

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

In the Matter of)
) RM. _____
Expanding Broadband Opportunities in the)
896-901/935-940 MHz Band)

To: The Commission

PETITION FOR RULEMAKING

**(on behalf of Ameren Services Company, Anterix, Inc., Enterprise Wireless Alliance,
Eversource Energy, Inc., Lower Colorado River Authority, Portland General Electric, San Diego Gas
& Electric, Southern Communications Services, Inc., Utility Broadband Alliance, and Xcel
Energy Services, Inc.)**

Respectfully submitted,

Ameren Services Company
Anterix, Inc.
Enterprise Wireless Alliance
Eversource Energy, Inc.
Lower Colorado River Authority
Portland General Electric
San Diego Gas & Electric
Southern Communications Services, Inc.
Utility Broadband Alliance
Xcel Energy Services, Inc.

Dated: February 28, 2024

TABLE OF CONTENTS

EXECUTIVE SUMMARYii

I. INTRODUCTION.....2

II. THERE IS SUBSTANTIAL DEMAND FOR A 5/5 MEGAHERTZ BROADBAND SEGMENT IN THE 900 MHz BAND.....5

A. PRIVATE BROADBAND NETWORKS ARE AN INCREASINGLY PROMINENT COMPONENT OF EVOLVING U.S. SPECTRUM POLICIES...5

B. THE UTILITY INDUSTRY IS EMBRACING THE OPPORTUNITY TO DEPLOY CUSTOMIZED 900 MHz BROADBAND NETWORKS.....6

III. THE CONTINUED EVOLUTION OF PRIVATE WIRELESS BROADBAND IN THE UNITED STATES WILL BE ENHANCED BY ADDITIONAL 5/5 MEGAHERTZ CAPACITY.9

IV. CURRENT RULES REQUIRE MINIMAL MODIFICATION TO ACCOMMODATE A 5/5 MEGAHERTZ 900 MHz BROADBAND OPTION..... 11

V. CONCLUSION..... 12

ATTACHMENT A..... 15

EXECUTIVE SUMMARY

The FCC's 2020 decision to authorize a 3/3 megahertz segment of the 900 MHz Band for private enterprise broadband operations was a landmark step in recognizing the essential role broadband technology plays in all segments of the American economy. It reinvigorated underutilized spectrum by creating an opportunity for utilities and other enterprise entities to design, deploy, and operate private broadband networks that meet their exacting specifications for reliability and security. It did so with market-driven, incumbent-respectful migration provisions. It created a mechanism for delivering to the U.S. Treasury economic value for spectrum that had remained fallow in the Commission's inventory for decades in many areas of the country.

The private enterprise industry's response to the Commission's creativity in opening up this spectrum opportunity has confirmed that decision. Six leading utilities (Ameren Services Company, Evergy, Inc., Lower Colorado River Authority, San Diego Gas & Electric, Tampa Electric, a subsidiary of TECO Energy, Inc., and Xcel Energy Services, Inc.) already are in the process of designing and/or deploying broadband networks in 15 states. Other private entities, including numerous utilities, have expressed an intention to move forward with private wireless broadband networks.

The Petitioners now urge the FCC to take the next step in this technology evolution, a step contemplated in its 2020 decision and easily incorporated in the current rules, by providing an option for 5/5 megahertz broadband networks in the 900 MHz band ("Expanded 900 MHz Broadband Segment"). Like the commercial broadband marketplace, once private networks are deployed, additional use cases and end points are likely to grow continuously, suggesting that additional capacity will be a welcome evolution. Creating a 5/5 megahertz opportunity either as an extension of a 3/3 megahertz system in response to those new use cases and/or capacity demands or as an initial broadband commitment would address that evolution.

The bedrock principle of the proposed rules is an entirely voluntary relocation process in the expanded broadband segment. No incumbent would be required to vacate channels in the current 900 MHz narrowband segments. That decision would be made by each incumbent based on its operational and business requirements.

The rule changes needed to implement a 5/5 megahertz option are minimal. The key elements are as follows:

- A 5/5 megahertz authorization for the Expanded 900 MHz Broadband Segment would be available upon initial application or as an application to expand a 3/3 megahertz license in the 900 MHz broadband segment.
- All incumbent relocations from frequencies in the two narrowband segments outside the current 3/3 megahertz broadband segment would be entirely voluntary; the mandatory relocation provisions would not be applicable to those incumbent frequencies.
- Incumbent interference protection rules would remain the same.
- All technical rules applicable to 900 MHz broadband systems would remain the same.
- The performance requirements for broadband systems would remain the same.
- As with the current rules, the licensee of an authorization for an Expanded 900 MHz Broadband Segment could be required to make any necessary anti-windfall payments to the U.S. Treasury.

The proposed rule changes will support not only the expanding demand for wide-area, private, and secure wireless broadband networks, but also will enhance the leadership of the United States in this growing wireless technology field, including with regard to the operation and security of the Nation's evolving electric grid. The Petitioners urge the FCC, in the interest of supporting US technology leadership and the continued advancement of enterprise technology, to adopt a Notice of Proposed Rulemaking in this proceeding consistent with the proposal contained herein.

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Pursuant to Sections 1.401 and 1.411 of the Federal Communications Commission (“FCC” or “Commission”) rules,¹ the undersigned parties (“Petitioners”), representing a range of leading utility and enterprise constituents, respectfully petition the Commission to modify Part 27, Subpart P, Part 90, Subpart S, and related provisions of the FCC rules to provide for an optional, expanded 5/5 megahertz broadband segment (“Expanded 900 MHz Broadband Segment”) in the 896-901/935-940 MHz band (“900 MHz Band”). The rule changes proposed will support FCC policy initiatives that seek to make increasingly efficient use of limited spectrum resources,² and they are consistent with the original 900 MHz Order that contemplated future consideration of a 5/5 megahertz broadband opportunity.³ The proposed rule changes will support not only the expanding demand for wide-area, private, and secure wireless broadband networks, but they will also enhance the leadership of the United States in this growing wireless technology field, including, but not limited to, the operation and security of our Nation’s evolving electric grid. Additionally, access to this expanded broadband spectrum opportunity will ensure that the work of the Commission in the original 900 MHz Order continues and will provide utilities, critical

¹ 47 C.F.R. §§ 1.4014 and 1.411.

² See, e.g., *Principles for Promoting Efficient Use of Spectrum and Opportunities for New Services; Promoting Efficient use of Spectrum through Improved Receiver Interference Immunity Performance*, Policy Statement, ET Docket Nos. 23-122 and 22-137, FCC 23-27 (rel. Apr. 21, 2023) (“New Services NOI”); see also, *Advancing Understanding of Non-Federal Spectrum Usage*, Notice of Inquiry, WT Docket No. 23-232, FCC 23-63 (rel. Aug. 4, 2023).

³ *Review of the Commission’s Rules Governing the 896-901/935-940 MHz Band*, Report and Order, Order of Proposed Modification, and Order, WT Docket No. 17-200, 35 FCC Rcd 5183 at ¶ 33 (2020) (“900 MHz Order”).

infrastructure, and business enterprise entities with additional capacity in the future to support their 900 MHz private wireless broadband deployments.

This Petition proposes adoption of flexible rules that will further facilitate the availability of broadband technology for private enterprise entities in the 900 MHz Band, including electric utilities and others charged with delivering critical services to the American public. The bedrock principle of these proposed rules is an entirely voluntary relocation process for the remaining narrowband incumbents. Under the proposed rules for the Expanded 900 MHz Broadband Segment, no incumbent would be required to vacate channels in the current 1.5/1.5 and .5/.5 900 MHz narrowband segments at 896-897.5/935-936.5 MHz and 900.5-901/939.5-940 MHz (“900 MHz Narrowband Segments”), and the remaining narrowband incumbents and complex system licensees would continue to receive all current protection rights.

I. INTRODUCTION.

The FCC recognizes the urgent need to maximize the use of the nation’s spectrum resources if America is to remain technically competitive in a global economy and provide its citizens with the capabilities they need to succeed at school, at work, and in all other aspects of their lives:

Meeting the spectrum demands of tomorrow requires a framework to make efficient, effective, and equitable use of the airwaves today. As spectrum bands grow more congested, our networks continue to require greater bandwidth to support next-generation applications....⁴

The FCC has been a catalyst in working to bridge the digital divide through its commitment to extending commercial broadband service to rural, tribal, and other underserved areas of the nation. Its 2020 decision to authorize a segment of the 900 MHz Band for broadband operations was another landmark step in recognizing the now essential role broadband technology plays in all segments of the American economy.⁵ It reinvigorated underutilized spectrum by creating an opportunity for enterprise entities to design, deploy, and operate private broadband networks that meet their exacting specifications for reliability and security. It did so with market-driven, incumbent-respectful migration provisions that, to date, have facilitated significant clearing of the currently authorized 3/3 megahertz 900 MHz broadband segment, without any need for

⁴ New Services NOI at 1.

⁵ See n. 3, *supra*.

Commission mediation. It created a mechanism for delivering to the U.S. Treasury economic value for spectrum that had remained underutilized or even unutilized in the Commission’s inventory for decades in many areas of the country. The Commission’s creativity in opening up this spectrum opportunity has been demonstrably successful.

Since the FCC unanimously adopted the 900 MHz Order, Anterix and electric utility stakeholders together have begun utilizing 900 MHz broadband spectrum to deliver major benefits for consumers and society. These achievements include:

- Ongoing deployment of private wireless broadband networks at 900 MHz by **six leading utilities** (Ameren Services Company; Evergy, Inc.; Lower Colorado River Authority; San Diego Gas & Electric (“SDG&E”); Tampa Electric, a subsidiary of TECO Energy, Inc.; and Xcel Energy Services, Inc.) in **15 states** (California, Colorado, Florida, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, New Mexico, North Dakota, South Dakota, Texas, and Wisconsin), with many more utilities throughout the country demonstrating their intent to move forward with private wireless broadband networks.
- **21 experimental licenses**⁶ granted to critical infrastructure operators, vendors, and other interested parties exploring the use of private wireless broadband at 900 MHz, with 17 granted after the 900 MHz Order.
- **Establishment of the full panoply of 3GPP standards for 5G** for the 900 MHz Band, based on the leadership of Anterix and with broad global support.
- Creation of the **Anterix Active Ecosystem**,⁷ which includes **more than 110 technology companies** developing 900 MHz broadband solutions to support the modernization and security of the Nation’s electric grid.
- Launch of the **Utility Strategic Advisory Board**,⁸ composed of top industry executives from more than 10 utilities, working together to identify industry priorities and shape the evolution of 900 MHz utility broadband.
- Growth of the **Utility Broadband Alliance**⁹ (“UBBA”) into a utility-led organization—now with more than 100 members, including **more than 30 utilities**—bringing the industry together to advance private broadband wireless connectivity.

⁶ <https://anterix.com/900-mhz-experimental-licenses>.

⁷ <https://anterix.com/anterix-active-ecosystem>.

⁸ <https://investors.anterix.com/news-and-views/Press-Releases/Press-Release/2022/Anterix-Announces-the-Launch-of-a-New-Integrated-Platform-to-Drive-Industrywide-900-MHz-Private-Broadband-Innovation-and-Solutions/default.aspx>.

⁹ <https://www.ubba.com>.

- Development of **dozens of innovative utility use cases** that harness private broadband, including wildfire prevention, decarbonization, integration of distributed energy resources, and enhancement of cybersecurity protections.
- Deployment and successful use of SDG&E’s Falling Conductor Protection system for wildfire mitigation when enabled by low-latency 900 MHz PLTE.¹⁰ The solution, developed jointly by Schweitzer Engineering Laboratories (“SEL”) and SDG&E, was successfully tested in the lab in joint testing with SEL and Anterix, and deployed in the field by SDG&E to de-energize falling, live electric lines.
- Completion of a study¹¹ with the Department of Energy’s **National Renewable Energy Laboratory** (“NREL”) validating the performance of 900 MHz PLTE networks for critical grid communications. The study focused on the use of 900 MHz private wireless communications to support the growing need to integrate distributed and renewable energy into the Nation’s electric grid.
- Participation in a study with the Department of Energy’s **Pacific Northwest National Laboratory** and other lab and technology partners, “Assessment of Communication Architectures for Energy Systems,” to identify and suggest ways to mitigate gaps in technology, standards, and processes for communications across the Nation’s electric grid.
- Clearing of the majority of incumbents from the 3/3 megahertz 900 MHz broadband segment, including agreements with four “complex systems,”¹² two of which have secured spectrum rights to deploy 900 MHz PLTE networks.

While the current rules created the environment that enabled the successes detailed above, this is an opportunity to expand and enhance the spectrum opportunity available to utilities, critical infrastructure organizations, and other users of private broadband networks to ensure that as their use cases continue to evolve they have a path toward additional capacity leveraging underutilized spectrum in the 900 MHz Band. In addition, 900 MHz private wireless broadband network entities could utilize this expanded capacity to offer shared services to other enterprise users within their network footprint, increasing the beneficial and efficient use of 900 MHz spectrum resources.

The Commission contemplated such an outcome when it stated in the 900 MHz Order that “...we do not find that adopting a paired 5/5 megahertz broadband segment is in the public interest

¹⁰ The term “PLTE” is used frequently to describe private broadband networks but is commonly understood to reference 4G Long Term Evolution. The path envisioned in the instant proposal includes 5G technology and beyond.

¹¹ <https://anterix.com/nrel-study-of-private-lte-for-utility-use-case>.

¹² 47 C.F.R. § 27.1501 (defines a “complex system” as a covered incumbent’s system that consists of 45 or more functionally integrated sites). The status of a system as “complex” is defined as of the adoption date of the 900 MHz Order irrespective of subsequent deletions or additions of sites: “We also clarify that a site-based incumbent’s status as a complex system as reflected in ULS will be determined as of the date of the adoption of this Report and Order.” 900 MHz Order at ¶ 84.

at this time.¹³ The Commission committed to “monitor the progress of 3/3 megahertz broadband deployments and any continuing narrowband requirements before addressing whether future authorization of a 5/5 megahertz broadband segment is in the public interest.”¹⁴ For the reasons detailed herein, Petitioners submit that the level of 900 MHz broadband adoption by the utility industry in the three plus years since adoption of the 900 MHz Order demonstrates significant progress of 3/3 megahertz broadband deployments. It confirms the Petitioners’ belief that the public interest would be best served by creation of an expanded 5/5 megahertz broadband segment option. Petitioners further submit that the rules proposed here, i.e., the voluntary relocation of incumbents coupled with retention of current 900 MHz narrowband interference protection rights, strike the appropriate balance between incentivizing the expeditious expansion of broadband capacity in the 900 MHz Band, and protecting incumbent operators.

II. THERE IS SUBSTANTIAL DEMAND FOR A 5/5 MEGAHERTZ BROADBAND SEGMENT IN THE 900 MHz BAND.

Utilities and other private enterprise users have a growing need for 900 MHz spectrum to deploy private broadband networks. Providing an option for expanding the existing broadband allocation in the 900 MHz band to the 5/5 megahertz segment proposed herein will address these critical in-demand services.

A. PRIVATE BROADBAND NETWORKS ARE AN INCREASINGLY PROMINENT COMPONENT OF EVOLVING U.S. SPECTRUM POLICIES.

America’s security, safety, technological leadership, and economic growth depend, in no small measure, on sufficient access to spectrum. For more than a century, the Nation has worked to make spectrum resources available for the growing number of spectrum-dependent technologies and services used for both public and private applications.¹⁵

While much of the broadband spectrum focus has been on consumer requirements and the capabilities of commercial networks, the FCC and the Administration recently have placed increased emphasis on the role private broadband networks will play in the overall spectrum policy. For example, the NTIA NSS emphasizes that, “[w]ireless capabilities also have become

¹³ 900 MHz Order at ¶ 33 (emphasis added).

¹⁴ *Id.*

¹⁵ National Telecommunications and Information Administration, Development of a National Spectrum Strategy, 88 Fed. Reg. 16244; Pillar Two (Mar. 16, 2023) (“NTIA NSS”).

integral to public safety, medical care, education, multimodal transportation, and an array of industrial operations.”¹⁶ Some of those operations can be accommodated on commercial networks, but there is growing demand for private broadband systems for reasons of security, reliability, and control.

Certain segments of the business enterprise community have a particular interest in deploying broadband systems on exclusive, licensed spectrum. Critical infrastructure, including utilities of all types – electric, oil and gas, water, pipelines, and more – as well as wide-area transportation operations, essential manufacturing facilities, casinos, and others have identified use cases that require the capacity, latency and security that private wireless broadband delivers. These businesses have decades of experience deploying and managing their own narrowband networks. They are interested in spectrum opportunities that will enable them to evolve from narrowband to broadband on systems they design and operate. The expanded capacity opportunity of a 5/5 megahertz broadband offering within the 900 MHz Band will support these interests and ensure American businesses remain competitive in the international marketplace.

B. THE UTILITY INDUSTRY IS EMBRACING THE OPPORTUNITY TO DEPLOY CUSTOMIZED 900 MHz BROADBAND NETWORKS.

The American utility community is facing a range of new realities, including decarbonization commitments, the integration of distributed renewable energy sources, the realities of increasing and more intense weather patterns, wildfires, more frequent and sophisticated cyber incursions, and much more. This new reality is occurring as utilities are electrifying more and more of the U.S. economy. Addressing these issues will require the deployment of millions of new sensors and controllers, and the requisite broadband communications capability that can capture, analyze, aggregate, and act upon new sources of data. Cloud and edge computing, machine learning and artificial intelligence, virtual and augmented reality are becoming vital components of these networks because they facilitate operational intelligence and situational awareness regarding the health of the Nation’s electric grid. As the success of the original 900 MHz rules has shown, high-speed, low-latency, secure and purpose-built private broadband networks will be an integral component of utility operations going forward.

While utility architectures use commercial broadband networks for certain applications, the criticality of the nation’s electric delivery, transmission, and generation operations demands

¹⁶ *Id.* at Overview.

utility-specific broadband solutions designed to their particular specifications and operated exclusively by their personnel. The increasing frequency of extreme weather events and ongoing cybersecurity challenges reinforce the need for utilities to maintain their own networks, separated from the public internet and built to a utility standard, rather than relying on commercial networks. Slicing technology or other options do not offer the 24/7/365 control that has made the U.S. electric grid the gold standard for utility service around the world. The reliability of the U.S. power grid is enhanced by utilities refraining from outsourcing critical capabilities – and this approach is equally vital for communications facilities and spectrum deployments, the invisible infrastructure integral to the electric grid.

Chairwoman Rosenworcel has recognized the critical importance of this new infrastructure in the American economy: “The airwaves around us are invisible infrastructure. How we allocate it supports – and constrains – what we can do with it.”¹⁷ The FCC’s 2020 decision to create a broadband option for private wireless broadband in a 900 MHz narrowband allocation that was, and remains, significantly underutilized outside major population centers is an example of aligning regulatory action with private enterprise need. The drive by electric utilities to ensure they are prepared to meet future challenges – and opportunities – is reflected in the decisions by six major utilities to lease or purchase 900 MHz broadband spectrum in 15 states, already covering a significant portion of the contiguous U.S. land mass, including unserved and underserved areas.

The movement of the electric utility industry toward PLTE, including by those utilities that previously expressed concern or opposition to a 5/5 megahertz broadband segment, demonstrates that the time is ripe to consider broadband operations beyond a 3/3 megahertz segment. The growing support of the utility industry for a 5/5 megahertz broadband segment, including by large narrowband incumbents, confirms that such a realignment, if voluntary, would not eliminate the option of continuing long-standing narrowband operations. The 900 MHz narrowband incumbents that are parties to this Petition have concluded that their narrowband requirements have evolved to support voluntary realignment to a 5/5 megahertz broadband segment.

As noted earlier, four utilities that qualified as “complex systems” with significant narrowband operations have executed agreements to clear their narrowband operations out of the

¹⁷ Remarks of FCC Chairwoman Jessica Rosenworcel Federal Communications Commission and National Science Foundation Joint Workshop “The Opportunities and Challenges of Artificial Intelligence for Communications Networks and Consumers” Washington, DC July 13, 2023.

3/3 megahertz 900 MHz broadband segment. Two are in the process of deploying 900 MHz PLTE broadband networks. A substantial number of other utilities are actively investigating 900 MHz broadband systems, a process that requires extensive internal evaluation and technical review but is well underway.

Because the business operations of private enterprises, including utilities, often require coverage in rural as well as urban/suburban communities, deployment of their private broadband networks could have a multiplier effect in terms of national broadband coverage. Approximately two-thirds of the more than 3,000 counties in the United States are classified as “rural” under the FCC’s definition of fewer than 100 persons per square mile. The infrastructure that will be built out to support these 900 MHz broadband networks can also help support cost-effective commercial broadband deployment in areas where population density would make investment in consumer-oriented networks challenging. Numerous utilities already are investigating this opportunity, including 11 utilities that secured Middle Mile funds from the bi-partisan Infrastructure Legislation.¹⁸

The robust interest in private broadband is confirmed by the emergence of the Utility Broadband Alliance. UBBA defines its mission as follows:

To champion the advancement and development of private broadband networks as a key enabler of the utility of the future. UBBA fosters collaboration among ecosystem participants to develop innovative solutions that cater to the unique needs of utilities.¹⁹

That ecosystem now includes more than 110 energy companies, equipment vendors, technology providers, OEMs, tower companies, engineering resources and others, as well as a Board of Directors that illustrates the importance of this issue to major utilities throughout the nation. UBBA’s recent conference in Minneapolis had over 500 attendees that participated in four days of exploration, discussion, debate, and collaboration, all focused on the goal of utilizing private broadband to meet the demand for connectivity and efficiency in utility networks.

This migration to PLTE also supports the FCC’s spectrum efficiency goals. Utilities, as a large block of remaining incumbents in the band, may continue to operate narrowband systems for certain applications. But increasingly, they will seek to incorporate those operations into their private broadband networks. This technology transition will streamline certain operations that

¹⁸ <https://broadbandusa.ntia.gov/funding-programs/enabling-middle-mile-broadband-infrastructure-program/funding-recipients> and <https://www.arcgis.com/apps/dashboards/4fc111c466a34528b54e462b6df184db>.

¹⁹ <https://www.ubba.com/about-us>.

often require the maintenance and oversight of a dozen or more different legacy narrowband wireless systems. One utility already has identified more than 20 wireless networks throughout its service territory that ultimately will transition to its new 900 MHz private broadband network. Thus, the record confirms that future authorization of a 5/5 megahertz broadband segment would not hinder continuing narrowband requirements and that expanding opportunities for private wireless broadband networks is in the public interest.

III. THE CONTINUED EVOLUTION OF PRIVATE WIRELESS BROADBAND IN THE UNITED STATES WILL BE ENHANCED BY ADDITIONAL 5/5 MEGAHERTZ CAPACITY.

The Commission has consistently recognized the value of bringing new spectrum to market to support wireless innovation and United States technology leadership.²⁰ The Petitioners agree and are confident that technology, with a demonstrated ability to leapfrog today’s use cases, will act as a catalyst for broadband applications that have not yet been identified as long as supported by the necessary spectrum.

²⁰ Chairwoman Rosenworcel remarked that innovative opportunities depend on access to spectrum and that spectrum will be increasingly difficult to identify:

...we face a hard truth. Greenfield spectrum – open and cleared for use – will not be as simple or easy to find. We will have to invest in new technologies to promote efficiency and use a range of spectrum policy tools...to ensure access to our airwaves. (Remarks of FCC Chairwoman Jessica Rosenworcel, Mobile World Congress “New Frontier of Partnerships” Barcelona, Spain, March 1, 2022.)

Commissioner Carr has stated the following:

Maintaining and extending U.S. leadership in wireless will require the FCC to continue an all-of-the-above approach to spectrum. That means continuing to work with all stakeholders to deliver a mix of low-, mid-, and high-band spectrum into the market. And we need to ensure that providers can choose from a mix of licensed, unlicensed, and shared spectrum bands to meet demand—all while protecting the interests of incumbents. (Testimony of Brendan Carr, Commissioner, Federal Communications Commission, Before the United States Senate Commerce, Science, and Transportation Committee, “Nominations Hearing-FCC” June 22, 2022).

Commissioner Starks also identified the growing demand for limited spectrum resources:

Which brings us to today, and the important task before us. Expanding spectrum access is particularly ripe for data-driven enhancements. Even though the resource is fixed, unused amounts are generally falling—all while demand only continues to build. (Starks Statement: FCC Launches Technical Inquiry into Spectrum Usage Data, August 4, 2023.)

Commissioner Simington has identified the same issue with specific recognition of private wireless needs: With regulatory engagement, 5G industrial networks could become a product category, and a national capacity, which is completely distinct from the more familiar consumer applications of 5G. The FCC is still committed to consumer 5G spectrum commercialization, and I don’t think we have to choose between two models; instead, we have to look at every option and every model that is likely to enable growth, and we have to allow the private sector to explore a variety of technological options. (Commissioner Simington Addresses Incompas Policy Summit, March 7, 2023.)

Private wireless broadband at 900 MHz already has demonstrated its capabilities for utilities. It supports critical cybersecurity protections, wildfire mitigation solutions, grid network flow controls, integration of renewable energy sources, situational awareness, and other vital capabilities. A powerful example of the potential of 900 MHz private wireless broadband networks is the deployment, by SDG&E, of the Falling Conductor Protection solution, which is designed to recognize when a live utility electric wire has broken and is falling, and de-energizes that line before it hits the ground.²¹ These innovations are exactly the type of transformational solutions that the Commission’s original 900 MHz Order has enabled and that would be enhanced by a 5/5 megahertz broadband opportunity.

From a technological standpoint, the 900 MHz spectrum has continued to evolve to match near-term and long-term utility and enterprise needs. Based on the work of Anterix, and with support across the globe, the 900 MHz 3/3 broadband segment has been granted a 3GPP standard for 5G, ensuring that it can evolve technologically as necessary. It also has been granted its own new band identification, Band 106 (LTE), with that band also being granted a 5G new radio standard (n106).

The 3/3 MHz broadband opportunity at 900 MHz supports existing utility use cases. However, like the commercial broadband marketplace, once private networks are deployed, additional use cases and end points are likely to grow continuously, suggesting that additional capacity will be a welcome evolution.. Sufficient future capacity will enable utilities to address the grid modernization required to address the climate, reliability, resilience, and security needs of utilities and their customers.

The availability of a 5/5 megahertz option also could be used in instances where multiple public or private entities such as a combination of electric, water, and other utilities or public safety entities share 900 MHz broadband spectrum and even infrastructure. Similar combinations might be formed by large industrial facilities sharing spectrum with the utility that serves them. This would enable stakeholders to share costs while enhancing their capabilities and the services they can deliver to the public. This sharing model has already been implemented successfully by Southern Communications Services, Inc. d/a/ Southern Linc, a subsidiary of the utility Southern Company, on its broadband network and by the Lower Colorado River Authority on a narrowband

²¹ See Schweitzer Engineering Labs / Anterix White Paper entitled “Detecting and Isolating Falling Conductors in Midair Using 900 MHz Private LTE at Protection Speeds,” at <https://selinc.com/api/download/135957/?lang=en>.

network and planned for on its new 900 MHz broadband network. Greater capacity also could create opportunities for cost-effective partnering with smaller, rural, and even tribal providers with complementary wireless coverage requirements.

IV. CURRENT RULES REQUIRE MINIMAL MODIFICATION TO ACCOMMODATE A 5/5 MEGAHERTZ 900 MHz BROADBAND OPTION.

Although the Commission found it premature to provide for a 5/5 megahertz broadband option in its 900 MHz Order, the fact that it contemplated a future with a 5/5 megahertz allocation is reflected in the 900 MHz rules that should require very few modifications to incorporate that option (as shown on Attachment A). The key elements in the proposed changes are as follows:

- A 5/5 megahertz authorization for the Expanded 900 MHz Broadband Segment would be available upon initial application or as an application to expand an existing 3/3 megahertz broadband license in the 900 MHz Band, in either case provided the eligibility requirements of Section 27.1503 are satisfied.
- All incumbent relocations from the 900 MHz Narrowband Segments would be entirely voluntary; the mandatory relocation provisions in Section 27.1504 would not be applicable to incumbent frequencies outside the current 3/3 megahertz 900 MHz broadband segment as confirmed in proposed Section 27.1505(a).
- Incumbent interference protection rules would remain the same, including those in Sections 27.1503(a)(2) and 90.672.
- All technical rules applicable to 900 MHz broadband systems would remain the same, including those in current Sections 27.1507, 27.1508, and 27.1509.
- The performance requirements of Section 27.1506 would remain the same.
- The licensee of an authorization for an Expanded 900 MHz Broadband Segment could be required to make an anti-windfall payment to the U.S. Treasury under proposed Section 27.1505(c), consistent with the provisions of current Section 27.1503(c).

The Petitioners also propose minor clarifying edits to Sections 27.1503 and 27.1506 based on several years of licensing experience.

While outside the scope of this proceeding, the Petitioners urge the FCC to work with the Federal Aviation Administration (“FAA”) in developing service rules for deployment of unmanned aircraft systems (“UAS”) in the 900 MHz Band. A number of parties, including some Petitioners, have expressed an urgent need for UAS operations in support of their mission-critical

responsibilities.²² The 900 MHz Band would be an ideal protected spectral home for this application.

V. CONCLUSION

Creating the Expanded 900 MHz Broadband Segment would be consistent with multiple FCC policy objectives. It would promote the introduction of new private wireless broadband users and use cases, devices, sensors, meters, and end points, supporting our Nation's critical infrastructure providers as they evolve to meet the energy needs of our country. It would present an opportunity for spectrum that has been available, yet unutilized, for decades in too many parts of this Nation to be placed into productive use, with the U.S. Treasury receiving full value for that use. It would offer a flexible technology roadmap for private enterprise entities to invest in broadband networks they design, deploy, operate, and control on a schedule that is consistent with their internal requirements. Importantly it would accomplish these goals in a regulatory environment that fully protects the rights of incumbents by making all relocation entirely voluntary.

The 900 MHz Order anticipated that an initial 900 MHz broadband allocation might be only the first step in addressing the growing demand for private broadband networks. Having laid that groundwork and having adopted rules that can be modified easily to create an Expanded 900 MHz Broadband Segment, the Petitioners urge the FCC, in the interest of supporting U.S. technology leadership and continued utility and enterprise technology evolution, to adopt a Notice of Proposed Rulemaking consistent with the proposal contained herein.

²² See, e.g., Comments of Florida Power & Light Company, WT Docket No. 22-323 (filed Mar. 9, 2023); see also Reply Comments of Florida Power & Light Company, WT Docket No. 22-323 (filed Apr. 10, 2023).

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Dated: February 28, 2024

ATTACHMENT A

Final Rules

For the reasons set forth above, Parts 1, 2, 20, 27 and 90 of the Code of Federal Regulations is amended as follows:

PART 1 – PRACTICE AND PROCEDURE

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

Authority: 47 U.S.C. chs. 2, 5, 9, 13; 28 U.S.C. 2461, unless otherwise noted.

1. Section 1.907 is amended by revising the definition of “Covered Geographic Licenses” to read as follows:

§ 1.907 Definitions.

* * * * *

Covered geographic licenses. Covered geographic licenses consist of the following services: 1.4 GHz Service (part 27, subpart I, of this chapter); 1.6 GHz Service (part 27, subpart J); 24 GHz Service and Digital Electronic Message Services (part 101, subpart G, of this chapter); 218-219 MHz Service (part 95, subpart F, of this chapter); 220-222 MHz Service, excluding public safety licenses (part 90, subpart T, of this chapter); 600 MHz Service (part 27, subpart N); 700 MHz Commercial Services (part 27, subpart F and H); 700 MHz Guard Band Service (part 27, subpart G); 800 MHz Specialized Mobile Radio Service (part 90, subpart S); 900 MHz Specialized Mobile Radio Service (part 90, subpart S); 900 MHz Broadband Service (part 27, subpart P); 3.7 GHz Service (part 27, subpart O); Advanced Wireless Services (part 27, subparts K and L); Air-Ground Radiotelephone Service (Commercial Aviation) (part 22, subpart G, of this chapter); Broadband Personal Communications Service (part 24, subpart E, of this chapter); Broadband Radio Service (part 27, subpart M); Cellular Radiotelephone Service (part 22, subpart H); Citizens Broadband Radio Service (part 96, subpart C, of this chapter); Dedicated Short Range Communications Service, excluding public safety licenses (part 90, subpart M); Educational Broadband Service (part 27, subpart M); H Block Service (part 27, subpart K); Local Multipoint Distribution Service (part 101, subpart L); Multichannel Video Distribution and Data Service (part 101, subpart P); Multilateration Location and Monitoring Service (part 90, subpart M); Multiple Address Systems (EAs) (part 101, subpart O); Narrowband Personal Communications Service (part 24, subpart D); Paging and Radiotelephone Service (part 22, subpart E; part 90, subpart P); VHF Public Coast Stations, including Automated Maritime Telecommunications Systems (part 80, subpart J, of this chapter); Upper Microwave Flexible Use Service (part 30 of this chapter); and Wireless Communications Service (part 27, subpart D).

* * * * *

2. Section 1.9005 is amended by adding a new paragraph (nn) to read as follows:

§ 1.9005 Included services.

* * * * *

- (nn) The 900 MHz Broadband Service (part 27 of this chapter).

PART 2 – FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

3. The authority citation for part 2 continues to read as follows:

Authority: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

4. Section 2.106 is amended by revising pages 31 and 32 to read as follows:

2.106 Table of Frequency Allocations.

International Table			United States Table		FCC Rule Part(s)	
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table		
890-942 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation	890-902 FIXED MOBILE except aeronautical mobile 5.317A Radiolocation	890-942 FIXED MOBILE 5.317A BROADCASTING Radiolocation	890-902	(See previous page) 894-896 AERONAUTICAL MOBILE US116 US268	Public Mobile (22)	
				896-897.5 FIXED LAND MOBILE US116 US268	Private Land Mobile (90)	
				897.5-900.5 FIXED MOBILE except aeronautical mobile US116 US268	Wireless Communications (27) Private Land Mobile (90)	
				900.5-901 FIXED LAND MOBILE US116 US268	Wireless Communications (27) Private Land Mobile (90)	
				901-902 FIXED MOBILE US116 US268	Personal Communications (24)	
	5.318 5.325			US116 US268 G2		
	902-928 FIXED Amateur Mobile except aeronautical mobile 5.325A Radiolocation 5.150 5.325 5.326			902-928 RADIOLOCATION G59	902-928	RF Devices (15) ISM Equipment (18) Private Land Mobile (90) Amateur Radio (97)
	928-942 FIXED MOBILE except aeronautical mobile 5.317A Radiolocation			5.150 US218 US267 US275 G11	5.150 US218 US267 US275	
				928-932	928-929 FIXED US116 US268 NG35	Public Mobile (22) Private Land Mobile (90) Fixed Microwave (101)
					929-930 FIXED LAND MOBILE US116 US268	Private Land Mobile (90)
					930-931 FIXED MOBILE US116 US268	Personal Communications (24)
					931-932 FIXED LAND MOBILE US116 US268	Public Mobile (22)
			US116 US268 G2			
			932-935 FIXED US268 G2	932-935 FIXED US268 NG35	Public Mobile (22) Fixed Microwave (101)	
			935-941	935-936.5 FIXED LAND MOBILE US116 US268	Wireless Communications (27) Private Land Mobile (90)	
				936.5-939.5 FIXED	Wireless Communications (27)	

				MOBILE except aeronautical mobile US116 US268	Private Land Mobile (90)
				939.5-940 FIXED LAND MOBILE US116 US268	Wireless Communications (27) Private Land Mobile (90)
				940-941 FIXED MOBILE US116 US268	Personal Communications (24)
			US116 US268 G2		
5.323	5.325	5.327	941-944 FIXED	941-944 FIXED	Public Mobile (22)
942-960 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322	942-960 FIXED MOBILE 5.317A	942-960 FIXED MOBILE 5.317A BROADCASTING	US84 US268 US301 G2	US84 US268 US301 NG30 NG35	Aural Broadcast Auxiliary (74E) Low Power Auxiliary (74H) Fixed Microwave (101)
5.323		5.320	944-960	944-960 FIXED NG35	
960-1164 AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328			960-1164 AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328		Aviation (87)
5.328AA			US224		
1164-1215 AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B			1164-1215 AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)		
5.328A			5.328A US224		
1215-1240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active)			1215-1240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G56 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) G132 SPACE RESEARCH (active)	1215-1240 Earth exploration-satellite (active) Space research (active)	
5.330 5.331 5.332			5.332		
1240-1300 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur			1240-1300 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G56 SPACE RESEARCH (active) AERONAUTICAL RADIONAVIGATION	1240-1300 AERONAUTICAL RADIONAVIGATION Amateur Earth exploration-satellite (active) Space research (active)	Amateur Radio (97)
5.282 5.330 5.331 5.332 5.335 5.335A			5.332 5.335	5.282	
1300-1350 RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 RADIONAVIGATION-SATELLITE (Earth-to-space)			1300-1350 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation G2	1300-1350 AERONAUTICAL RADIONAVIGATION 5.337	Aviation (87)
5.149 5.337A			US342	US342	
1350-1400 FIXED MOBILE RADIOLOCATION	1350-1400 RADIOLOCATION 5.338A		1350-1390 FIXED MOBILE RADIOLOCATION G2	1350-1390	
			5.334 5.339 US342 US385 G27 G114	5.334 5.339 US342 US385	

5.149 5.338 5.338A 5.339	5.149 5.334 5.339	1390-1395 5.339 US79 US342 US385	1390-1395 FIXED MOBILE except aeronautical mobile 5.339 US79 US342 US385 NG338A	Wireless Communications (27)
		1395-1400 LAND MOBILE (medical telemetry and medical telecommand) 5.339 US79 US342 US385	Personal Radio (95)	

PART 20 – COMMERCIAL MOBILE SERVICES

5. The authority citation for part 20 continues to read as follows:

Authority: 47 U.S.C. 151, 152(a) 154(i), 157, 160, 201, 214, 222, 251(e), 301, 302, 303, 303(b), 303(r), 307, 307(a), 309, 309(j)(3), 316, 316(a), 332, 610, 615, 615a, 615b, 615c, unless otherwise noted.

6. Section 20.12 is amended by revising paragraph (a)(1) to read as follows:

§ 20.12 Resale and roaming.

(a)(1) Scope of manual roaming and resale. Paragraph (c) of this section is applicable to providers of Broadband Personal Communications Services (part 24, subpart E of this chapter), Cellular Radio Telephone Service (part 22, subpart H of this chapter), Specialized Mobile Radio Services in the 800 MHz and 900 MHz bands (included in part 90, subpart S of this chapter), and 900 MHz Broadband Service (included in part 27, subpart P of this chapter) if such providers offer real-time, two-way switched voice or data service that is interconnected with the public switched network and utilizes an in-network switching facility that enables the provider to re-use frequencies and accomplish seamless hand-offs of subscriber calls. The scope of paragraph (b) of this section, concerning the resale rule, is further limited so as to exclude from the requirements of that paragraph those Broadband Personal Communications Services C, D, E, and F block licensees that do not own and control and are not owned and controlled by firms also holding cellular A or B block licenses.

* * * * *

PART 27 – MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

7. The authority citation for part 27 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302a, 303, 307, 309, 332, 336, 337, 1403, 1404, 1451, and 1452, unless otherwise noted.

8. Section 27.1 is amended by adding paragraph (b)(16) to read as follows:

§ 27.1 Basis and purpose.

* * * * *

(b) * * *

(16) 897.5-900.5 MHz and 936.5-939.5 MHz.

9. Section 27.5 is amended by adding paragraph (n) to read as follows:

§ 27.5 Frequencies.

* * * * *

(n) *900 MHz Broadband*. The paired 897.5-900.5 MHz and 936.5-939.5 MHz bands are available for assignment on a geographic basis and can be expanded to the 896-901 MHz and 935-940 MHz bands in accordance with § 27.1505—. For operations in the 897.5-900.5 MHz and 936.5-939.5 MHz bands (designated as Channels 120-360 in section 90.613 of this chapter), no new applications will be accepted in transitioned markets for narrowband systems under part 90, subpart S of this chapter.

* * * * *

10. Section 27.12 is amended by revising paragraph (a) to read as follows:

§ 27.12 Eligibility.

(a) Except as provided in paragraph (b) and in §§ 27.604, 27.1201, 27.1202, and 27.1503, any entity other than those precluded by section 310 of the Communications Act of 1934, as amended, 47 U.S.C. 310, is eligible to hold a license under this part.

11. Section 27.13 is amended by adding paragraph (n) to read as follows:

§ 27.13 License Period.

* * * * *

(n) *900 MHz Broadband*. Authorizations for broadband licenses in the 897.5-900.5-896-901 MHz and 936.5-939.5-935-940 MHz bands will have a term not to exceed 15 years from the date of initial issuance and ten (10) years from the date of any subsequent renewal.

* * * * *

12. Part 27 is amended by adding a new subpart P to read as follows:

Subpart P—Regulations Governing Licensing and Use of 900 MHz Broadband Service in the 897.5-900.5 896-901 MHz and 936.5-939.5-935-940 MHz Bands

27.1500 Scope

27.1501 Definitions

27.1502 Permanent discontinuance of 900 MHz broadband licenses

27.1503 Broadband license eligibility and application requirements

27.1504 Mandatory relocation

27.1505 Expanded 900 MHz broadband segment

~~27.15056~~ Performance requirements

~~27.15067~~ Frequencies

~~27.15078~~ Effective radiated power limits for 900 MHz Broadband systems

~~27.15089~~ Field strength limit

~~27.15109~~ Emission limits

~~27.15110~~ Unacceptable interference to narrowband 900 MHz licensees from 900 MHz

broadband licensees

§ 27.1500 Scope.

This subpart sets out the regulations governing the licensing and operations of 900 MHz broadband systems operating in the 897.5-900.5/936.5-939.5 MHz band, [which may be expanded to the 896-901/935-940 MHz band in accordance with § 27.1505](#). It includes eligibility requirements and operational and technical standards for stations licensed in this band. It also supplements the rules regarding application procedures contained in part 1, subpart F of this chapter. The rules in this subpart are to be read in conjunction with the applicable requirements contained elsewhere in this part; however, in case of conflict, the provisions of this subpart shall govern with respect to licensing and operation in this frequency band.

§ 27.1501 Definitions.

Terms used in this subpart shall have the following meanings:

(a) *900 MHz Broadband*. The 900 MHz broadband systems in the 897.5-900.5/936.5-939.5 MHz band, [including those expanded to the 896-901/935-940 MHz band](#), licensed by the Commission pursuant to the provisions of this subpart.

(b) *900 MHz Broadband licensee*. An entity that holds a 900 MHz broadband license issued pursuant to this subpart.

(c) *900 MHz Broadband segment*. The segment of realigned 900 MHz spectrum (i.e., the 897.5-900.5/936.5-939.5 MHz band) licensed by the Commission pursuant to the provisions of this subpart.

(d) *900 MHz Narrowband segment*. The segments of realigned 900 MHz spectrum (i.e., the 896-897.5/935-936.5 MHz and 900.5-901/939.5-940 MHz bands (Paired channels 1-119 and 361-399)) designated for narrowband operations and licensed pursuant to 47 CFR part 90, subpart S of this chapter.

(e) *Complex system*. A covered incumbent's system that consists of 45 or more functionally integrated sites.

(f) *County*. For purposes of this part, counties shall be defined using the United States Census Bureau's data reflecting county legal boundaries and names valid through January 1, 2017.

(g) *Covered incumbent*. Any 900 MHz site-based licensee in the broadband segment, [and in the expanded broadband segment if applicable](#), that is required under section 90.621(b) to be protected by a broadband licensee with a base station at any location within the county, or any 900 MHz geographic-based SMR licensee in the broadband segment, [and in the expanded broadband segment if applicable](#), whose license area completely or partially overlaps the county.

(h) *Eligibility Certification*. A filing made to the Commission as part of the prospective broadband licensee's application for a 900 MHz broadband license that demonstrates satisfaction of the eligibility restrictions.

(i) [Expanded 900 MHz Broadband segment](#). [The segment of realigned 900 MHz spectrum \(896-901/935-940 MHz\) licensed by the Commission in accordance with § 27.1505 upon application from an entity that holds or qualifies to hold a 900 MHz broadband license in the 897.5-900.5/936.5-939.5 MHz band. Upon grant of such authority, the 900 MHz narrowband segments are no longer available for licensing of narrowband systems.](#)

(~~h~~j) *License Area*. The geographic component of a 900 MHz broadband license. A license area consists of one county.

(~~j~~k) *Power spectral density (PSD)*. The power of an emission in the frequency domain, such as in terms of ERP or EIRP, stated per unit bandwidth, e.g., watts/MHz.

(~~k~~l) *Site-channel*. A channel licensed at a particular location.

(~~h~~m) *Transition Plan*. A filing made to the Commission as part of the prospective broadband licensee's application for a 900 MHz broadband license that includes a plan for transitioning the band in the particular county.

(~~m~~n) *Transitioned Market*. See section 90.7 of part 90 of this chapter

§ 27.1502 Permanent discontinuance of 900 MHz broadband licenses.

A 900 MHz broadband licensee that permanently discontinues service as defined in § 1.953 must notify the Commission of the discontinuance within 10 days by filing FCC Form 601 requesting license cancellation. An authorization will automatically terminate, without specific Commission action, if service is permanently discontinued as defined in this chapter, even if a licensee fails to file the required form requesting license cancellation.

§ 27.1503 Broadband license eligibility and application requirements.

(a) *Eligibility*. For an applicant to be eligible for a broadband license in a county, it must:

(1) Hold the licenses for more than 50% of the total amount of licensed 900 MHz SMR (site-based or geographically licensed) and B/ILT (site-based) spectrum for the relevant county including credit for spectrum included in an application to acquire or relocate covered incumbents, or in an application to cancel a covered incumbent license(s) or delete site-channel(s) pursuant to an agreement with the broadband applicant, filed with the Commission on or after March 14, 2019;

(2) Hold spectrum in the broadband segment or reach an agreement to clear through acquisition, ~~or~~ relocation, or license cancellation, including credit for spectrum included in an application to acquire, ~~or~~ relocate covered incumbents, or an application to cancel a covered incumbent license(s) or delete site-channel(s) pursuant to an agreement with the broadband applicant, filed with the Commission on or after March 14, 2019, or demonstrate how it will provide interference protection to, covered incumbent licensees collectively holding licenses in the broadband segment for at least 90% of the site-channels in the county and within 70 miles of the county boundary, and geographically licensed channels where the license area completely or partially overlaps the county. To provide interference protection, an applicant may:

(i) protect site-based covered incumbent(s) through compliance with minimum spacing criteria set forth in § 90.621(b) of this chapter;

(ii) protect site-based covered incumbent(s) through new or existing letters of concurrence agreeing to lesser base station separations as set forth in § 90.621(b); and/or

(iii) protect geographically based covered incumbent(s) through a private contractual agreement.

(3) If any site of a complex system is located within the county and/or within 70 miles of the county boundary, an applicant must either hold the license for that site or reach an agreement to acquire, relocate, or protect it, [or cause the cancellation of the license for that site or delete its site-channel\(s\)](#) in order to demonstrate eligibility.

(4) The applicant may use its current 900 MHz holdings in the narrowband segment to relocate covered incumbents. Spectrum used for the purpose of relocating incumbent(s) may not exceed the incumbent's current spectrum holdings in the relevant county, unless additional channels are necessary to achieve equivalent coverage and/or capacity.

(b) *Application.*

(1) Applications must be filed in accordance with part 1, subpart F of this chapter.

(2) An applicant for a 900 MHz broadband license must submit with its application an Eligibility Certification that:

(i) Lists the licenses the applicant holds in the 900 MHz band to demonstrate that it holds the licenses for more than 50% of the total licensed 900 MHz spectrum, whether SMR or B/ILT, for the relevant county including credit for spectrum included in an application to [clear through acquisition, relocation or cancellation](#)~~acquire or relocate~~ any covered incumbents filed on or after March 14, 2019;

(ii) A statement that it has filed a Transition Plan detailing how it holds spectrum in the broadband segment and/or has reached an agreement to clear through acquisition, ~~or~~ relocation [or cancellation](#) (including credit for spectrum included in an application to acquire or relocate covered incumbents filed with the Commission on or after March 14, 2019 [or an application to cancel a covered incumbent license or delete site-channel\(s\) pursuant to an agreement with the applicant](#)), or demonstrate how it will provide interference protection to, covered incumbent licensees collectively holding licenses in the broadband segment for at least 90% of the site-channels in the county and within 70 miles of the county boundary, and geographically licensed channels where the license area completely or partially overlaps the county.

(3) An applicant for a 900 MHz broadband license must submit with its application a Transition Plan that provides:

(i) A showing of one or more of the following:

(A) Agreement by covered incumbents to relocate from the broadband segment;

(B) Protection of site-based covered incumbents through compliance with minimum spacing criteria;

(C) Protection of site-based covered incumbents through new or existing letters of concurrence agreeing to lesser base station separations;

(D) Protection of geographically-based covered incumbents through private contractual agreements; and/or

(E) Evidence that it holds licenses for the site-channels and/or geographically licensed channels.

(ii) Descriptions of the agreements between the prospective broadband licensee and all covered incumbents collectively holding licenses for at least 90% of site-channels within the county and within 70 miles of the county boundary, and geographically licensed channels where the license area completely or partially overlaps the county.

(iii) Descriptions in detail of all information and actions necessary to accomplish the realignment, as follows:

(A) The applications that the parties to the agreements will file for spectrum in the narrowband segment in order to relocate or repack licensees;

(B) A description of how the applicant will provide interference protection to, and/or acquire or relocate, [including by cancellation](#), from the broadband segment covered incumbents collectively holding licenses for at least 90% of site-channels within 70 miles of the county and within 70 miles of the county boundary and/or evidence that it holds licenses for the site-channels and/or geographically licensed channels.

(C) Any rule waivers or other actions necessary to implement an agreement with a covered incumbent; and

(D) Such additional information as may be required.

(iv) A certification from an FCC-certified frequency coordinator that the Transition Plan's representations can be implemented consistent with Commission rules. The certification must establish that the relocations proposed therein take into consideration all relevant covered incumbents and are consistent with the existing Part 90 interference protection criteria if the covered incumbent is site-based, and include any private contractual agreements between the prospective broadband licensee and a geographically-licensed covered incumbent.

(4) Applicants seeking to transition multiple counties may simultaneously file a single Transition Plan with each of its county-based applications.

(c) *Anti-Windfall Provisions* [for 897.5-900.5/936.5-939.5 MHz Broadband Segment License](#).

(1) The applicant must return to the Commission all of its licensed 900 MHz SMR and B/ILT spectrum, up to six megahertz, for the county in which it seeks a broadband license. The applicant will be required to file, within 15 days of filing its broadband license application, an application(s) to cancel all of its 900 MHz SMR and B/ILT spectrum, up to six megahertz, conditioned upon Commission grant of its application.

(2) If the applicant relinquishes less than six megahertz of spectrum in accordance with 27.1503(c)(1), then the applicant must remit an anti-windfall payment prior to the grant of the 900 MHz broadband license. Payment must be made through a monetary payment to the U.S. Treasury.

§ 27.1504 Mandatory relocation.

(a) Subject to paragraph (b) of this section, broadband licensees may require mandatory

relocation from the [897.5-900.5/936.5-939.5](#) broadband segment, [but not from the 896-897.5/935-936.5 MHz or 900.5-901/939.5-940 MHz narrowband segments](#), of covered incumbents' remaining site-channels in a given county and within 70 miles of the county boundary, and geographically licensed channels where the license area completely or partially overlaps the county, that were not covered by 27.1503(a)(2).

(b) Complex systems are exempt from mandatory relocation. To qualify as exempt from mandatory relocation, a complex system must have at least one site (of its 45 or more functionally integrated sites) located within the county license area or within 70 miles of the county boundary.

(c) *Relocation Costs and Comparable facilities.* A broadband licensee seeking to relocate a covered incumbent pursuant to this section is required to pay all reasonable relocation costs, including providing the relocated covered incumbent with comparable facilities. To be comparable, the replacement system provided to a covered incumbent during a mandatory relocation must be at least equivalent to the existing 900 MHz system with respect to the following four factors: (1) system; (2) capacity; (3) quality of service; and (4) operating costs.

(d) Having met the 90% success threshold, a 900 MHz broadband licensee seeking to trigger the mandatory relocation process shall serve notice on applicable covered incumbent(s).

(e) Following the service of notice, a 900 MHz broadband licensee may request information from the covered incumbent reasonably required to craft its offer of comparable facilities.

(f) We expect all parties to negotiate with the utmost "good faith" in the negotiation process. Factors relevant to a "good-faith" determination include:

(1) Whether the party responsible for paying the cost of band reconfiguration has made a *bona fide* offer to relocate the incumbent to comparable facilities;

(2) The steps the parties have taken to determine the actual cost of relocation to comparable facilities; and

(3) Whether either party has unreasonably withheld information, essential to the accurate estimation of relocation costs and procedures, requested by the other party.

(g) A party seeking Commission resolution of a dispute must submit in writing to the Chief, Wireless Telecommunications Bureau:

(1) the name, address, telephone number, and email address of the 900 MHz broadband licensee or covered incumbent making the allegation;

(2) the name of the 900 MHz broadband licensee or covered incumbent about which the allegation is made;

(3) a complete statement of the facts supporting the broadband licensee's or incumbent's claim; and

(4) the specific relief sought.

(h) If an incumbent fails to negotiate in good faith, its facilities may be mandatorily relocated, and its license modified accordingly by the Commission pursuant to Section 316 of the Act. If the

Wireless Telecommunications Bureau finds bad faith on the part of the broadband licensee, the broadband licensee may lose the right to relocate the incumbent or the Wireless Telecommunications Bureau may refer the matter to the Enforcement Bureau for action (which could include a range of sanctions, such as imposition of forfeitures).

§ 27.1505 Expanded 900 MHz broadband segment. An entity that holds or qualifies to hold a 900 MHz broadband license in the 897.5-900.5/936.5-939.5 MHz band in accordance with § 27.1503 may seek FCC approval for authority to expand the broadband segment to the 896-901/935-940 MHz band upon a showing that it can clear through acquisition, relocation, protection, or cancellation all covered incumbents. Except as specified below, the rules in this subpart applicable to the 900 MHz broadband segment apply to the expanded 900 MHz broadband segment.

(a) A broadband licensee may not require mandatory relocation of any covered incumbent site channels in the previously narrowband 896-897.5/935-936.5 MHz or 900.5-901/939.5-940 MHz segments of the expanded 900 MHz broadband segment. All covered incumbent site channels in the previously narrowband segments in a given county and within 70 miles of the county boundary, and geographically licensed channels where the license area completely or partially overlaps the county must be cleared pursuant to voluntary agreements.

(b) The applicant must return to the Commission all of its licensed 900 MHz spectrum for the county in which it seeks a broadband license. The applicant will be required to file, within 15 days of filing its broadband license application, an application(s) to cancel all of its 900 MHz spectrum conditioned upon FCC grant of its application.

(c) If the applicant relinquishes less than ten megahertz of spectrum in the county for which it seeks a license, then the applicant must remit an anti-windfall payment prior to the grant of the 900 MHz broadband license. Payment must be made through a monetary payment to the U.S. Treasury

§ 27.1506 Performance requirements.

(a) 900 MHz broadband licensees shall demonstrate compliance with performance requirements by filing a construction notification with the Commission, within 15 days of the expiration of the applicable benchmark, in accordance with the provisions set forth in §1.946(d) of this chapter.

(1) The licensee must certify whether it has met the applicable performance requirements. The licensee must file a description and certification of the areas for which it is providing service. The construction notifications must include electronic coverage maps and supporting technical documentation regarding the type of service it is providing for each licensed area within its service territory and the type of technology used to provide such service, and certify the accuracy of such documentation. Supporting documentation must include the assumptions used to create the coverage maps, including the propagation model and the signal strength necessary to provide reliable service with the licensee's technology.

(2) To demonstrate compliance with the population coverage requirement, licensees shall use the most recently available decennial U.S. Census Bureau data at the time of measurement and shall base their measurements of population served on areas no larger than the Census Tract level. The population within a specific Census Tract (or other acceptable identifier) will be deemed served by the licensee only

if it provides reliable signal coverage to and offers service within the specific Census Tract (or other acceptable identifier). To the extent the Census Tract (or other acceptable identifier) extends beyond the boundaries of a license area, a licensee with authorizations for such areas may include only the population within the Census Tract (or other acceptable identifier) towards meeting the performance requirement of a single, individual license.

(b) A 900 MHz broadband licensee must meet either a population coverage requirement or geographic coverage as follows:

(1) *Population Metric.*

(i) A 900 MHz broadband licensee shall provide reliable signal coverage and offer broadband service to at least 45% of the population in its license area within six years of license grant.

(ii) A 900 MHz broadband licensee shall provide reliable signal coverage and offer broadband service to at least 80% of the population in its license area within 12 years of license grant.

(2) *Geographic Coverage.* Alternatively, a 900 MHz broadband licensee may:

(i) Demonstrate it provides reliable signal coverage and offers broadband service, [or uses its facilities to further its private business needs](#), covering at least 25% of the geographic license area within six years of license grant.

(ii) Demonstrate it provides reliable signal coverage and offers broadband service, [or uses its facilities to further its private business needs](#), covering at least 50% of the geographic license area within twelve years of license grant.

(c) *Penalties.*

(i) If a 900 MHz broadband licensee fails to meet the first performance benchmark, we require the licensee to meet the final performance benchmark two years sooner (i.e., at 10 years into the license term) and reduce the license term from 15 years to 13 years.

(ii) If a 900 MHz broadband licensee fails to meet the final performance benchmark, its authorization for that license area will terminate automatically without Commission action.

(d) *License Renewal.* After satisfying the 12-year, final performance benchmark, a licensee must continue to provide coverage and offer broadband service [or use its facilities to further its private business needs](#) at or above that level for the remaining three years of the 15-year license term in order to warrant license renewal.

§ 27.15067 **Frequencies.** The 897.5-900.5 MHz and 936.5-939.5 MHz band segments are available for licensing with an authorized bandwidth up to 3 megahertz paired channels. [The expanded 900 MHz broadband segment of 896-901 MHz and 935-940 MHz is available for licensing with an authorized bandwidth up to 5 megahertz paired channels.](#) The 897.5-900.5 MHz segment [or 896-901 MHz segment, as applicable](#), must only be used for uplink transmissions. The 936.5-939.5 MHz segments [or 935-940 MHz segment, as applicable](#), must only be used for downlink transmissions.

§ 27.15078 **Effective radiated power limits for 900 MHz Broadband systems.**

(a) Maximum ERP. The power limits specified in this section are applicable to operations in areas more than 110 km (68.4 miles) from the U.S./Mexico border and 140 km (87 miles) from the U.S./Canada border.

(1) General Limit.

(i) The ERP for base and repeater stations must not exceed 400 watts/megahertz power spectral density (PSD) per sector and an antenna height of 304 m height above average terrain (HAAT), except that antenna heights greater than 304 m HAAT are permitted if power levels are reduced below 400 watts/megahertz ERP in accordance with Table 1 of paragraph (e) of this section.

(ii) Provided that they also comply with paragraphs (b) and (c) of this section, licensees are permitted to operate base and repeater stations with up to a maximum ERP of 1000 watts/megahertz power spectral density (PSD) per sector and an antenna height of 304 m height above average terrain (HAAT), except that antenna heights greater than 304 m HAAT are permitted if power levels are reduced below 1000 watts/megahertz ERP in accordance with Table 2 of paragraph (e) of this section.

(2) Rural Areas. For systems that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census:

(i) The ERP for base and repeater stations must not exceed 800 watts/megahertz power spectral density (PSD) per sector and an antenna height of 304 m height above average terrain (HAAT), except that antenna heights greater than 304 m HAAT are permitted if power levels are reduced below 800 watts/megahertz ERP in accordance with Table 3 of paragraph (e) of this section.

(ii) Provided that they also comply with paragraphs (b) and (c) of this section, base and repeater stations may operate with up to a maximum ERP of 2000 watts/megahertz power spectral density (PSD) per sector and an antenna height of 304 m height above average terrain (HAAT), except that antenna heights greater than 304 m HAAT are permitted if power levels are reduced below 2000 watts/megahertz ERP in accordance with Table 4 of paragraph (e) of this section.

(3) Mobile, control and auxiliary test stations must not exceed 10 watts ERP.

(4) Portable stations must not exceed 3 watts ERP.

(b) Power flux density (PFD). Each 900 MHz broadband base or repeater station that exceeds the ERP limit of paragraphs (a)(1)(i) or (a)(2)(i) of this section must be designed and deployed so as not to exceed a modeled PFD of 3000 microwatts/m²/MHz over at least 98% of the area within 1 km of the base or repeater station antenna, at 1.6 meters above ground level. To ensure compliance with this requirement, the licensee must perform predictive modeling of the PFD values within at least 1 km of each base or repeater station antenna prior to commencing such operations and, thereafter, prior to making any site modifications that may increase the PFD levels around the base or repeater station. The modeling must take into consideration terrain and other local conditions and must use good engineering practices for the 900 MHz band.

(c) Power measurement. Measurement of 900 MHz broadband base transmitter and repeater ERP must be made using an average power measurement technique. Power measurements for base transmitters and repeaters must be made in accordance with either of the following:

(1) A Commission-approved average power technique (see FCC Laboratory's Knowledge Database); or

(2) For purposes of this section, peak transmit power must be measured over an interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

(d) PAR limit. The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.

(e) Height-power limit. As specified in paragraph (a) of this section, the following tables specify the maximum base station power for antenna heights above average terrain (HAAT) that exceed 304 meters.

Table 1 – Permissible Power and Antenna Heights for Base Stations and Repeaters permitted to Transmit with up to 400 Watts/Megahertz

Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) (watts/megahertz)
Above 1372 (4500)	26
Above 1220 (4000) To 1372 (4500)	28
Above 1067 (3500) To 1220 (4000)	30
Above 915 (3000) To 1067 (3500)	40
Above 763 (2500) To 915 (3000)	56
Above 610 (2000) To 763 (2500)	80
Above 458 (1500) To 610 (2000)	140
Above 305 (1000) To 458 (1500)	240
Up to 305 (1000)	400

Table 2 – Permissible Power and Antenna Heights for Base Stations and Repeaters Permitted to Transmit with up to 1000 Watts/Megahertz

Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) (watts/megahertz)
Above 1372 (4500)	65
Above 1220 (4000) To 1372 (4500)	70
Above 1067 (3500) To 1220 (4000)	75
Above 915 (3000) To 1067 (3500)	100

Above 763 (2500) To 915 (3000)	140
Above 610 (2000) To 763 (2500)	200
Above 458 (1500) To 610 (2000)	350
Above 305 (1000) To 458 (1500)	600
Up to 305 (1000)	1000

Table 3 – Permissible Power and Antenna Heights for Base Stations and Repeaters Permitted to Transmit with up to 800 Watts/Megahertz

Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) (watts/megahertz)
Above 1372 (4500)	52
Above 1220 (4000) To 1372 (4500)	56
Above 1067 (3500) To 1220 (4000)	60
Above 915 (3000) To 1067 (3500)	80
Above 763 (2500) To 915 (3000)	112
Above 610 (2000) To 763 (2500)	160
Above 458 (1500) To 610 (2000)	280
Above 305 (1000) To 458 (1500)	480
Up to 305 (1000)	800

Table 4 – Permissible Power and Antenna Heights for Base Stations and Repeaters Permitted to Transmit with up to 2000 Watts/Megahertz

Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) (watts/megahertz)
Above 1372 (4500)	130
Above 1220 (4000) To 1372 (4500)	140
Above 1067 (3500) To 1220 (4000)	150
Above 915 (3000) To 1067 (3500)	200
Above 763 (2500) To 915 (3000)	280
Above 610 (2000) To 763 (2500)	400
Above 458 (1500) To 610 (2000)	700
Above 305 (1000) To 458 (1500)	1200

Up to 305 (1000)	2000
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§ 27.150~~89~~ Field strength limit.

The predicted or measured median field strength must not exceed 40 dB μ V/m at any given point along the geographic license boundary, unless the affected licensee agrees to a different field strength. This value applies to both the initially offered service areas and to partitioned service areas.

§ 27.151~~09~~ Emission limits.

The power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) in watts by at least the following amounts:

(a) For 900 MHz broadband operations in 897.5-900.5 MHz band [or 896-901 MHz band, as applicable](#), by at least 43 + 10 log (P) dB.

(b) For 900 MHz broadband operations in the 936.5-939.5 MHz band [or 935-940 MHz band, as applicable](#), by at least 50 + 10 log (P) dB.

(c) Measurement procedure. Compliance with the provisions of paragraphs (a) and (b) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the licensee's band, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(d) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

(e) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

§ 27.151~~10~~ Unacceptable interference to narrowband 900 MHz licensees from 900 MHz broadband licensees.

See Section 90.672 of this chapter.

PART 90 – PRIVATE LAND MOBILE RADIO SERVICES

13. The authority citation for part 90 continues to read as follows:

Authority: 47 U.S.C. 154(i), 161, 303(g), 303(r), 332(c)(7), 1401-1473.

14. Section 90.7 is amended by adding definitions for “900 MHz Broadband,” “900 MHz Broadband licensee,” “900 MHz Broadband segment,” “900 MHz Narrowband segment,” [“Expanded 900 MHz Broadband Segment,”](#) and “Transitioned Market” in alphabetical order to read as follows:

§ 90.7 Definitions.

* * * * *

900 MHz Broadband. See section 27.1501 of part 27 of this chapter.

900 MHz Broadband licensee. See section 27.1501 of part 27 of this chapter.

900 MHz Broadband segment. See section 27.1501 of part 27 of this chapter.

900 MHz Narrowband segment. See section 27.1501 of part 27 of this chapter.

[Expanded 900 MHz Broadband segment.](#) See section 27.1501 of part 27 of this chapter.

Transitioned Market. A geographic area in which the 900 MHz band has been reconfigured to consist of a 900 MHz broadband license in the 900 MHz broadband segment and two 900 MHz narrowband segments, [or to consist of a 900 MHz broadband license in the expanded 900 MHz broadband segment,](#) pursuant to Part 27 of this chapter.

* * * * *

15. Section 90.35 is amended by revising paragraph (c)(71) to read as follows:

§ 90.35 Industrial/Business Pool.

(c) * * *

(71) Subpart S of this part contains rules for assignment of frequencies in the 806-824/851-869 MHz band and for narrowband operations in the 896-901/935-940 MHz band.

* * * * *

16. Section 90.205 is amended by revising paragraph (k) to read as follows:

§ 90.205 Power and antenna height limits.

* * * * *

(k) *806-824 MHz, 851-869 MHz, 896-901 MHz and 935-940 MHz.* Power and height limitations for frequencies in the 806-824 MHz and 851-869 MHz bands and for narrowband operations in the 896-901/935-940 MHz band are specified in § 90.635.

* * * * *

17. Section 90.209 is amended by adding a new footnote 7 to the table in paragraph (b)(5) to read as follows:

§ 90.209 Bandwidth limitations.

* * * * *

(b) * * *

(5) * * *

Standard Channel Spacing/Bandwidth

Frequency band (MHz)	Channel spacing (kHz)	Authorized bandwidth (kHz)
* * *	* * *	* * *
896-901/935-940 ⁷	12.5	13.6
* * *	* * *	* * *

* * * * *

⁷ 900 MHz broadband systems may operate on channels and with bandwidths pursuant to the rules specified in subpart P of part 27 of this chapter.

* * * * *

18. Section 90.210 is amended by adding a new footnote 7 to the table in the introductory text to read as follows:

§ 90.210 Emission masks.

* * * * *

APPLICABLE EMISSION MASKS

Frequency band (MHz)	Mask for equipment with audio low pass filter	Mask for equipment without audio low pass filter
* * *	* * *	* * *
896-901/935-940 ⁷	I	J
* * *	* * *	* * *

* * * * *

⁷ Equipment used with 900 MHz broadband systems operating under subpart P of part 27 of this chapter is subject to the emission limitations in § 27.1509 of this chapter.

* * * * *

19. Section 90.213 is amended by adding a new footnote 15 to the table in paragraph (a) to read as follows:

§ 90.213 Frequency stability.

(a) * * *

Minimum Frequency Stability [Parts per million (ppm)]

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
* * *	* * *	* * *	* * *
896-901 ¹⁵	¹⁴ 0.1	1.5	1.5
* * *	* * *	* * *	* * *
935-940 ¹⁵	0.1	1.5	1.5
* * *	* * *	* * *	* * *

* * * * *

¹⁵ Equipment used with 900 MHz broadband systems operating under subpart P of part 27 of this chapter is exempt from the frequency stability requirements of this section. Instead, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

* * * * *

20. Section 90.601 is amended to read as follows:

§ 90.601 Scope.

This subpart sets out the regulations governing the licensing and operations of all systems operating in the 806-824/851-869 MHz and the narrowband operations in the 896-901/935-940 MHz bands. It includes eligibility requirements, and operational and technical standards for stations licensed in these bands. It also supplements the rules regarding application procedures contained in part 1, subpart F of this chapter. The rules in this subpart are to be read in conjunction with the applicable requirements contained elsewhere in this part; however, in case of conflict, the provisions of this subpart shall govern with respect to licensing and operation in these frequency bands.

21. Section 90.603 is amended by revising the introductory text to read as follows:

Except as specified in section 90.616, the following persons are eligible for licensing in the 806-824 MHz, 851-869 MHz, 896-901 MHz, and 935-940 MHz Bands.

22. Section 90.613 is amended by revising the introductory text to read as follows:

§ 90.613 Frequencies available.

The following table indicates the channel designations of frequencies available for assignment to eligible applicants under this subpart. Frequencies shall be assigned in pairs, with mobile and control station transmitting frequencies taken from the 806-824 MHz band with corresponding base station frequencies being 45 MHz higher and taken from the 851-869 MHz band, or with mobile and control station frequencies taken from the 896-901 MHz band with corresponding base station frequencies being 39 MHz higher and taken from the 935-940 MHz band. For operations in the 897.5-900.5 MHz and 936.5-939.5 MHz bands (Channels 120-360), no new applications will be accepted in a transitioned market for a narrowband system under part 90, subpart S of this chapter. Only the base station

transmitting frequency of each pair is listed in the following table.

23. Part 90 is amended by adding a new section to read as follows:

§ 90.616 896-897.5/935-936.5 MHz and 900.5-901/939.5-940 MHz Narrowband Segments in Transitioned Market without Expanded 900 MHz Broadband Segment.

(a) In a transitioned market, the narrowband segments of realigned 900 MHz spectrum (i.e., the 896-897.5/935-936.5 MHz and 900.5-901/939.5-940 MHz bands (Paired channels 1-119 and 361-399 as specified in 90.613)) are designated for the following entities:

(1) Applicants eligible in the Industrial/Business Pool of subpart C of this part;

(2) Business/Industrial/Land Transportation Pool and Specialized Mobile Radio licensees authorized as of September 13, 2018 for continuing operations; and

(3) Business/Industrial/Land Transportation Pool and Specialized Mobile Radio licensees authorized as of September 13, 2018, for relocation to the new narrowband segments from the broadband segment pursuant to Part 27, subpart P, of this chapter.

(b) Applications for new authorizations will only be accepted from applicants specified in paragraph (a)(1) of this section.

(c) Table 1 indicates the channels available in transitioned markets to the entities set forth in paragraph (a) of this section. These frequencies are available in transitioned markets in non-border areas and the U.S./Mexico border area. For multi-channel systems, channels may be grouped vertically or horizontally as they appear in the following table.

TABLE 1 –CHANNELS IN THE 896-897.5/935-936.5 MHz AND 900.5-901/939.5-940 MHz FREQUENCY BANDS IN TRANSITIONED MARKETS (IN NON-BORDER AREAS AND IN THE UNITED STATES/MEXICO BORDER AREA)

1-2-3-4-5	81-82-83-84-85
6-7-8-9-10	86-87-88-89-90
11-12-13-14-15	91-92-93-94-95
16-17-18-19-20	96-97-98-99-100
21-22-23-24-25	101-102-103-104-105
26-27-28-29-30	106-107-108-109-110
31-32-33-34-35	111-112-113-114-115
36-37-38-39-40	116-117-118-119
41-42-43-44-45	361-362-363-364-365
46-47-48-49-50	366-367-368-369-370
51-52-53-54-55	371-372-373-374-375
56-57-58-59-60	376-377-378-379-380
61-62-63-64-65	381-382-383-384-385
66-67-68-69-70	386-387-388-389-390
71-72-73-74-75	391-392-393-394-395
76-77-78-79-80	396-397-398-399

(d) Table 2 indicates the channels available in transitioned markets to the entities set forth in paragraph (a) of this section, available for use in the U.S./Canada border area.

TABLE 2 – CHANNELS IN THE 896-897.5/935-936.5 AND 900.5-901/939.5-940 MHz FREQUENCY BANDS IN TRANSITIONED MARKETS AVAILABLE IN THE U.S./CANADA BORDER AREA

Region	Location (longitude)	Channels
1	66° W-71° W. (0-100 km from border)	1-119, 398, 399
2	71° W-80°30' W (0-100 km from border)	1-119
3	80°30' W-85° W (0-100 km from border)	1-119
4	85° W-121°30' W (0-100 km from border)	1-119, 398, 399
5	121°30' W-127° W (0-140 km from border)	1-119, 398, 399
6	127° W-143° W (0-100 km from border)	1-119, 398, 399
7	66° W-121°30' W (100-140 km from border)	1-119, 361-399
8	127° W-143° W (100-140 km from border)	1-119, 361-399

(e) Table 3 indicates additional channels available in transitioned markets to the entities set forth in paragraph (a) of this section, available for use in the U.S./Canada border area. The channels listed in Table 3 are available for assignment in Regions 1-6 if the maximum power flux density (PFD) of the station's transmitted signal does not exceed the limits specified in tables 29 and 30 of section 90.619 of this chapter.

TABLE 3 – ADDITIONAL CHANNELS AVAILABLE IN TRANSITIONED MARKETS IN THE U.S./CANADA BORDER AREA [REGIONS 1-6]

Region	Channel No.'s	Effective radiated power
1	361-397	See Table 29 of section 90.619
2	361-399	See Table 29 of section 90.619
3	361-399	See Table 29 of section 90.619
4	361-397	See Table 29 of section 90.619
5	361-397	See Table 30 of section 90.619
6	361-397	See Table 29 of section 90.619

24. Section 90.617 is amended by revising the introductory text of paragraphs (c) and (f), as follows:

(c) Except as specified in section 90.616, the channels listed in Table 3 are available to applicants eligible in the Industrial Business Pool of subpart C of this part but exclude Specialized Mobile Radio Systems as defined in §90.603(c). These frequencies are available in non-border areas. Specialized Mobile Radio (SMR) systems will not be authorized on these frequencies. These channels are available for intercategory sharing as indicated in §90.621(e).

* * *

(f) Except as specified in section 90.616, the channels listed in Table 6 are available for operations only to eligibles in the SMR category—which consists of Specialized Mobile Radio (SMR) stations and eligible end users. These frequencies are available in non-border areas. The spectrum blocks listed below are available for EA-based services according to §90.681.

25. Section 90.619 is amended by revising the introductory text of paragraphs (b)(1), (b)(2), (d)(1), (d)(3), (d)(4), (d)(5), and (d)(6), and revising paragraph (d)(1) to read as follows:

(b)(1) Except as specified in section 90.616, the channels listed in Table 1 below are available to applicants eligible in the Industrial/Business Pool of subpart C of this part but exclude Specialized Mobile Radio Systems as defined in §90.603(c). These frequencies are available within the Mexico border region. Specialized Mobile Radio (SMR) systems will not be authorized on these frequencies.

* * *

(b)(2) Except as specified in section 90.616, the channels listed in Table 2 of this section are available for operations only to eligibles in the SMR category—which consists of Specialized Mobile Radio (SMR) stations and eligible end users. These frequencies are available in the Mexico border region. The spectrum blocks listed in the table below are available for EA-based services according to §90.681.

* * *

(d)

* * *

(1) Except as specified in section 90.616, channels 1-399, as listed in §90.613 table of 896-901/935-940 MHz Channel Designations, are available to eligible applicants for use in the U.S./Canada border area as shown in table 27.

* * *

(3) In Region 5, except as specified in section 90.616, channels 201-397 may be authorized in the United States under the following conditions:

* * *

(4) Except as specified in section 90.616, channel assignments for stations to be located in the geographical area in Region 1 enclosed by the United States-Canada border, the meridian 71° W and the line beginning at the intersection of 44°25' N, 71° W, then running by great circle arc to the intersection of 45° N, 70° W, then North along meridian 70° W to the intersection of 45°45' N, then running West along 45°45' N to the intersection of the United States-Canada border, will be only for channels 121 through 160, inclusive, and will be limited to assignments with 11 kHz or less necessary bandwidth. Coordination with Canada will be required for these channels.

(5) Except as specified in section 90.616, channel assignments for stations to be located in the geographical area in Region 3 enclosed by the meridian of 81° W longitude, the arc of a circle of 100 km radius centered at 42°39'30" N latitude and 81° W longitude at the northern shore of Lake Erie and drawn clockwise from the southerly intersection with 80°30' W longitude to intersect the United States-Canada border West of 81° W, and the United States-Canada border, will be only for channels 121

through 230, inclusive, and will be limited to assignments with 11 kHz or less necessary bandwidth. Coordination with Canada will be required for these channels. U.S. stations must protect Canadian stations operating on channels 121 through 230 within an area of 30 km radius from the center city coordinates (referenced to North American Datum 1983 (NAD83)) of London, Ontario (42°59'00.1" N, 81°13'59.5" W).

(6) Additional channels available— Except as specified in section 90.616, the channels listed in table 28 are available for assignment in Regions 1-6 if the maximum power flux density (PFD) of the station's transmitted signal does not exceed the limits specified in tables 29 and 30. The spreading loss shall be calculated using the free space formula taking into account any antenna discrimination in the direction of the border.

26. Section 90.672 is amended to read as follows:

§ 90.672 Unacceptable interference to non-cellular 800 MHz licensees from 800 MHz cellular systems or part 22 Cellular Radiotelephone systems, and within the 900 MHz narrowband segments, and to narrowband 900 MHz licensees from 900 MHz broadband licensees.

(a) *Definition.* Except as provided in 47 CFR 90.617(k), unacceptable interference to non-cellular licensees in the 800 MHz band from 800 MHz cellular systems or part 22 of this chapter, Cellular Radiotelephone systems; unacceptable interference within the 900 MHz narrowband segment; and unacceptable interference to narrowband 900 MHz licensees from 900 MHz broadband licensees, will be deemed to occur when the below conditions are met:

(1) A transceiver at a site at which interference is encountered:

(i) Is in good repair and operating condition, and is receiving:

(A) From the 800 MHz band, a median desired signal strength of -104 dBm or higher if operating in the 800 MHz band, or a median desired signal strength of -88 dBm if operating in the 900 MHz narrowband segment, as measured at the R.F. input of the receiver of a mobile unit; or

(B) From the 800 MHz band, a median desired signal strength of -101 dBm or higher if operating in the 800 MHz band, or a median desired signal strength of -85 dBm if operating in the 900 MHz narrowband segment; or, as measured at the R.F. input of the receiver of a portable *i.e.*, hand-held unit;

(C) From the 900 MHz broadband segment, a median desired signal strength of -104 dBm or higher if operating in the 900 MHz narrowband segment, as measured at the R.F. input of the receiver of a mobile unit; or

(D) From the 900 MHz broadband segment, median desired signal strength of -101 dBm or higher if operating in the 900 MHz narrowband segment, as measured at the R.F. input of the receiver of a portable, *i.e.*, hand-held unit; and either

(ii) Is a voice transceiver:

(A) With manufacturer published performance specifications for the receiver section of the transceiver equal to, or exceeding, the minimum standards set out in paragraph (b) of this section, and;

(B) Receiving an undesired signal or signals which cause the measured Carrier to Noise plus Interference ($C/(I + N)$) ratio of the receiver section of said transceiver to be less than 20 dB if operating in the 800 MHz band, or less than 17 dB if operating in the 900 MHz narrowband segment, or;

(iii) Is a non-voice transceiver receiving an undesired signal or signals which cause the measured bit error rate (BER) (or some comparable specification) of the receiver section of said transceiver to be more than the value reasonably designated by the manufacturer.

(2) Provided, however, that if the receiver section of the mobile or portable voice transceiver does not conform to the standards set out in paragraph (b) of this section, then that transceiver shall be deemed subject to unacceptable interference only at sites where the median desired signal satisfies the applicable threshold measured signal power in paragraphs (a)(1)(i) of this section after an upward adjustment to account for the difference in receiver section performance. The upward adjustment shall be equal to the increase in the desired signal required to restore the receiver section of the subject transceiver to the 20 dB $C/(I + N)$ ratio of paragraph (a)(1)(ii)(B) of this section. The adjusted threshold levels shall then define the minimum measured signal power(s) in lieu of paragraphs (a)(1)(i) of this section at which the licensee using such non-compliant transceiver is entitled to interference protection.

(b) *Minimum Receiver Requirements.* Voice transceivers capable of operating in the 806-824 MHz portion of the 800 MHz band, or in the 900 MHz narrowband segment, shall have the following minimum performance specifications in order for the system in which such transceivers are used to claim entitlement to full protection against unacceptable interference. (See paragraph (a)(2) of this section.)

(1) Voice units intended for mobile use: 75 dB intermodulation rejection ratio; 75 dB adjacent channel rejection ratio; -116 dBm reference sensitivity.

(2) Voice units intended for portable use: 70 dB intermodulation rejection ratio; 70 dB adjacent channel rejection ratio; -116 dBm reference sensitivity.

(3) Voice units intended for mobile or portable use in the 900 MHz narrowband segment: 60 dB intermodulation rejection ratio; 60 dB adjacent channel rejection ratio; -116 dBm reference sensitivity.