legacy and IP networks during the transition. Managing 911 traffic on both legacy and IP networks also results in increased vulnerability and risk of 911 outages.

3. In today's *Report and Order*, the Commission adopts rules and procedures to expedite the NG911 transition that will apply to all wireline, Commercial Mobile Radio Service (CMRS), covered text, interconnected Voice over Internet Protocol (VoIP), and Internet-based Telecommunications Relay Service (TRS) providers (collectively, Originating Service Providers or OSPs for purposes of this proceeding) as 911 Authorities transition to IP-based networks and develop the capability to support NG911 elements and functions. Specifically, we require OSPs to complete necessary network upgrades to complete the transition to NG911 in two phases, triggered at each phase by separate valid requests of 911 Authorities who have completed their required NG911 technology upgrade readiness for that phase. At Phase 1, OSPs must deliver 911 traffic in IP format to NG911 Delivery Points designated by 911 Authorities, such as an Emergency Services IP network (ESInet) or similar designated point. All Phase 1 requirements must be completed in order to progress to Phase 2. At Phase 2, OSPs must deliver traffic in fully compliant NG911 format to include information that enables routing to the correct Public Safety Answering Point (PSAP), as well as caller location information, in the IP Session Initiation Protocol (SIP) header of the IP-delivered 911 call.

4. Smaller wireline providers (such as Rural Incumbent Local Exchange Carriers (RLECs)),

¹ 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 *Facilitating Implementation of Next Generation 911 Services (NG911)*, PS Docket No. 21-479, Notice of Proposed Rulemaking, FCC 23-47, 2023 WL 3946685 (June 9, 2023), <https://www.fcc.gov/document/fcc-proposes-action-expedite-transition-next-generation-911-0> (*NG911 Notice*).

³ Rural Telephone Company Consortium (RTCC) NG911 Notice Comments at 24 n.53 (rec. Aug. 9, 2023) (RTCC NG911 Notice Comments). RTCC's comments are discussed in sections B and E of this Final Regulatory Flexibility Analysis.

⁴ 5 U.S.C. § 604.

non-nationwide CMRS providers, and Internet-based TRS providers will have one year following a 911 Authority request to comply with each phase of the transition. Larger wireline providers, nationwide CMRS providers, covered text providers, and interconnected-VoIP providers will have six months to comply with a valid request with each phase of the transition. For all OSPs, the initial compliance date will be extended based on the effective date of the rules we adopt today—i.e. no OSP must comply with a 911 Authority Phase 1 request sooner than one year after the effective date of these rules, regardless of the timing of the 911 Authority’s request. This timing rule is similar to the requirements adopted for CMRS and covered text providers in our recent proceeding on wireless location-based routing.⁵

5. The Commission’s two-phased approach allows OSPs and states or localities to negotiate alternate agreements on cost recovery terms. However, in the absence of alternate agreements by states or localities, OSPs must cover the costs of transmitting 911 calls to the NG911 Delivery Points designated by a 911 Authority starting in Phase 1. OSPs bear responsibility for any costs associated with completing the TDM-to-IP translation necessary to deliver such calls and associated routing and location information in the requested IP-based format. Thus, the NG911 Delivery Point becomes the network demarcation point for allocating all 911 network costs between the OSP portions of the network and the state and local government portions of the network. States and localities can establish alternative cost allocation arrangements with OSPs. However, OSPs are presumptively responsible for all the costs associated with delivering traffic to the NG911 Delivery Point identified by the appropriate 911 Authority in the absence of any such alternative arrangements.

6. Expediting the NG911 transition will help ensure that the nation’s 911 system functions effectively and reliably, and with the most advanced capabilities available. In the *Report and Order*, the Commission’s actions also respond to the petition filed in 2021 by the National Association of State 911 Administrators (NASNA),⁶ urging the Commission to resolve uncertainty and disputes between OSPs and state 911 Authorities regarding the NG911 transition. With the rules we adopt, the Commission creates a consistent framework for ensuring that OSPs take the necessary steps to implement the transition to NG911 capability in coordination with state and local 911 Authorities. Today’s rules also align the NG911 transition requirements for all OSPs with similar Commission requirements adopted for CMRS in the *Location-Based Routing Report and Order*, thereby promoting consistency across service platforms. Finally, the demarcation point and cost allocation rules the Commission adopts today address “the critical component, and biggest regulatory roadblock, to transitioning to NG911 services.”⁷

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

7. One commenter, RTCC, raises significant issues in response to the IRFA. RTCC states that the Commission’s initial estimate in the *NG911 Notice* that only 8.5% of RLECs would incur monthly 911 IP call transport costs “lack[s] a factual foundation” and therefore “call[s] into question the reliability and sustainab[ility]” of the IRFA.⁸ We disagree. Further, while not raised in response to the IRFA, comments filed by RLECs also raise cost-related concerns associated with the IP transport rule proposed in the *NG911 Notice*.⁹ Following the Commission’s review of comments from multiple parties associated

⁵ *Location-Based Routing for Wireless 911 Calls*, PS Docket No. 18-64, Report and Order, FCC 24-4, 2024 WL 356874 at *2, para. 3 (Jan. 26, 2024) (*LBR Report and Order*).

⁶ Petition for Rulemaking; Alternatively, Petition for Notice of Inquiry, CC Docket No. 94-102, PS Docket Nos. 18-64, 18-261, 11-153, and 10-255 (filed Oct. 19, 2021), <https://www.fcc.gov/ecfs/document/1019188969473/1> (NASNA Petition).

⁷ NASNA Petition at 6.

⁸ RTCC NG911 Notice Comments at 24 & n.53.

⁹ South Carolina Telephone Coalition (South Carolina RLECs) NG911 Notice Comments at 10 & n.17 (rec. Aug. 9, 2023) (South Carolina RLECs NG911 Notice Comments) (arguing that landline carriers cannot recover 911 costs from customers); Kansas RLECs NG911 Notice Comments at 3-5 (rec. Aug. 9, 2023) (Kansas RLECs NG911

(continued....)

with our cost estimates in the *NG911 Notice*, including comments submitted in the record by RLECs, today's *Report and Order* adjusts our cost estimates to implement the requirements we adopt to advance the nationwide transition to Next Generation 911. In response to comments, today's *Report and Order* also modifies the proposed rules to substantially minimize any significant cost impacts on small businesses. We discuss RTCC and RLECs concerns in Section E of this FRFA, as well as modifications adopted in the *Report and Order* in Section F of this FRFA. Accordingly, the Commission concludes that the IRFA included in the *NG911 Notice* was sound and has fulfilled its purposes in satisfaction of the requirements of the RFA.

C. Response to Comments by the Chief Counsel for Advocacy of the Small Business Administration

8. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments.¹⁰ The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

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

9. 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 rules adopted herein.¹¹ The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”¹² In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.¹³ A “small business concern” is one

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Notice Comments) (arguing RLECs cannot recover costs, but also explaining the processes for RLECs to petition the Kansas Corporation Commission to increase rates or recover costs); Five Area Telephone Cooperative, Inc. and Mid-Plains Telephone Cooperative, Inc. (Five Area Telephone) NG911 Notice Comments at 9, 11 (rec. Aug. 9, 2023) (Five Area Telephone NG911 Notice Comments) (estimating almost \$3,000 per month for transport to ESInet points “hundreds of miles away in other states” which would cost OSPs collectively over \$83 million annually nationwide); NTCA–The Rural Broadband Association (NTCA) NG911 Notice Comments at 3 (rec. Aug. 9, 2023) (NTCA NG911 Notice Comments) (stating an RLEC in rural Kansas has been ordered by the 911 authority to deliver IP formatted 911 traffic to delivery points in California or Texas, which would cost \$1,400 per month); South Dakota Telecommunications Association NG911 Notice Comments at 11-12 (rec. Aug. 9, 2023) (South Dakota Telecommunications Association NG911 Notice Comments) (IP transport costs per RLEC could be between \$1,000 and \$13,000 per month per connection depending on distance, and that cost could increase at least 30% for out-of-state connections); USTelecom–The Broadband Association (USTelecom) NG911 Notice Comments at 4-5 (rec. Aug. 9, 2023) (USTelecom NG911 Notice Comments) (distance impacts IP transport prices, and one carrier is paying \$750,000 in annual cost (or equivalent to \$62,500 per month) to deliver 911 traffic to the state-designated delivery point hundreds of miles away); RTCC NG911 Notice Comments at 25 (Nebraska RLECs would each have to pay approximately \$1,350 per month for reliable SIP transport to connect to the IP delivery points in Colorado and Illinois, with an aggregate cost of \$360,000 per year for the 24 RLECs); WTA–Advocates for Rural Broadband (WTA) NG911 Notice Comments at 6, 8 (rec. Aug. 9, 2023)) (WTA NG911 Notice Comments) (it is impossible to fairly estimate transport costs without knowing where the delivery points are located and at what distance from RLECs).

¹⁰ 5 U.S.C. § 604(a)(3).

¹¹ *Id.* § 604(a)(4).

¹² *Id.* § 601(6).

¹³ *Id.* § 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

(continued....)

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.¹⁴

10. *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, at the outset, three broad groups of small entities that could be directly affected herein.¹⁵ 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.¹⁶ These types of small businesses represent 99.9% of all businesses in the United States, which translates to 33.2 million businesses.¹⁷

11. 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.”¹⁸ 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.¹⁹ Nationwide, for tax year 2022, there were approximately 530,109 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.²⁰

12. 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.”²¹ U.S. Census Bureau data from the 2022 Census of

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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.”

¹⁴ 15 U.S.C. § 632.

¹⁵ 5 U.S.C. § 601(3)-(6).

¹⁶ See SBA, Office of Advocacy, “What’s New With Small Business?,” <https://advocacy.sba.gov/wp-content/uploads/2023/03/Whats-New-Infographic-March-2023-508c.pdf> (Mar. 2023).

¹⁷ *Id.*

¹⁸ 5 U.S.C. § 601(4).

¹⁹ 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 of 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.

²⁰ 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-eo-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 2022 with revenue less than or equal to \$50,000 for Region 1-Northeast Area (71,897), Region 2-Mid-Atlantic and Great Lakes Areas (197,296), and Region 3-Gulf Coast and Pacific Coast Areas (260,447) that includes the continental U.S., Alaska, and Hawaii. This data includes information for Puerto Rico (469).

²¹ 5 U.S.C. § 601(5).

Governments²² indicate there were 90,837 local governmental jurisdictions consisting of general purpose governments and special purpose governments in the United States.²³ Of this number, there were 36,845 general purpose governments (county,²⁴ municipal, and town or township²⁵) with populations of less than 50,000 and 11,879 special purpose governments (independent school districts²⁶) with enrollment populations of less than 50,000.²⁷ Accordingly, based on the 2022 U.S. Census of Governments data, we estimate that at least 48,724 entities fall into the category of “small governmental jurisdictions.”²⁸

13. *All Other Telecommunications.* This industry is comprised of establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation.²⁹ This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems.³⁰ Providers of Internet services (e.g. dial-up ISPs) or Voice over Internet Protocol (VoIP) services, via client-supplied telecommunications connections are also included in this industry.³¹ The SBA small business size standard for this industry classifies firms with annual receipts of \$40 million

²² 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/economic-census/year/2022/about.html>.

²³ See U.S. Census Bureau, 2022 Census of Governments – Organization Table 2. Local Governments by Type and State: 2022 [CG2200ORG02], <https://www.census.gov/data/tables/2022/econ/gus/2022-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. CG2200ORG02 Table Notes_Local Governments by Type and State_2022.

²⁴ See *id.* at tbl.5. County Governments by Population-Size Group and State: 2022 [CG2200ORG05], <https://www.census.gov/data/tables/2022/econ/gus/2022-governments.html>. There were 2,097 county governments with populations less than 50,000. This category does not include subcounty (municipal and township) governments.

²⁵ See *id.* at tbl.6. Subcounty General-Purpose Governments by Population-Size Group and State: 2022 [CG2200ORG06], <https://www.census.gov/data/tables/2022/econ/gus/2022-governments.html>. There were 18,693 municipal and 16,055 town and township governments with populations less than 50,000.

²⁶ See *id.* at tbl.10. Elementary and Secondary School Systems by Enrollment-Size Group and State: 2022 [CG2200ORG10], <https://www.census.gov/data/tables/2022/econ/gus/2022-governments.html>. There were 11,879 independent school districts with enrollment populations less than 50,000. See also tbl.4. Special-Purpose Local Governments by State Census Years 1942 to 2022 [CG2200ORG04], CG2200ORG04 Table Notes_Special Purpose Local Governments by State_Census Years 1942 to 2022.

²⁷ While the special purpose governments category also includes local special district governments, the 2022 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.

²⁸ 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 (36,845) and the number of special purpose governments - independent school districts with enrollment populations of less than 50,000 (11,879), from the 2022 Census of Governments - Organizations tbls. 5, 6 & 10.

²⁹ See U.S. Census Bureau, 2017 NAICS Definition, “517919 All Other Telecommunications,” <https://www.census.gov/naics/?input=517919&year=2017&details=517919>.

³⁰ *Id.*

³¹ *Id.*

or less as small.³² U.S. Census Bureau data for 2017 show that there were 1,079 firms in this industry that operated for the entire year.³³ Of those firms, 1,039 had revenue of less than \$25 million.³⁴ Based on this data, the Commission estimates that the majority of “All Other Telecommunications” firms can be considered small.

14. *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 available and licensed in these bands for the provision of various wireless communications services.³⁵ Wireless Telecommunications Carriers (*except* Satellite)³⁶ 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.³⁷ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.³⁸ Of this number, 2,837 firms employed fewer than 250 employees.³⁹ Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

15. According to Commission data as of December 2021, there were approximately 4,472 active AWS licenses.⁴⁰ 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.⁴¹ Pursuant to these definitions, 57 winning bidders claiming status as small or very small businesses won 215 of

³² See 13 CFR § 121.201, NAICS Code 517919 (as of 10/1/22, NAICS Code 517810).

³³ 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 517919, <https://data.census.gov/cedsci/table?y=2017&n=517919&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

³⁴ *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.

³⁵ See 47 CFR § 27.1(b).

³⁶ 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>.

³⁷ See 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

³⁸ 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>. At this time, the 2022 Economic Census data is not available.

³⁹ *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.

⁴⁰ 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.

⁴¹ See 47 CFR §§ 27.1002, 27.1102, 27.1104, 27.1106.

1,087 licenses.⁴² In the most recent auction of AWS licenses 15 of 37 bidders qualifying for status as small or very small businesses won licenses.⁴³

16. 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.

17. *Wired Telecommunications Carriers.* The U.S. Census Bureau defines this industry as 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 communications networks.⁴⁴ Transmission facilities may be based on a single technology or a combination of technologies. 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.⁴⁵ By exception, establishments providing satellite television distribution services using facilities and infrastructure that they operate are included in this industry.⁴⁶ Wired Telecommunications Carriers are also referred to as wireline carriers or fixed local service providers.⁴⁷

18. The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small.⁴⁸ U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year.⁴⁹ Of this number, 2,964 firms operated with fewer than 250 employees.⁵⁰ Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 4,590 providers that reported they were engaged

⁴² 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>.

⁴³ 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).

⁴⁴ See U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* <https://www.census.gov/naics/?input=517311&year=2017&details=517311>.

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ Fixed Local Service Providers include the following types of providers: Incumbent Local Exchange Carriers (ILECs), Competitive Access Providers (CAPs) and Competitive Local Exchange Carriers (CLECs), Cable/Coax CLECs, Interconnected VOIP Providers, Non-Interconnected VOIP Providers, Shared-Tenant Service Providers, Audio Bridge Service Providers, and Other Local Service Providers. Local Resellers fall into another U.S. Census Bureau industry group and therefore data for these providers is not included in this industry.

⁴⁸ See 13 CFR § 121.201, NAICS Code 517311 (as of 10/1/22, NAICS Code 517111).

⁴⁹ 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: EC1700SIZEEMPFI, NAICS Code 517311, <https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFI&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

⁵⁰ *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.

in the provision of fixed local services.⁵¹ Of these providers, the Commission estimates that 4,146 providers have 1,500 or fewer employees.⁵² Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

19. *Local Exchange Carriers (LECs)*. Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to local exchange services. Providers of these services include both incumbent and competitive local exchange service providers. Wired Telecommunications Carriers⁵³ is the closest industry with an SBA small business size standard.⁵⁴ Wired Telecommunications Carriers are also referred to as wireline carriers or fixed local service providers.⁵⁵ The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small.⁵⁶ U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year.⁵⁷ Of this number, 2,964 firms operated with fewer than 250 employees.⁵⁸ Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 4,590 providers that reported they were fixed local exchange service providers.⁵⁹ Of these providers, the Commission estimates that 4,146 providers have 1,500 or fewer employees.⁶⁰ Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

20. *Competitive Local Exchange Carriers (LECs)*. Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to local exchange services. Providers of these services include several types of competitive local exchange service providers.⁶¹ Wired Telecommunications Carriers⁶² is the closest industry with a SBA small business size standard.

⁵¹ Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2022), <https://docs.fcc.gov/public/attachments/DOC-391070A1.pdf>.

⁵² *Id.*

⁵³ See U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* <https://www.census.gov/naics/?input=517311&year=2017&details=517311>.

⁵⁴ See 13 CFR § 121.201, NAICS Code 517311 (as of 10/1/22, NAICS Code 517111).

⁵⁵ Fixed Local Exchange Service Providers include the following types of providers: Incumbent Local Exchange Carriers (ILECs), Competitive Access Providers (CAPs) and Competitive Local Exchange Carriers (CLECs), Cable/Coax CLECs, Interconnected VOIP Providers, Non-Interconnected VOIP Providers, Shared-Tenant Service Providers, Audio Bridge Service Providers, Local Resellers, and Other Local Service Providers.

⁵⁶ *Id.*

⁵⁷ 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: EC1700SIZEEMPFIEM, NAICS Code 517311, <https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

⁵⁸ *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.

⁵⁹ Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2022), <https://docs.fcc.gov/public/attachments/DOC-391070A1.pdf>.

⁶⁰ *Id.*

⁶¹ Competitive Local Exchange Service Providers include the following types of providers: Competitive Access Providers (CAPs) and Competitive Local Exchange Carriers (CLECs), Cable/Coax CLECs, Interconnected VOIP Providers, Non-Interconnected VOIP Providers, Shared-Tenant Service Providers, Audio Bridge Service Providers, Local Resellers, and Other Local Service Providers.

⁶² See U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* <https://www.census.gov/naics/?input=517311&year=2017&details=517311>.

The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small.⁶³ U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year.⁶⁴ Of this number, 2,964 firms operated with fewer than 250 employees.⁶⁵ Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 3,378 providers that reported they were competitive local service providers.⁶⁶ Of these providers, the Commission estimates that 3,230 providers have 1,500 or fewer employees.⁶⁷ Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

21. *Incumbent Local Exchange Carriers (Incumbent LECs)*. Neither the Commission nor the SBA have developed a small business size standard specifically for incumbent local exchange carriers. Wired Telecommunications Carriers⁶⁸ is the closest industry with an SBA small business size standard.⁶⁹ The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small.⁷⁰ U.S. Census Bureau data for 2017 show that there were 3,054 firms in this industry that operated for the entire year.⁷¹ Of this number, 2,964 firms operated with fewer than 250 employees.⁷² Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 1,212 providers that reported they were incumbent local exchange service providers.⁷³ Of these providers, the Commission estimates that 916 providers have 1,500 or fewer employees.⁷⁴ Consequently, using the SBA's small business size standard, the Commission estimates that the majority of incumbent local exchange carriers can be considered small entities.

22. *Interexchange Carriers (IXCs)*. Neither the Commission nor the SBA have developed a small business size standard specifically for Interexchange Carriers. Wired Telecommunications

⁶³ See 13 CFR § 121.201, NAICS Code 517311 (as of 10/1/22, NAICS Code 517111).

⁶⁴ 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: EC1700SIZEEMPFIEM, NAICS Code 517311, <https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

⁶⁵ *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.

⁶⁶ Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), <https://docs.fcc.gov/public/attachments/DOC-379181A1.pdf>.

⁶⁷ *Id.*

⁶⁸ See U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* <https://www.census.gov/naics/?input=517311&year=2017&details=517311>.

⁶⁹ See 13 CFR § 121.201, NAICS Code 517311 (as of 10/1/22, NAICS Code 517111).

⁷⁰ *Id.*

⁷¹ 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: EC1700SIZEEMPFIEM, NAICS Code 517311, <https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

⁷² *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.

⁷³ Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2022), <https://docs.fcc.gov/public/attachments/DOC-391070A1.pdf>.

⁷⁴ *Id.*

Carriers⁷⁵ is the closest industry with a SBA small business size standard.⁷⁶ The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small.⁷⁷ U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year.⁷⁸ Of this number, 2,964 firms operated with fewer than 250 employees.⁷⁹ Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 127 providers that reported they were engaged in the provision of interexchange services. Of these providers, the Commission estimates that 109 providers have 1,500 or fewer employees.⁸⁰ Consequently, using the SBA's small business size standard, the Commission estimates that the majority of providers in this industry can be considered small entities.

23. *Local Resellers.* Neither the Commission nor the SBA have developed a small business size standard specifically for Local Resellers. Telecommunications Resellers is the closest industry with a SBA small business size standard.⁸¹ The Telecommunications Resellers industry comprises establishments engaged in purchasing access and network capacity from owners and operators of telecommunications networks and reselling wired and wireless telecommunications services (except satellite) to businesses and households.⁸² Establishments in this industry resell telecommunications; they do not operate transmission facilities and infrastructure.⁸³ Mobile virtual network operators (MVNOs) are included in this industry.⁸⁴ The SBA small business size standard for Telecommunications Resellers classifies a business as small if it has 1,500 or fewer employees.⁸⁵ U.S. Census Bureau data for 2017 show that 1,386 firms in this industry provided resale services for the entire year.⁸⁶ Of that number, 1,375 firms operated with fewer than 250 employees.⁸⁷ Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 207 providers that reported

⁷⁵ See U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* <https://www.census.gov/naics/?input=517311&year=2017&details=517311>.

⁷⁶ See 13 CFR § 121.201, NAICS Code 517311 (as of 10/1/22, NAICS Code 517111).

⁷⁷ *Id.*

⁷⁸ 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: EC1700SIZEEMPFIEM, NAICS Code 517311, <https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

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 Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2022), <https://docs.fcc.gov/public/attachments/DOC-391070A1.pdf>.

⁸¹ See U.S. Census Bureau, *2017 NAICS Definition, "517911 Telecommunications Resellers,"* <https://www.census.gov/naics/?input=517911&year=2017&details=517911>.

⁸² *Id.*

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ See 13 CFR § 121.201, NAICS Code 517911 (as of 10/1/22, NAICS Code 517121).

⁸⁶ 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: EC1700SIZEEMPFIEM, NAICS Code 517911, <https://data.census.gov/cedsci/table?y=2017&n=517911&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

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.

they were engaged in the provision of local resale services.⁸⁸ Of these providers, the Commission estimates that 202 providers have 1,500 or fewer employees.⁸⁹ Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

24. *Broadband Personal Communications Service.* The broadband personal communications services (PCS) spectrum encompasses services in the 1850-1910 and 1930-1990 MHz bands.⁹⁰ The closest industry with a SBA small business size standard applicable to these services is Wireless Telecommunications Carriers (except Satellite).⁹¹ The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.⁹² U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.⁹³ Of this number, 2,837 firms employed fewer than 250 employees.⁹⁴ Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

25. Based on Commission data as of November 2021, there were approximately 5,060 active licenses in the Broadband PCS service.⁹⁵ 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.⁹⁶ Winning bidders claiming small business credits won Broadband PCS licenses in C, D, E, and F Blocks.⁹⁷

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

⁸⁸ Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2022), <https://docs.fcc.gov/public/attachments/DOC-391070A1.pdf>.

⁸⁹ *Id.*

⁹⁰ See 47 CFR § 24.200.

⁹¹ 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>.

⁹² See 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

⁹³ 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&hidePrevious=false>. At this time, the 2022 Economic Census data is not available.

⁹⁴ *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.

⁹⁵ 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.

⁹⁶ See 47 CFR § 24.720(b).

⁹⁷ 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>.

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.

27. *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.⁹⁸ 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.⁹⁹ Wireless Telecommunications Carriers (*except Satellite*)¹⁰⁰ 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.¹⁰¹ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.¹⁰² Of this number, 2,837 firms employed fewer than 250 employees.¹⁰³ 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 of December 2021, there were approximately 4,211 active *Narrowband PCS* licenses.¹⁰⁴ 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.¹⁰⁵ 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.¹⁰⁶ Pursuant to these definitions, 7 winning bidders claiming small and very small bidding credits won approximately 359 licenses.¹⁰⁷ One of the winning bidders claiming a small business status classification in these *Narrowband PCS* license auctions had an active license as of

⁹⁸ See 47 CFR § 24.5.

⁹⁹ *Id.*

¹⁰⁰ 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>.

¹⁰¹ See 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

¹⁰² 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>. At this time, the 2022 Economic Census data is not available.

¹⁰³ *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.

¹⁰⁴ 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.

¹⁰⁵ See 47 CFR § 24.321(a)(1)-(2).

¹⁰⁶ *Id.*

¹⁰⁷ 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>.

December 2021.¹⁰⁸

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. *Offshore Radiotelephone Service.* This service operates on several UHF television broadcast channels that are not used for television broadcasting in the coastal areas of states bordering the Gulf of Mexico.¹⁰⁹ Wireless Telecommunications Carriers (*except Satellite*)¹¹⁰ is the closest industry with a SBA small business size standard applicable to this service. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.¹¹¹ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.¹¹² Of this number, 2,837 firms employed fewer than 250 employees.¹¹³ Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small. Additionally, based on Commission data, as of December 2021, there was one licensee with an active license in this service.¹¹⁴ However, since the Commission does not collect data on the number of employees for this service, at this time we are not able to estimate the number of licensees that would qualify as small under the SBA's small business size standard.

31. *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.¹¹⁵ Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment,

¹⁰⁸ 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.

¹⁰⁹ This service is governed by Subpart I of Part 22 of the Commission's Rules. See 47 CFR §§ 22.1001-22.1037.

¹¹⁰ 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>.

¹¹¹ See 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

¹¹² 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>. At this time, the 2022 Economic Census data is not available.

¹¹³ *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.

¹¹⁴ 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 = CO; 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.

¹¹⁵ 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>.

paggers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.¹¹⁶ The SBA small business size standard for this industry classifies businesses having 1,250 employees or less as small.¹¹⁷ U.S. Census Bureau data for 2017 show that there were 656 firms in this industry that operated for the entire year.¹¹⁸ Of this number, 624 firms had fewer than 250 employees.¹¹⁹ Thus, under the SBA size standard, the majority of firms in this industry can be considered small.

32. *Rural Radiotelephone Service.* Neither the Commission nor the SBA have developed a small business size standard specifically for small businesses providing Rural Radiotelephone Service. Rural Radiotelephone Service is radio service in which licensees are authorized to offer and provide radio telecommunication services for hire to subscribers in areas where it is not feasible to provide communication services by wire or other means.¹²⁰ A significant subset of the Rural Radiotelephone Service is the Basic Exchange Telephone Radio System (BETRS).¹²¹ Wireless Telecommunications Carriers (*except Satellite*),¹²² is the closest applicable industry with a SBA small business size standard. The SBA small business size standard for Wireless Telecommunications Carriers (*except Satellite*) classifies firms having 1,500 or fewer employees as small.¹²³ For this industry, U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated for the entire year.¹²⁴ Of this total, 2,837 firms employed fewer than 250 employees.¹²⁵ Thus under the SBA size standard, the Commission estimates that the majority of Rural Radiotelephone Services firm are small entities. Based on Commission data as of December 27, 2021, there were approximately 119 active licenses in the Rural Radiotelephone Service.¹²⁶ The Commission does not collect employment data from these entities holding these licenses and therefore we cannot estimate how many of these entities meet the SBA small business size standard.

33. *Wireless Communications Services.* Wireless Communications Services (WCS) can be used

¹¹⁶ *Id.*

¹¹⁷ See 13 CFR § 121.201, NAICS Code 334220.

¹¹⁸ 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 334220, <https://data.census.gov/cedsci/table?y=2017&n=334220&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

¹¹⁹ *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.

¹²⁰ 47 CFR § 22.99.

¹²¹ BETRS is defined in 47 CFR §§ 22.757, 22.759.

¹²² 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>.

¹²³ See 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

¹²⁴ 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>. At this time, the 2022 Economic Census data is not available.

¹²⁵ *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.

¹²⁶ Based on a FCC Universal Licensing System search on December 27, 2021. <https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp>. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = CR; 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.

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.¹²⁷ Wireless Telecommunications Carriers (*except Satellite*)¹²⁸ is the closest industry with an 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.¹²⁹ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.¹³⁰ Of this number, 2,837 firms employed fewer than 250 employees.¹³¹ Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

34. 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.¹³²

35. 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.

36. *Wireless Telecommunications Carriers (except Satellite)*. This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves.¹³³ 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.¹³⁴ The SBA size standard for this industry classifies a business as small if it has 1,500 or fewer employees.¹³⁵ U.S. Census Bureau data for 2017 show that there were 2,893 firms in this

¹²⁷ See 47 CFR §§ 27.1 – 27.1607.

¹²⁸ 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>.

¹²⁹ See 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

¹³⁰ 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&hidePrevious=false>. At this time, the 2022 Economic Census data is not available.

¹³¹ *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.

¹³² 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.

¹³³ 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>.

¹³⁴ *Id.*

¹³⁵ See 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

industry that operated for the entire year.¹³⁶ Of that number, 2,837 firms employed fewer than 250 employees.¹³⁷ Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 594 providers that reported they were engaged in the provision of wireless services.¹³⁸ Of these providers, the Commission estimates that 511 providers have 1,500 or fewer employees.¹³⁹ Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

37. *Wireless Telephony.* Wireless telephony includes cellular, personal communications services, and specialized mobile radio telephony carriers. The closest applicable industry with an SBA small business size standard is Wireless Telecommunications Carriers (except Satellite).¹⁴⁰ The size standard for this industry under SBA rules is that a business is small if it has 1,500 or fewer employees.¹⁴¹ For this industry, U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated for the entire year.¹⁴² Of this number, 2,837 firms employed fewer than 250 employees.¹⁴³ Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 331 providers that reported they were engaged in the provision of cellular, personal communications services, and specialized mobile radio services.¹⁴⁴ Of these providers, the Commission estimates that 255 providers have 1,500 or fewer employees.¹⁴⁵ Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

38. *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)¹⁴⁶ 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.¹⁴⁷ U.S. Census Bureau data for 2017 show that there

¹³⁶ 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, <https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFI&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

¹³⁷ *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.

¹³⁸ Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2022), <https://docs.fcc.gov/public/attachments/DOC-391070A1.pdf>.

¹³⁹ *Id.*

¹⁴⁰ 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>.

¹⁴¹ See 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

¹⁴² 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, <https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFI&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

¹⁴³ *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.

¹⁴⁴ Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2022), <https://docs.fcc.gov/public/attachments/DOC-391070A1.pdf>.

¹⁴⁵ *Id.*

¹⁴⁶ 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>.

¹⁴⁷ See 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

were 2,893 firms that operated in this industry for the entire year.¹⁴⁸ Of this number, 2,837 firms employed fewer than 250 employees.¹⁴⁹ Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

39. According to Commission data as of December 2021, there were approximately 224 active 700 MHz Guard Band licenses.¹⁵⁰ The Commission's small business size standards with respect to 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.¹⁵¹ 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.¹⁵² 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 2021.¹⁵³

40. 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.

41. *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

¹⁴⁸ 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>. At this time, the 2022 Economic Census data is not available.

¹⁴⁹ *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.

¹⁵⁰ 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.

¹⁵¹ See 47 CFR § 27.502(a).

¹⁵² 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>.

¹⁵³ 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.

services.¹⁵⁴ Wireless Telecommunications Carriers (*except* Satellite)¹⁵⁵ 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.¹⁵⁶ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.¹⁵⁷ Of this number, 2,837 firms employed fewer than 250 employees.¹⁵⁸ Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

42. According to Commission data as of December 2021, there were approximately 2,824 active Lower 700 MHz Band licenses.¹⁵⁹ 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.¹⁶⁰ In auctions for Lower 700 MHz Band licenses seventy-two winning bidders claiming a small business classification won 329 licenses,¹⁶¹ twenty-six winning bidders claiming a small business classification won 214 licenses,¹⁶² and three winning bidders claiming a small business classification won all five auctioned licenses.¹⁶³

¹⁵⁴ 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>.

¹⁵⁵ 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>.

¹⁵⁶ See 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

¹⁵⁷ 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>. At this time, the 2022 Economic Census data is not available.

¹⁵⁸ *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.

¹⁵⁹ 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.

¹⁶⁰ See 47 CFR § 27.702(a)(1)-(3).

¹⁶¹ 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>.

¹⁶² 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>.

¹⁶³ 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>.

43. 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.

44. *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.¹⁶⁴ 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.¹⁶⁵ Wireless Telecommunications Carriers (*except Satellite*)¹⁶⁶ 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.¹⁶⁷ U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.¹⁶⁸ Of that number, 2,837 firms employed fewer than 250 employees.¹⁶⁹ Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

45. According to Commission data as of December 2021, there were approximately 152 active Upper 700 MHz Band licenses.¹⁷⁰ 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

¹⁶⁴ See 47 CFR § 27.4.

¹⁶⁵ 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.

¹⁶⁶ 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>.

¹⁶⁷ See 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

¹⁶⁸ 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>. At this time, the 2022 Economic Census data is not available.

¹⁶⁹ *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.

¹⁷⁰ 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.

preceding three years.¹⁷¹ Pursuant to these definitions, three winning bidders claiming very small business status won five of the twelve available licenses.¹⁷²

46. 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.

47. *Wireless Resellers.* Neither the Commission nor the SBA have developed a small business size standard specifically for Wireless Resellers. The closest industry with a SBA small business size standard is Telecommunications Resellers.¹⁷³ The Telecommunications Resellers industry comprises establishments engaged in purchasing access and network capacity from owners and operators of telecommunications networks and reselling wired and wireless telecommunications services (except satellite) to businesses and households.¹⁷⁴ Establishments in this industry resell telecommunications and they do not operate transmission facilities and infrastructure.¹⁷⁵ Mobile virtual network operators (MVNOs) are included in this industry.¹⁷⁶ Under the SBA size standard for this industry, a business is small if it has 1,500 or fewer employees.¹⁷⁷ U.S. Census Bureau data for 2017 show that 1,386 firms in this industry provided resale services during that year.¹⁷⁸ Of that number, 1,375 firms operated with fewer than 250 employees.¹⁷⁹ Thus, for this industry under the SBA small business size standard, the majority of providers can be considered small entities.

48. *Semiconductor and Related Device Manufacturing. Semiconductor and Related Device Manufacturing.* This industry comprises establishments primarily engaged in manufacturing semiconductors and related solid state devices.¹⁸⁰ Examples of products made by these establishments are integrated circuits, memory chips, microprocessors, diodes, transistors, solar cells and other

¹⁷¹ See 47 CFR § 27.502(a).

¹⁷² 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.

¹⁷³ See U.S. Census Bureau, *2017 NAICS Definition, "517911 Telecommunications Resellers,"* <https://www.census.gov/naics/?input=517911&year=2017&details=517911>.

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ See 13 CFR § 121.201, NAICS Code 517911 (as of 10/1/22, NAICS Code 517121).

¹⁷⁸ 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: EC1700SIZEEMPFIEM, NAICS Code 517911, <https://data.census.gov/cedsci/table?y=2017&n=517911&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

¹⁷⁹ *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.

¹⁸⁰ See U.S. Census Bureau, *2017 NAICS Definition, "334413 Semiconductor and Related Device Manufacturing,"* <https://www.census.gov/naics/?input=334413&year=2017&details=334413>.

optoelectronic devices.¹⁸¹ The SBA small business size standard for this industry classifies entities having 1,250 or fewer employees as small.¹⁸² U.S. Census Bureau data for 2017 show that there were 729 firms in this industry that operated for the entire year.¹⁸³ Of this total, 673 firms operated with fewer than 250 employees.¹⁸⁴ Thus under the SBA size standard, the majority of firms in this industry can be considered small.

49. *Telecommunications Relay Service (TRS) Providers.* Telecommunications relay services enable individuals who are deaf, hard of hearing, deaf-blind, or who have a speech disability to communicate by telephone in a manner that is functionally equivalent to using voice communication services.¹⁸⁵ Internet-based TRS (*iTRS*) connects an individual with a hearing or a speech disability to a TRS communications assistant using an Internet Protocol-enabled device via the Internet, rather than the public switched telephone network.¹⁸⁶ Video Relay Service (VRS) one form of *iTRS*, enables people with hearing or speech disabilities who use sign language to communicate with voice telephone users over a broadband connection using a video communication device.¹⁸⁷ Internet Protocol Captioned Telephone Service (IP CTS) another form of *iTRS*, permits a person with hearing loss to have a telephone conversation while reading captions of what the other party is saying on an Internet-connected device.¹⁸⁸ Providers must be certified by the Commission to provide VRS and IP CTS¹⁸⁹ and to receive compensation from the TRS Fund for TRS provided in accordance with applicable rules.¹⁹⁰

50. Neither the Commission nor the SBA have developed a small business size standard specifically for TRS Providers. All Other Telecommunications is the closest industry with a SBA small business size standard.¹⁹¹ Internet Service Providers (ISPs) and Voice over Internet Protocol (VoIP) services, via client-supplied telecommunications connections are included in this industry.¹⁹² The SBA small business size standard for this industry classifies firms with annual receipts of \$40 million or less as small.¹⁹³ U.S. Census Bureau data for 2017 show that there were 1,079 firms in this industry that operated for the entire year.¹⁹⁴ Of those firms, 1,039 had revenue of less than \$25 million.¹⁹⁵ Based on

¹⁸¹ *Id.*

¹⁸² See 13 CFR § 121.201, NAICS Code 334413.

¹⁸³ 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: EC1700SIZEEMPFIEM, NAICS Code 334413, <https://data.census.gov/cedsci/table?y=2017&n=334413&tid=ECNSIZE2017.EC1700SIZEEMPFIEM&hidePrevious=false>. At this time, the 2022 Economic Census data is not available.

¹⁸⁴ *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.

¹⁸⁵ 47 U.S.C. § 225(a)(3).

¹⁸⁶ 47 CFR § 64.601(a)(22). Except as authorized or required by the Commission, Internet-based TRS does not include the use of a text telephone (TTY) or RTT over an interconnected Voice over Internet Protocol service.

¹⁸⁷ *Id.* § 64.601(a)(51).

¹⁸⁸ *Id.* § 64.601(a)(23).

¹⁸⁹ *Id.* § 64.606(a)(2).

¹⁹⁰ *Id.* § 64.604(c)(5)(iii)(F).

¹⁹¹ See U.S. Census Bureau, *2017 NAICS Definition, "517919 All Other Telecommunications,"* <https://www.census.gov/naics/?input=517919&year=2017&details=517919>.

¹⁹² *Id.*

¹⁹³ See 13 CFR § 121.201, NAICS Code 517919 (as of 10/1/22, NAICS Code 517810).

Commission data there are ten certified *iTRS* providers.¹⁹⁶ The Commission however does not compile financial information for these providers. Nevertheless, based on available information, the Commission estimates that most providers in this industry are small entities.

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

51. The rules adopted in the *Report and Order* will impose new or additional reporting, recordkeeping, and/or other compliance obligations on small entities. Some of our requirements contain written notification and certification requirements that will be applicable to small entities, and other requirements impose compliance obligations on small entities that may require small entities to hire professionals to implement and comply.

52. *Reporting and Recordkeeping.* Today the Commission adopts the reporting and recordkeeping requirements proposed in the *NG911 Notice*, with minor adjustments. First, in each phase of the NG911 transition, the Commission allows OSPs and 911 Authorities the flexibility to agree to alternate time frames or cost allocation arrangements, but the OSPs must notify the Commission of the alternate arrangements, including the pertinent terms of that agreement, within 30 days of the agreement. We note that the notice of the alternative agreement must specifically identify which requirements from the rules are impacted, and what are the mutually agreed upon new requirements (e.g., compliance time frames, dates). Further, an OSP and a 911 Authority can submit a joint notification. In contrast, the rules proposed in the *NG911 Notice* limited OSPs and 911 Authorities to entering into mutual agreements to establish alternative time frames for meeting the requirements to deliver 911 calls and texts in the requested IP-based format. Second, to ensure OSPs receive valid requests from a technologically-ready 911 Authority to initiate each phase, we require the requesting local or state entity to certify its technology readiness suitable to the appropriate phase with a formal notice that must be transmitted in writing to the OSPs or made available to them via a Commission public registry.

53. *Other Compliance Requirements.* Several comments filed in response to the *NG911 Notice* discussed various categories of potential expenses to comply with NG911 transition requirements, with many asserting that there would be a greater burden on smaller RLEC providers.¹⁹⁷ Our initial estimate of the upper bound of these costs for all 2,327 OSPs industry-wide in the *NG911 Notice* was approximately \$103,000 in one-time costs¹⁹⁸ and \$11.6 million in recurring annual costs for new annual IP 911 call delivery transport charges for the 81 of those OSPs that currently provide only TDM telephony.¹⁹⁹ As

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¹⁹⁴ 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 517919, <https://data.census.gov/cedsci/table?y=2017&n=517919&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false>. At this time, the 2022 Economic Census data is not available.

¹⁹⁵ *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.

¹⁹⁶ See [Internet-Based TRS Providers | Federal Communications Commission \(fcc.gov\)](https://www.fcc.gov/general/internet-based-trs-providers), <https://www.fcc.gov/general/internet-based-trs-providers> (last visited February 15, 2023).

¹⁹⁷ Kansas RLECs NG911 Notice Comments at 2, 4; Home Telephone NG911 Notice Comments at 10, n. 4; South Carolina RLECs Nov. 17, 2023 Ex Parte at 1-2; Five Area Telephone NG911 Notice Comments at 9, 11; NTCA NG911 Notice Comments at 3; South Dakota Telecommunications Association NG911 Notice Comments at 11-12; USTelecom NG911 Notice Comments at 4; RTCC NG911 Notice Comments at 22, 25; WTA NG911 Notice Comments at 6, 8.

¹⁹⁸ *NG911 Notice* at *27, para. 71.

¹⁹⁹ *NG911 Notice* at *28, para. 72.

discussed below, in the *Report and Order* the Commission adjusts our cost estimates to account for industry-submitted data and further Commission analysis.

54. *Assessment of Costs of Compliance Requirements.* We update our cost calculation for a total of 2,287 OSPs based on newer Form 477 data,²⁰⁰ and we estimate that OSPs will incur approximately \$4.4 million in total one-time non-recurring costs and no more than \$5.5 million in annual recurring costs to implement Phase 1 requirements, and additionally approximately \$24 million in non-recurring costs and approximately \$50 million per year to implement Phase 2 requirements.

55. *Phase 1 Compliance Costs.* The new IP transport costs due to today's rules are non-negligible. We respond to RTCC's comment that our initial estimate²⁰¹ of IP transport costs for only 8.5 % of RLECs was in error²⁰² by re-assessing that wireline OSPs may incur some transport costs regardless of whether they already have IP switches and can convert TDM to IP on their own networks or not, particularly assuming SIP trunking is used.²⁰³ We recognize that some smaller OSPs – primarily RLECs – will incur incremental recurring cost of IP transport via SIP trunks, even if those RLECs already have IP switches, can convert TDM to IP on their own networks, and can provide broadband service using their own IP switching facilities. As some parties point out, these RLECs might incur some SIP call transport costs if they do not have settlement-free peering agreements and cannot hand off IP voice traffic to existing interconnection partners.²⁰⁴ We estimate that the total of these costs will be below \$5.5 million per year. This estimate is based on assumptions that the transport cost would be \$2,000 per month for the 16 OSPs that currently only offer TDM-based voice services (i.e., they do not offer broadband or VoIP services) and serve fewer than 10,000 subscribers, and 50% more (i.e., \$3,000 per month) for the two OSPs that provide no broadband or VoIP but serve more than 10,000 subscribers.²⁰⁵

²⁰⁰ Based on FCC Form 477 data as of June 2023, there are 1,996 small/medium OSPs that serve up to 10,000 subscribers each and 291 large OSPs that serve more than 10,000 subscribers each. The 1,996 small/medium OSPs include 16 wireline OSPs that do not offer any form of IP services (e.g., broadband or VoIP services), 394 wireline OSPs that also provide broadband services, 14 iTRS OSPs, 1554 VoIP OSPs, and 18 wireless OSPs. Among the 291 large OSPs, there are 2 wireline OSPs that do not offer any form of IP services (e.g., broadband or VoIP services), 20 wireline OSPs that also provide broadband services, 232 VoIP OSPs, and 37 wireless OSPs. Staff Calculation. FCC Form 477 Data as of June 2023. See also FCC, *Internet-Based TRS Providers*, <https://www.fcc.gov/general/internet-based-trs-providers> (last visited Apr. 27, 2024) (the 14 certified Internet-based TRS providers include: CaptionCall, CaptionMate, ClearCaptions, Global Caption, Hamilton Relay, InnoCaption, Nagish, NexTalk, Rogervoice, T-Mobile USA, Convo Communications, Sorenson Communications, Tive, ZP Better Together).

²⁰¹ *NG911 Notice* at *28, para. 72.

²⁰² RTCC *NG911 Notice Comments* at 24, n.53.

²⁰³ RTCC *NG911 Notice Comments* at 9, n. 20, 23-24, n. 53; see also NTCA *NG911 Notice Comments* at 6-7; Frontier *NG911 Notice Reply* at 3-4.

²⁰⁴ See RTCC *NG911 Notice Comments* at 23-24; NTCA *NG911 Notice Comments* at 6-7; Frontier *NG911 Notice Reply* at 3-4.

²⁰⁵ Comtech estimates that the transport cost per IP POI would be between \$678.39 and \$977.84 per month and the total interconnection cost to be \$19,672.51 for 12 RLECs (\$19,672.51/12 ~ \$1,639.38 per RLEC), and MSCI estimates the IP transport cost per POI is \$400 per month. See Letter from Susan C. Ornstein, Senior Director, Legal & Regulatory Affairs, Comtech, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479 at 11 (filed Mar. 8, 2024) (Comtech Mar. 8, 2024 *Ex Parte*) (estimating the IP-based connectivity cost per LEC POI site is between \$678.39 and \$977.84); Comtech Mar. 25, 2024 *Ex Parte* at 22 (estimating a total cost, including NRC, MRC #1, and MRC #2, of 12 RLEC interconnections to be \$19,672.51); Letter from Bennett L. Ross, Counsel on behalf of MSCI, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at Attach. at 6 (filed Apr. 17, 2024) (MSCI Apr. 17, 2024 *Ex Parte*); MSCI May 28, 2024 *Ex Parte*. We find the cost estimates submitted by Comtech and MSCI credible. To be conservative, we assume the SIP transport cost to be \$2,000 per month for each

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56. The Commission concludes that most of the RLECs' and other commenting parties' estimates of the recurring costs of IP transport²⁰⁶ to NG911 Delivery Points are unduly high. Almost all of these cost estimates for 911 IP transport are premised on assumptions that OSPs will be required to transmit 911 calls over long distances across multiple states to faraway NG911 Delivery Points.²⁰⁷ These assumptions are unfounded in light of the rules we adopt today, which require OSPs to transport 911 calls only to in-state NG911 Delivery Points designated by 911 Authorities. Given the ample evidence showing that IP transport costs are significantly lower than TDM transport costs, we believe that the rules we adopt today might actually reduce the overall transport costs for OSPs. For example, South Carolina submits data indicating that IP transport of 911 traffic is generally 27% cheaper than TDM call delivery, regardless of where the calls are delivered.²⁰⁸ iCERT points out that, to avoid the higher cost of transporting TDM calls, RLECs could convert their traffic from TDM to IP format prior to transporting them.²⁰⁹ Five Area

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small/medium OSP that serves no more than 10,000 subscribers, and \$3,000 per month for a large OSP that serves more than 10,000 subscribers. These estimates are consistent with those proposed by the majority of commenters. See Kansas RLECs NG911 Notice Comments at 2, 4 (rec. Aug. 9, 2023) (Kansas RLECs NG911 Notice Comments) (estimating between \$1,200 and \$5,000 per month in IP transport costs for its members); Home Telephone NG911 Notice Comments at 10, n. 4 (estimating third-party IP transport of \$1,500 to \$3,000 per month); NTCA NG911 Notice Comments at 3 (stating the cost is \$1,400 for an RLEC in rural Kansas to deliver IP formatted 911 traffic to delivery points in California or Texas); South Dakota Telecommunications Association NG911 Notice Comments at 11-12 (IP transport costs per RLEC could be between \$1,000 and \$13,000 per month per connection depending on distance); RTCC NG911 Notice Comments at 25 (Nebraska RLECs would each have to pay approximately \$1,350 per month for reliable SIP transport to connect to the IP delivery points in Colorado and Illinois).

²⁰⁶ See, e.g., Kansas RLECs NG911 Notice Comments at 2, 4 (estimating between \$1,200 and \$5,000 per month in IP transport costs for its members); Home Telephone NG911 Notice Comments at 10, n. 4 (estimating third-party IP transport of \$1,500 to \$3,000 per month); Letter from John Kuykendall, JSI Regulatory Advisor on behalf of the South Carolina Telephone Coalition, and Margaret M. Fox, Counsel to South Carolina Telephone Coalition, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 21-479, at 1-2 (filed. Nov. 17, 2023) (MSCI Nov. 17, 2023 *Ex Parte*) (asserting that South Carolina RLEC Sandhill Telephone Cooperative got estimates of approximately \$2,700 per month and \$3,500 per month for third-party IP transport).

²⁰⁷ Five Area Telephone NG911 Notice Comments at 9, 11 (estimating almost \$3,000 per month for transport to ESInet points "hundreds of miles away in other states" which would cost OSPs collectively over \$83 million annually nationwide); NTCA NG911 Notice Comments at 3 (stating an RLEC in rural Kansas has been ordered by the 911 authority to deliver IP formatted 911 traffic to delivery points in California or Texas, which would cost \$1,400 per month); South Dakota Telecommunications Association NG911 Notice Comments at 11-12 (stating that IP transport costs per RLEC could be between \$1,000 and \$13,000 per month per connection depending on distance, and that cost could increase at least 30% for out-of-state connections); USTelecom NG911 Notice Comments at 4 (indicating that distance impacts IP transport prices, and one carrier is paying \$750,000 in annual cost (or equivalent to \$62,500 per month) to deliver 911 traffic to the state-designated delivery point hundreds of miles away); RTCC NG911 Notice Comments at 25 (stating that Nebraska RLECs would each have to pay approximately \$1,350 per month for reliable SIP transport to connect to the IP delivery points in Colorado and Illinois, with an aggregate cost of \$360,000 per year for the 24 RLECs); WTA NG911 Notice Comments at 6 (stating that it is not possible to fairly estimate transport costs without knowing where the delivery points are located and at what distance from RLECs).

²⁰⁸ South Carolina RFA NG911 Notice Comments at 4-5 (stating that the network transport costs for ILECs in its state to deliver TDM traffic to two delivery points inside South Carolina are approximately \$236,000 per year, while its analysis of the transport costs for the same South Carolina ILECs to deliver SIP traffic even further to two delivery points in Dallas, Texas and Raleigh, North Carolina is less – \$172,000 per year, resulting in a 27% cost saving utilizing SIP). Comtech similarly estimates that transport costs for OSPs are likely to be far lower than the estimates provided in the record by RLECs. Comtech Mar. 25, 2024 *Ex Parte* at 22-23.

²⁰⁹ iCERT Dec. 13, 2023 Office of Commissioner Gomez *Ex Parte* at 2; Mission Critical Partners NG911 Notice Comments at 5; MSCI Apr. 17, 2024 *Ex Parte* Attach. at 5 (estimating the annual transport cost for one POI through TDM is \$42,810, compared to \$4,800 for the transport through IP).

Telephone also points out that OSPs could significantly lower the overall costs of transmitting 911 calls to ESInets by taking advantage of third-party aggregators' services.²¹⁰

57. We further assess small and other OSPs will incur additional non-recurring Phase 1 material and labor costs in order to comply with the IP transport requirement. The Commission estimates a total of \$4.4 million in one-time material and labor costs, including approximately \$4 million to convert TDM calls to IP format and \$343,000 to configure the delivery to new NG911 Delivery Points. Because the majority of OSPs are capable of transmitting calls in IP format, we estimate that only a subset of OSPs that do not offer full IP-related services would need to incur the cost of facilities needed to convert TDM calls to IP format; other OSPs that already originate traffic in IP format would incur no up-front IP conversion costs. For the smallest entities, we conservatively estimate an upper bound of the one-time IP conversion cost to be no more than \$17,600 for the voice-only OSPs with no more than 10,000 subscribers.²¹¹

58. We use Five Area Telephone's estimate of \$17,600 as the upper bound for the up-front equipment costs for small OSPs to connect to ESInets – an estimate that, according to Five Area Telephone, includes the costs of “establishing network connectivity, procurement of private line circuits, configuration assistance, switching equipment configuration, testing, cutover, and final testing,” equaling over \$40 million if applied to all 2,327 carriers.²¹² The Commission believes this estimate substantially overstates the cost of the network equipment required to convert TDM calls to IP format, because it assumes a major system upgrade would be required, and we reject Five Area Telephone's assertion that the total cost would exceed \$40 million because that erroneously assumes that all 2,327 OSPs would incur the same amount. Nonetheless, we apply Five Area Telephone's \$17,600 one-time cost estimate as the basis to calculate the upper bound of our IP conversion cost estimate, because other commenters' estimates are even less credible. Most of them include the non-recurring cost of system upgrades that are not required by the rules; many of them rely on unsupported cost figures for specific OSPs without providing any basis for us to examine whether these costs are typical; and some include no cost figures at all.²¹³

²¹⁰ Five Area Telephone NG911 Notice Comments at 13.

²¹¹ Five Area Telephone asserts that the up-front costs for RLECs to connect to ESInets are \$17,600 each, including “establishing network connectivity, procurement of private line circuits, configuration assistance, switching equipment configuration, testing, cutover, and final testing.” Five Area Telephone NG911 Notice Comments at 11. We believe this estimate would be an upper bound, as OSPs may, instead of upgrading their systems with new circuits and switching equipment, choose to acquire an LNG gateway at a much lower cost to convert calls from TDM to IP format. Brian Rosen NG911 Notice Reply at 2 (rec. Sep. 8, 2023) (Brian Rosen NG911 Notice Reply) (“The RLECS commenting on this proceeding wildly overestimate the cost of the gateway required to convert TDM to SIP. An Audiocodes Mediant 500 gateway, for example, costs approximately \$1000, and a Mediant 1000, which has much more capability than a smaller carrier requires is approximately \$5000. There will need to be some software, which could run on a commodity server . . . which would add to the costs, and these carriers may not have enough expertise . . . necessitating a support contract with an appropriate vendor.”).

²¹² Five Area Telephone NG911 Notice Comments at 11.

²¹³ See, e.g., Kansas RLECs NG911 Notice Comments at 2 (contending that one NG911 service provider (AT&T) has proposed a plan that could require some Kansas RLECs to acquire SIP equipment at a cost of \$50,000); Rural Wireless Association (RWA) NG911 Notice Comments at 2 (rec. Aug. 9, 2023) (RWA NG911 Notice Comments) (contending that the Commission's estimate ignores the possibility that a small CMRS carrier would first need to obtain and install a session border control gateway for a cost of \$100,000 to allow for the connection from the carrier's IP-cable network to a PSAP that remains only TDM-capable); USTelecom NG911 Notice Comments at 4-5 (asserting that one Northern California carrier, prior to initiating IP transport, would need to expend an “initial cost of \$378,000 to aggregate traffic from multiple exchanges”); Frontier NG911 Notice Reply at 3-4 (stating that central office facilities upgrades plus labor is in the “millions” to begin delivering IP call traffic outside its footprints, and equipment costs for SIP delivery are substantial); Alaska Telecom Assoc. NG911 Notice Comments at 4-5

(continued....)

59. Including larger entities, we estimate that the total one-time cost that OSPs would incur to obtain the facilities needed to convert TDM calls to IP format would be approximately \$4 million, including \$334,400 for the 18 that do not offer any IP services and \$3.7 million for the 414 that offer broadband as well as voice services.²¹⁴ We believe our estimate is conservative because it does not take into account the many non-911 calls that these OSPs would transmit using the same equipment.

60. The Commission also estimates that the one-time costs of reconfiguring and changing 911 traffic delivery points would require all affected OSPs to incur labor costs totaling \$343,000. This is based on the Bureau of Labor Statistics' estimate that the average wage for telecommunications equipment installers and repairers is \$32.26 per hour,²¹⁵ as well as an estimate, based on evidence in the record, that OSPs serving fewer than 10,000 subscribers would need to pay for up to three hours of labor and OSPs serving more than 10,000 subscribers would need to pay 50% more in labor costs due to the potentially more complex tasks these entities might need to undertake to reconfigure and change the delivery points for their 911 traffic. We rely on RWA's assertion that "the number of person-hours required will typically be closer to two or three,"²¹⁶ rather than the one hour estimated in the *NG911 Notice*,²¹⁷ and adjust this amount upward by 50% more for OSPs serving more than 10,000 subscribers to account for the greater complexity of the task. Based on these assumptions, we arrive at the total one-time labor cost of \$343,000 for all the OSPs to change the delivery points.²¹⁸

61. *Phase 2 Compliance Costs.* We estimate that wireline carriers, interconnected VoIP providers, and other OSPs that are not CMRS providers (and thus not subject to the *Location Based Routing Order*) will incur approximately \$24 million in one-time costs and \$50 million in annual recurring costs to comply with 911 Authorities' Phase 2 requests to transmit and maintain accurate location information with 911 calls in IP format using LIS databases and the LVF function (or their

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(identifying costs for "creating a dedicated IP trunk group to the ESInet," along with wireline network reconfigurations to reroute calls to the carriers' IP switch, updating the routing for subscriber lines, and similar SIP network architecture reconfigurations for wireless carriers).

²¹⁴ This is based on the following: (\$17,600 per OSP × 16 small/medium telephone voice only wireline OSPs) + (\$17,600 per OSP × (1 + 50% for large OSP) × 2 large telephone voice only wireline OSPs) + (\$17,600 per OSP × (50% partial transport) × 394 small/medium telephone voice and broadband wireline OSPs) + (\$17,600 per OSP × (1 + 50% for large OSP) × (50% partial transport) × 20 large telephone voice and broadband wireline OSPs) = \$4,065,600, which we round to \$4 million.

²¹⁵ See Bureau of Labor Statistics, *Occupational Employment and Wages, May 2023*, <https://www.bls.gov/oes/current/oes492022.htm> (last visited Apr. 27, 2024). According to the Bureau of Labor Statistics, as of December 2023, civilian wages and salaries averaged \$31.29/hour and benefits averaged \$14.13/hour. Total compensation therefore averaged \$31.29 + \$14.13 = \$45.42. See Press Release, Bureau of Labor Statistics, *Employer Costs for Employee Compensation – December 2023* (Mar. 13, 2024), <https://www.bls.gov/news.release/pdf/eccc.pdf>. Using these figures, benefits constitute a markup of \$14.13/\$31.29 = 45%. We therefore mark up wages by 45% to account for benefits. \$32.26 × 1.45 = \$46.78, which we round to \$47.

²¹⁶ RWA NG911 Notice Comments at 2, n.5; accord South Carolina RLECs NG911 Notice Comments at 10 (arguing that one hour of labor to change delivery points is unrealistic, as this task requires "consulting with the ESInet regarding technical requirements, figuring out how transport will be handled and an appropriate demarcation point, procuring transport circuits to connect, configuring the lines and switching equipment, and then managing cut over of existing 911 traffic and testing to ensure the trunk is operable"). Frontier's assertion that the costs of labor plus facilities upgrades needed to begin delivering IP call traffic outside its network footprint will be "millions" is unfounded and implausible. See Frontier NG911 Notice Reply at 3.

²¹⁷ *NG911 Notice* at *27, para. 71.

²¹⁸ We calculate the total one-time IP delivery configuration cost in Phase 1 as follows: (\$47/hour × 3 hours × 1,996 small/medium OSPs serving no more than 10,000 subscribers) + (\$47/hour × 3 hours × (1 + 50%) × 291 large OSPs serving more than 10,000 subscribers) = \$342,982.50, rounding to \$343,000.

equivalent). Today’s rules allow OSPs to use “LIS as a service” from a third-party vendor as an option instead of creating their own LIS or equivalent databases. This LIS service may either involve native IP LIS or LIS equivalent database population, or a database conversion of OSPs’ existing ALI/ANI/MSAG data to LIS formats. CSRIC explains that LIS as a service is contemplated as an NG911 solution at “minimal expense” to small OSPs, as it relieves OSPs of most costs beyond monthly services, and an LNG and can be provided either by a commercial vendor or the 911 authority.²¹⁹ This is a substantial cost-savings measure especially for smaller OSPs with TDM networks, who may not be ready to decommission older legacy equipment and modernize their networks for IP/VoIP.²²⁰

62. We conservatively base these figures on Five Area Telephone’s estimates that, to comply with location-based routing-type requirements to insert location information into call paths, wireline and VoIP providers would need to incur non-recurring costs of approximately \$10,000 and monthly recurring costs of \$1,750.²²¹ Extrapolating these statistics and increasing the costs by 50% for larger OSPs serving more than 10,000 subscribers, we estimate that compliance with the Phase 2 rules would require non-CMRS OSPs to incur a total of \$24 million in one-time costs and \$50 million in annual recurring costs.²²² The Commission concludes that the location information requirement does not result in any additional costs for CMRS providers because they will have already implemented such upgrades.²²³

63. We reject AT&T’s cost estimate submitted in the record. AT&T alleges that “requiring the introduction of a Location Information Server (‘LIS’) would be extremely expensive and inefficient” for carriers with legacy TDM switching facilities and “could cost several billion dollars on an industry-wide basis.”²²⁴ AT&T, in its role as the lead NGCS and ESInet contractor in Virginia,²²⁵ has already provided

²¹⁹ CSRIC VI Working Group 1, *Transition Path to NG9-1-1 Final Report - Small Carrier NG9-1-1 Transition Considerations*, at 26, 27 n.21 (Sept. 2018), <https://www.fcc.gov/sites/default/files/csric6wg1sept18ng911report.docx> (CSRIC NG911 Transition Report) (“LIS or equivalent elements may be operated directly by originating service providers, by their chosen vendors, or possibly by a 9-1-1 Authority, a set of 9-1-1 Authorities, or their vendors as a service to carriers.”).

²²⁰ *See, e.g.*, Brian Rosen NG911 Notice Reply at 17 (“The LNG contains the Location Database (LIS) which is analogous to the ALI in that there is a record per subscriber (for wireline subscribers) typically indexed by telephone number. The TDM signaling contains all the information needed for the LNG to retrieve the location from its database and insert it in the SIP signaling towards the ESInet. As above, there are data format and provisioning changes wireline OSPs will need to make, but there are many ESInets with functioning LNGs that handle RLECs well. And, as above, wireline OSPs will continue to use street address (civic) location formats, albeit those formats are different than the current MSAG based standards.”).

²²¹ Five Area Telephone NG911 Notice Comments at 6.

²²² We calculate the one-time cost as follows: (\$10,000 per OSPs × 1,978 small/medium wireline and VoIP OSPs) + (\$10,000 × (1 + 50%) × 254 large wireline and VoIP OSPs) = \$23,590,000. Staff Calculation. FCC Form 477 Data as of June 2023. We calculate the annual cost following the same approach: (\$1,750 per month × 12 months × 1,978 small/medium wireline and VoIP OSPs) + (\$1,750 per month × 12 months × (1 + 50%) × 254 large wireline and VoIP OSPs) = \$49,539,000, rounding to \$50 million.

²²³ *LBR Notice*, 37 FCC Rcd at 15210, para. 70 n.176 (“AT&T’s implementation of location-based routing uses Intrado’s ‘Locate Before Route’ feature and ‘implemented several timer changes in the GMLC housing AT&T [Location Information Server (LIS)],” *citing* AT&T LBR Public Notice Comments at 2, 5 (rec. July 11, 2022)); Letter from Kristine Laudadio Devine, Counsel, T-Mobile, to Marlene H. Dortch, Secretary, FCC, PS Docket Nos. 18-64 and 21-479, at 7-9, Exh. B (filed July 26, 2023) (asking if the PSAP requesting NG911 service is served by an ESInet/NGCS capable of supporting standards based NG911 connectivity to T-Mobile’s LIS).

²²⁴ AT&T NG911 Notice Comments at 4, n. 7.

²²⁵ Virginia Department of Emergency Management, *NG9-1-1 Deployment—Summary of the project*, <https://ngs.vdem.virginia.gov/pages/ng9-1-1-deployment> (last visited June 21, 2024) (“The project contractor, AT&T, tracks status for 19 project items, such as AVPN ordered and trunk complete.”); *see also* Virginia

(continued....)

a solution that allows legacy OSP wireline ALI and MSAG location data to be used for NG911-compliant LIS as a service,²²⁶ which eliminates TDM OSPs' needs to upgrade their networks to IP. The Commission therefore finds AT&T's record assertion, which could have been relevant to small carriers with legacy TDM switching facilities, was based on an assumption of an IP origination requirement, which today we decline to impose.²²⁷

64. The Commission emphasizes that today's Phase 2 rules do not require OSPs to originate 911 calls in IP format. Our Phase 2 cost estimate does not include the costs of originating traffic in IP format. However, we nevertheless consider WTA's claims that "obtaining the full benefits of NG911 service will not be possible unless 911 calls originate in IP format," and that converting networks from TDM to IP carries "not only significant network and customer equipment changes and reconfigurations, but also substantial customer service and education costs."²²⁸ Although we agree that converting TDM networks to IP networks can be costly, we reject the contention that such system upgrade costs should be attributed to the requirements in these rules. The transition from TDM to IP technology has been ongoing for over a decade as the subscriptions to voice-only local exchange telephone service (switched access lines) has fallen from nearly 141 million lines in December 2008 to 27 million in June 2022.²²⁹ A linear model predicts that switched access lines will be fully phased out in the near future.²³⁰ Therefore, since we can reasonably expect that these system upgrades will occur organically as part of the natural technological evolution, regardless of whether OSPs are required to comply with Phase 2 requests, the upgrades cannot be attributed to these requirements. Instead, they should be considered baseline costs of operating telecommunications business. Furthermore, even if a handful of RLECs delayed their system upgrades for idiosyncratic reasons, the 6- to 12-month timeline to comply with the requirements for each of the two

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Department of Emergency Management (VDEM) 9-1-1 and Geospatial Services Bureau (NGS), [no title] (Aug. 29, 2022), https://gismaps.vdem.virginia.gov/websites/ngs/NG9-1-1%20Deployment/documents/FFXVBComp_NGS.pdf (summarizing "high level information about the Fairfax County and VA Beach Next Generation 9-1-1 (NG9-1-1) contracts").

²²⁶ Virginia Department of Emergency Management, *MSAG and ALI Maintenance After Next Generation 9-1-1 Go-Live at 1* (Nov. 2022), <https://gismaps.vdem.virginia.gov/Websites/PSC/RegionalAdvisoryCommittee/Documents/20221117MSAGALIMaint.pdf> ("Wireline phone providers require the MSAG and ALI information until they upgrade their systems to the NG9-1-1 end state environment. Therefore, after NG9-1-1 go live, Virginia localities must continue to maintain MSAG and ALI databases, now in the AT&T and Intrado environment"); *id.* at 3 (describing solution for "when a PSAP is live on NG9-1-1 and their legacy 9-1-1 provider still requires a legacy ALI database").

²²⁷ See *supra* section III.C.1.c.i.

²²⁸ WTA NG911 Notice Comments at 8.

²²⁹ See FCC, *Voice Telephone Services Report*, (Aug. 18, 2023), <https://www.fcc.gov/voice-telephone-services-report> (linking to Nationwide and State-Level Data for 2008-Present (Zip), https://www.fcc.gov/sites/default/files/vts_june_22_hist.zip (containing "VTS_subscriptions_hist.csv;" Reference row 13 "Local exchange telephone service (Switched Access Lines)" shows that there were 140,958,000 subscriptions in December 2008 which declined steadily year-over-year to 27,207,000 subscriptions in June 2022.).

²³⁰ A linear model estimates $Expected\ Subscriptions = 17,117,250.6 - 8,455.4\ Year$, which implies the $Expected\ Subscriptions = 0$ when $Year = 2024.4$ (or May in 2024 because $0.4 \times 12\ months = 4.8\ months$). The linear model fits the data well with a $R^2 = 0.97$, meaning 97% of the data variation is explained by the linear model. A linear model predicts the switched access lines would have been fully phased out in May 2024. Therefore, if the system upgrades would have happened organically as part of the natural technological evolution, they should be considered costs of operating telecommunications business. Furthermore, even if a handful of RLECs delayed their system upgrades for idiosyncratic reasons, the 6- to 12-month timeline to comply with the requirements for each of the two phases would be sufficient for RLECs to move away from the legacy systems that are beyond end of their life.

phases would be sufficient for RLECs to move away from the legacy systems that are beyond end of their life.

65. Finally, our Phase 2 rules do not preclude small and other OSPs from negotiating with 911 authorities for alternative arrangements. If the costs of upgrading network systems are as high as some OSPs claim, those entities could offer 911 Authorities alternative, less costly arrangements, such as offering to pay the 911 Authorities to maintain the costly legacy conversion components for these OSPs to use in order to fulfill the requirements. Nonetheless, in light of the ample record evidence that most 911 Authorities are eager to decommission these legacy facilities due to the high cost of maintaining them (as well as the limitations on these facilities' functionality), we believe it is highly unlikely that any OSP would find such an arrangement to be cost-effective, especially when compared with the cost of upgrading their own networks – upgrades that they almost certainly will need to implement within the applicable time frame for reasons that have nothing to do with these NG911 rules.

66. *OSP Implementation Timeframes.* In the *Report and Order* the Commission also adjusted the compliance timeframes for small and rural OSPs. RLECs,²³¹ non-nationwide CMRS providers,²³² and Internet-based TRS providers are required to comply with a 911 Authority's valid request at each phase of the NG911 transition within 12 months after receiving a valid request or within 12 months after the effective date of the rules adopted in the *Report and Order*, whichever is later. The Commission granted these OSPs a longer time to comply than nationwide CMRS providers,²³³ interconnected VoIP providers, and non-RLEC wireline providers who are required to comply within six months after receiving a valid request at each phase of the NG911 transition or within six months after the effective date of the rules adopted in the *Report and Order*.

67. The important life-saving public safety benefits that will result from the rules the Commission adopts in the *Report and Order* are conservatively estimated at over one trillion dollars annually. The rule changes to implement NG911 will save lives by improving the reliability of the 911 network and decrease outages and call failures, improving routing to PSAPs to ensure each 911 call goes to the most appropriate PSAP that can most quickly answer and respond with the most suitable emergency assistance, and improving the standardized format and reliability of caller location data delivered to PSAPs to ensure faster public safety response times. Accordingly, these rule changes serve the public interest.

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

68. The RFA requires an agency to provide “a description of the steps the agency has taken to minimize the significant economic impact on small entities . . . including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.”²³⁴

69. In the *Report and Order* the Commission describes the significant public safety benefits to be achieved from requiring all OSPs to acquire and implement NG911 technology. We also discuss that

²³¹ A “[r]ural incumbent local exchange carrier (RLEC)” has the meaning given such term under 47 CFR § 54.5. See *supra* Appendix A at § 9.28.

²³² A “non-nationwide CMRS provider” has the meaning given such term under 47 CFR § 9.10(i)(1)(v). See *supra* Appendix A at § 9.28.

²³³ The term “nationwide CMRS provider” has the meaning given such term under 47 CFR § 9.10(i)(1)(iv). See *supra* Appendix A at § 9.28.

²³⁴ 5 U.S.C. § 604(a)(6).

based on the record in this proceeding, the Commission finds it is technologically feasible for all OSPs to do so.²³⁵ While all OSPs are capable of complying with the NG911 transition requirements, the rules the Commission adopts in the *Report and Order* are intended to be cost effective and minimally burdensome for small and other entities impacted by the rules. For example, the Commission did not propose, and declined to adopt any rules for monitoring the transition to NG911 or addressing compliance with the new requirements as supported by a small iTRS provider Hamilton Relay.²³⁶ Additionally, the adopted rules pertaining to Phase 2 SIP location and LIS costs only require OSPs to use “LIS as a service” from a third-party vendor instead of creating their own LIS databases. Using LIS as a service often involves simple database conversion of OSPs’ existing ALI/ANI/MSAG data to LIS formats. As discussed by CSRIC, LIS as a service is envisioned as an NG911 solution at “minimal expense” to small OSPs, which absolves OSPs of most costs beyond monthly services and a Legacy Network Gateway (LNG), and the service can be provided either by a commercial vendor, or the 911 Authority.²³⁷ LIS as a service is a substantial cost-savings measure especially for smaller OSPs, who may not be ready to decommission older legacy equipment and modernize their networks for NG911 end-state architecture.²³⁸ Below we discuss other steps the Commission has taken to minimize costs and reduce the economic impact for small entities, as well as some alternatives considered.

70. *In-State NG911 Delivery Points*. In response to RLEC comments and concerns that they might be required to incur unreasonably high transport costs if 911 Authorities had unlimited discretion to designate interconnection points anywhere in the country,²³⁹ and about the high costs they might incur where 911 Authorities “have delegated the operation of an ESInet to a third-party provider [that designates a] connection point far outside of state boundaries,”²⁴⁰ the Commission modified the proposed

²³⁵ See generally USTelecom NG911 Notice Comments at 3; South Carolina RLECs NG911 Notice Reply at 13 (rec. Sept. 8, 2023); Alaska Telecom Assoc. NG911 Notice Comments at 7; Verizon LBR Notice Comments at 6 (rec. Feb. 16, 2023).

²³⁶ Hamilton Relay, Inc. (Hamilton Relay) NG911 Notice Comments at 7 (rec. Aug. 9, 2023).

²³⁷ CSRIC NG911 Transition Report at 27, n.21 (“LIS or equivalent elements may be operated directly by originating service providers, by their chosen vendors, or possibly by a 9-1-1 Authority, a set of 9-1-1 Authorities, or their vendors as a service to carriers...”), 26 (“In this scenario, the NG Emergency Services Network Provider hosts the LNG and the small carrier provides interconnection via legacy protocols. The NG Emergency Services Network Provider manages the interworking between legacy modes and those required by the NG Emergency Services Network. This scenario allows the LNG to be used as an aggregation point for multiple small carriers.... If each small carrier was required to host the LNG, then their ability to offer emergency calls to the NG Emergency Services Network would be based upon their ability to fund and deploy the LNG. If the NG Emergency Services Network Provider hosts the LNG, then it can provide the LNG as a service and accommodate small carriers coming on board with minimal expense to the smaller carrier. There would need to be service agreements that would cover the interconnection and management of the location data into the Location Database.”).

²³⁸ See e.g. Brian Rosen NG911 Notice Reply at 17 (“The LNG contains the Location Database (LIS) which is analogous to the ALI in that there is a record per subscriber (for wireline subscribers) typically indexed by telephone number. The TDM signaling contains all the information needed for the LNG to retrieve the location from its database and insert it in the SIP signaling towards the ESInet. As above, there are data format and provisioning changes wireline OSPs will need to make, but there are many ESInets with functioning LNGs that handle RLECs well. And, as above, wireline OSPs will continue to use street address (civic) location formats, albeit those formats are different than the current MSAG based standards.”).

²³⁹ See, e.g., Five Area Telephone NG911 Notice Comments at 8-9 (requesting in-state limitation to limit OSP costs); South Dakota Telecommunications Association NG911 Notice Comments at 10-11.

²⁴⁰ Five Area Telephone Comments at 8; see also, e.g., NTCA Comments at 3; Frontier Reply at 5; South Carolina RLECs Comments at 7; South Dakota Telecommunications Association NG911 Notice Comments at 8; NCTA Reply at 2; Oklahoma 9-1-1 Management Authority NG911 Notice Comments at 1.

default rule to require OSPs to deliver NG911 traffic to NG911 Delivery Points designated by a 911 Authority only if those points are located within the 911 Authority's home state.²⁴¹ Moreover, although the Commission believes, the obligation to transmit 911 calls to NG911 Delivery Points will have little, if any impact on RLECs' exposure to liability under state tort law, the home-state qualification may make it easier for RLECs to anticipate and manage those *de minimis* risks by avoiding exposing them to multiple states' differing tort law standards. In addition, RLECs' concerns that an obligation to deliver calls to faraway states would compel them to retain third-party long distance transmission vendors, and they could be held liable for violations of the Commission's 911 reliability rules committed by these vendors,²⁴² should be addressed by the home-state qualification requirement. The home-state qualification should also reduce the need for RLECs to retain third-party vendors, and make it easier for them to monitor the performance of both their own networks and those of the third-party vendors.

71. *No IP 911 Call Origination Requirement / LNG Gateway Solution.* Today's rules decline to require IP origination of 911 calls for OSPs at Phase 2, marking a substantial cost saving flexibility for small and other OSPs that still originate calls in TDM. In the *Notice*, we sought comment about such a requirement,²⁴³ but today we decline to impose it. Permitting these OSPs to maintain their legacy TDM facilities instead of moving to VoIP for NG911 Phase 2 will reduce the burdens on smaller entities. Specifically, our rules do not prevent OSPs from meeting the Phase 2 requirements by using a LIS gateway solution,²⁴⁴ which converts OSPs' existing legacy ALI/ANI location data into IP format for delivery in the SIP header code to ESInets and PSAPs.²⁴⁵ This allows the smallest OSPs to continue to operate legacy TDM networks and their ALI/ANI facilities without having to immediately convert their networks to VoIP.

²⁴¹ NG911 Delivery Points designated by a local, regional, or Tribal 911 Authority will satisfy this criterion even if they are located outside the boundaries of the 911 Authority's local, regional, or Tribal area, so long as they are located in the same state. NG911 Delivery Points designated by a territorial government's 911 Authority must be located within the same territory to qualify.

²⁴² NTCA NG911 Notice Comments at 4-5, 6-7 (IP 911 call delivery poses risks for OSP call delivery by too widely expanding the use of third-party networks); WTA NG911 Notice Comments at 3, 5 (there are reliability risks for IP general internet transport of 911 calls compared to dedicated SIP lines); Alaska Telecom Assoc. NG911 Notice Comments at 4 (replacing redundant 911 TDM trunks with IP 911 could result in less reliability in rural villages that rely completely on satellite connectivity for all IP traffic); USTelecom NG911 Notice Comments at 4-5 (the proposed rules will make it more challenging for OSPs to comply with the Commission's 911 reliability rules, as IP 911 call traffic will be travelling over various intermediate third-party networks); Windstream NG911 Notice Reply at 2-3 (NG911 traffic aggregators should be subject to the Commission's rules relating to disruption notification requirements, which currently apply to OSPs); Home Telephone NG911 Notice Comments at 8, 14-17 (the use of NG911 call aggregators needs to be addressed to ensure reliability); NTCA NG911 Notice Reply at 7-8 (public internet IP 911 call delivery instead of SIP means traffic will be travelling over networks often unknown to the OSP, so downstream outages will be unknowable).

²⁴³ *Notice* at *10, para. 25.

²⁴⁴ See Rosen Technologies NG911 Notice Reply at 2 ("The RLECS commenting on this proceeding wildly overestimate the cost of the gateway required to convert TDM to SIP.").

²⁴⁵ See Rosen Technologies NG911 Notice Reply Comments at 17 ("The TDM signaling contains all the information needed for the LNG to retrieve the location from its database and insert it in the SIP signaling towards the ESInet."); see also NENA Potential Points of Demarcation in NG9-1-1, Networks Information Document, NENA-INF-003 (March 21, 2013), p. 28 ("If an emergency call routed via the ESInet contains a location reference, the LPG must support a de-referencing interface to a LIS or LNG or ingress LSRG [Legacy Selective Router Gateway] to obtain the location information that will be returned to the legacy PSAP in the ALI response."), available at https://cdn.ymaws.com/www.nena.org/resource/collection/2851C951-69FF-40F0-A6B8-36A714CB085D/NENA-INF-003_Potential_Points_of_Demarcation_in_NG9-1-1_Networks.pdf.

72. *Time to Comply for Smaller Entities.* The additional six months for small and rural OSPs to comply with each Phase of the NG911 transition is also a significant step to reduce burdens by the Commission in the *Report and Order*. In the previous section we discuss the implementation timeframes for small and rural OSPs - RLECs,²⁴⁶ non-nationwide CMRS providers,²⁴⁷ and Internet-based TRS providers, which require these providers to comply with a 911 Authority's valid request at each phase of the NG911 transition within 12 months after receiving a valid request or within 12 months after the effective date of the rules adopted in the *Report and Order*, instead of the six month compliance timeframe for OSPs that do not fall into any of these classifications. The extended timeframe recognizes the concerns of RLEC commenters' about the challenges that they may face when transitioning to NG911.²⁴⁸ The Commission considered but declined RWA's request that non-nationwide providers have 30 months from a valid PSAP request to implement NG911.²⁴⁹ We also considered but declined to adopt an alternative sought by the Alaska Telecom Assoc. for, (1) "an implementation extension or exemption for non-IP networks, or portions of networks" and "longer implementation timelines as well as an opportunity for waivers of timing requirements;"²⁵⁰ and (2) NG911 rules that provide carriers in Alaska with a presumptive waiver of mandated IP-delivery deadlines, provided such a carrier can demonstrate that it is working in good faith with the PSAP to complete the request a carrier can demonstrate that it is working in good faith with the PSAP to complete their request,²⁵¹ recommending that OSPs and 911 Authorities negotiate alternative agreement timelines where reasonable.

73. *Reporting and Recordkeeping Requirements.* Today's *Report and Order* minimizes the burden of reporting requirements on businesses and governmental jurisdictions identified as small by the SBA. First, in response to comments, we adopt use of a Commission-owned registry for valid 911 authority readiness requests as the most efficient and least burdensome method of communication between 911 authorities and OSPs. Furthermore, we considered but declined to implement any additional and new data collections for monitoring performance and compliance with the NG911 rules the

²⁴⁶ A "[r]ural incumbent local exchange carrier (RLEC)" has the meaning given such term under § 54.5 of this chapter. See *supra* Appendix A at § 9.28.

²⁴⁷ A "non-nationwide CMRS provider" has the meaning given such term under § 9.10(i)(1)(v). See *supra* Appendix A at § 9.28.

²⁴⁸ See, e.g., Alaska Telecom Assoc. NG911 Notice Comments at 7-9 (stating that smaller providers should be afforded additional time than proposed in the *NG911 Notice*); CCA NG911 Notice Comments at 2-3 (stating that "smaller and rural carriers have significant resource constraints and supply chain challenges that lead them to need additional time and flexibility to comply with FCC requirements"); Five Area Telephone NG911 NPRM Comments at 7, 12, 13, 15 (discussing cost recovery concerns and stating that need at least twenty-four months is needed to comply following a 911 authority request because OSPs must hire contractors or third parties or upgrade their networks); Intrado NG911 NPRM Comments at 4 (stating that, except in the case of certain ILECs/RLECs, interconnecting parties typically can establish IP-formatted (i.e., SIP) delivery relatively quickly); NTCA Feb. 6, 2023 *Ex Parte*; NTCA March 6, 2023 *Ex Parte*; RTCC NG911 Notice Comments at 11 n.25 (discussing the availability of middle-mile transport facilities in an area, the cost of "cross-connects" for transport, and the technical capability of service providers); Pennsylvania RLECs NG911 NPRM Comments at 8 (stating that installing new switches and upgrading to an IP format can take between nine months and three years); South Carolina NG911 NPRM Comments at 7 (discussing the limitations of some current customer premises equipment); South Dakota Telecommunications Association NG911 Notice Comments at 12-14 (discussing the potential need for different customer premises equipment and the technical feasibility of embedding location information in TDM-originated calls); USTelecom NG911 NPRM Comments at 3 (discussing issues for some wireline providers to include location information in IP call headers) and WTA Feb. 7, 2024 *Ex Parte*.

²⁴⁹ RWA LBR Comments at 3-4.

²⁵⁰ Alaska Telecom Assoc. NG911 NPRM Comments at 2.

²⁵¹ Alaska Telecom Assoc. NG911 NPRM Comments at 7 (alternatively recommending an explicit mention of the option to request a waiver or extension).

Commission adopts. Thus, the Commission does not impose any added costs in addition to those discussed in the *NG911 Notice*. As discussed above in section E the rules adopted in the *Report and Order* gives small and other OSPs more flexibility than proposed in the *NG911 Notice* by the allowing OSPs and 911 Authorities to agree to alternate timeframes or cost allocation arrangements instead of those the Commission adopts but imposes notification requirements OSPs must make to the Commission regarding any alternate arrangements.

74. *Impact on Universal Service*. Small entities could potentially incur an economic impact if requiring the NG911 technology transitions adversely affect universal service in a way that deprives smaller entities of cost recovery mechanisms. However, given that under the adopted rules states remain free to implement cost recovery mechanisms as they deem necessary, the Commission concludes that the rules we adopt will not adversely impact universal service. Moreover, some parties argue the rules in the *NG911 Notice* are contrary to universal service principles because RLECs will bear disproportionate costs of the NG911 transition.²⁵² This is incorrect. To the extent RLECs higher-cost service areas require them to spend more than urban and suburban OSPs for NG911 transition costs, those costs can be recovered from intra-state universal service funds. South Carolina notes that its intra-state Universal Service Fund already provides generous subsidies to high-cost RLECs.²⁵³ Further, the Kansas RLECs indicate that the Kansas Universal Service Fund can be increased by the Kansas Corporation Commission (KCC) upon petition, which the KCC takes approximately 8 months to address.²⁵⁴ State regulatory agencies are better positioned than the Commission to assess the needs of their rural businesses and establish appropriate universal service policies for intra-state call traffic (such as 911) which best serve the interests of their state and local populations, both now and during the NG911 transition.

G. Report to Congress

75. The Commission will send a copy of the *Report and Order*, including this FRFA, in a report to Congress pursuant to the Congressional Review Act.²⁵⁵ In addition, the Commission will send a copy of the *Report and Order*, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the *Report and Order* and FRFA (or summaries thereof) will also be published in the Federal Register.²⁵⁶

²⁵² Fastwyre NG911 Notice Reply at 3; NTCA NG911 Notice Reply at 9-10; Iowa RLECs NG911 Notice Reply at 3; South Carolina RLECs NG911 Notice Comments at 11.

²⁵³ South Carolina NG911 Notice Comments at 2.

²⁵⁴ Kansas RLECs NG911 Notice Comments at 3-4.

²⁵⁵ 5 U.S.C. § 801(a)(1)(A).

²⁵⁶ 5 U.S.C. § 604(b).

Appendix C**Entities Filing Comments, Replies, and *Ex Partes*
to the Notices of Proposed Rulemaking in PS Docket Nos. 21-479 and 18-64**

Adams County E-911 Emergency Telephone Service Authority, Arapahoe County 911 Authority, and Jefferson County Emergency Communications Authority (Adams County et al.)

Alaska 9-1-1 Advisory Board

Alaska Telecom Association (Alaska Telecom Assoc.)

Alliance for Telecommunications Industry Solutions (ATIS)

American Trauma Society (ATS)

Acadian Ambulance Service Inc.

Association of Public-Safety Communications Officials-International, Inc. (APCO)

Arizona Department of Administration 9-1-1 Program Office (Arizona Dept. of Administration)

AT&T Services, Inc. (AT&T)

Bandwidth Communications, Inc. (Bandwidth)

Blue Valley Tele-communications, Inc, Golden Belt Telephone Association, Inc., KanOkla Telephone Association, Madison Telephone, LLC, Mutual Telephone Company, Peoples Telecommunications, LLC, Pioneer Telephone Association, Inc., Rainbow Telecommunications Association, Inc., S&A Telephone Company, LLC, S&A Telephone Company, LLC, S&T Telephone Cooperative Association, Inc., South Central Telephone Association, Inc., United Telephone Association, Inc., Wheat State Telephone, Inc., Columbus Communications Services, LLC, Cunningham Telephone Co., Inc., Gorham Telephone Co., Inc., H&B Communications, Inc., Home Telephone Co., Inc., LaHarpe Telephone Co., Inc., Southern Kansas Telephone Co., Inc., Totah Telephone Co., Inc., Twin Valley Telephone, Inc., Wamego Telecommunications Co., Inc., Wilson Telephone Co., Inc., Zenda Telephone Co., Inc., Rural Telephone Service Company, Inc. (Kansas RLECs)

Boulder Regional Emergency Telephone Service Authority (BRETSA)

Brian Rosen

ClearCaptions, LLC (ClearCaptions)

Colorado Council of Authorities, Inc. (CCOA)

Colorado Public Utilities Commission (Colorado PUC)

Communications Equality Advocates (CEA)

Competitive Carriers Association (CCA)

Comtech Telecommunications, Corp. (Comtech)

CTIA

Electronic Privacy Information Center (EPIC)

Fastwyre Broadband

Five Area Telephone Cooperative, Inc, Mid-Plains Rural Telephone Cooperative, Inc. (Five Area Telephone)

Frontier Communications Parent, Inc. (Frontier)

GCI Communications, Corp. (GCI)

Google

Hamilton Relay, Inc. (Hamilton Relay)

Home Telephone ILEC LLC (Home Telephone)

Industry Council for Emergency Response Technologies (iCERT)

Inteliquent, Inc. (Inteliquent)

Intrado Life & Safety, Inc. (Intrado)

Iowa Communications Alliance

Jack Varnado (Livingston Parish)

Jon Marcy, Kevin Brown, and John Holloway, Defense Information Systems Agency (DISA)

Joseph Lyons (Lyons)

Keith Johnson, System Chief, Loudoun County Combined Fire and Rescue System (LC-CFRS) and

Nicole Pickrell, Deputy Chief, Loudoun County Fire-Rescue (LCFR) (Loudoun County)

Maine Public Utilities Commission (Maine PUC)

Michigan State 911 Committee (Michigan State 911)

Minnesota Department of Public Safety/Emergency Communication Networks Division (Minnesota DPS-ECN)

Mission Critical Partners, LLC (Mission Critical Partners)

Motorola Solutions Connectivity, Inc. (MSCI)

National Association of State 911 Administrators (NASNA)

NCTA – The Internet & Television Association (NCTA)

Nebraska Public Service Commission (Nebraska PSC)

NENA: The 9-1-1 Association (NENA)

NGA 911, LLC (NGA 911)

Ronald R. Fenwick, Esq. (Fenwick)

NTCA – The Rural Broadband Association (NTCA)

RLEC Coalition

Oklahoma 9-1-1 Management Authority

Pennsylvania Emergency Management Agency (Pennsylvania Emergency Mgmt. Agency)

Pennsylvania Public Utility Commission (Pennsylvania PUC)

Pennsylvania Telephone Association

PTI Pacifica Inc. dba IT&E (IT&E)

Rally Networks

Richard Ray

Rural Wireless Association, Inc. (RWA)

South Carolina Revenue and Fiscal Affairs Office (South Carolina RFA)

South Dakota Telecommunications Association

Southern Communications Services, Inc. (Southern Line)

TDIforAccess, Inc. (TDI)

The Ad Hoc NG911 Service Providers Coalition

The Rural Telephone Company Consortium (RTCC)

The South Carolina Telephone Coalition (South Carolina RLECs)

The Texas 9-1-1 Alliance, the Texas Commission on State Emergency Communications, and the
Municipal Emergency Communication Districts Association (Texas 9-1-1 Entities)

TDIforAccess, Inc. (TDI)

T-Mobile USA, Inc. (T-Mobile)

USTelecom – The Broadband Association (USTelecom)

Val Sprynczynatyk

Verizon

Windstream Services, LLC (Windstream)

WTA – Advocates for Rural Broadband (WTA)

Voice on the Net Coalition (VON)