Communications and Information Technology Alert

Akin Gump
STRAUSS HAUER & FELD LLP

900 MHz Draft Order – What to Know

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Background

The 900 MHz band (896-901/935-940 MHz) encompasses 10 MHz of spectrum that is used by many utilities, refiners, railroads and other critical infrastructure operators in the United States, primarily for two-way voice communications. These "narrowband" uses are important to both the daily operations of these businesses as well as safety-related and emergency response communications. The alternative bands for narrowband communications are limited. In many of the more populated areas across the country, available narrowband frequencies are intensively used, and there is concern that there may not be sufficient spectrum available to support future needs, particularly the expansion of large utility and refinery operations that rely on these frequencies. In rural areas, and away from coastal urban centers, 900 MHz frequencies are less heavily utilized.

Over the past several years, in response to a petition filed by Anterix f/k/a pdvWireless, Inc., the Federal Communications Commission (FCC) has been exploring the introduction of broadband services at 900 MHz. Broadband systems, such as private enterprise Long-Term Evolution (LTE) systems, can provide additional functionality for certain applications, such as higher-speed data transfer, but may not be a suitable substitute for all narrowband systems. For example, there are currently no spark-resistant broadband devices available, which are necessary to refinery operations. Moreover, broadband performance is limited in challenging radio frequency environments with high noise and significant obstructions, which are typical in many industrial facilities. Finally, some incumbent users, such as oil refiners in the United States, are concerned about the potential for broadband operations to interfere with their critical narrowband communications, which are essential to maintaining safety in and around their facilities.

Executive Summary of the Draft Order

On April 22, 2020, the FCC released a Draft Order that would approve a process for partial transition to broadband operations in the 900 MHz band (896-901/935-940 MHz). This spectrum is used by many utilities, refiners, railroads and other critical infrastructure operators in the United States, primarily for two-way, narrowband voice communications that are important for daily operations and emergency

Contact Information

If you have any questions concerning this alert, please contact:

Jennifer L. Richter
Partner
jrichter@akingump.com
Washington, D.C.
+1 202.887.4524

C. Shea Boyd
Associate
shea.boyd@akingump.com
Washington, D.C.
+1 202.887.4421

communications. The Draft Order is not yet final and could be modified in response to discussions with stakeholders before it is voted at the FCC's next open meeting, May 13th. The Draft Order: (1) Authorizes the creation of a 6 MHz broadband segment, limiting narrowband communications to 4 MHz of the band; and (2) Establishes a market-based transition with mandatory relocation after an entity successfully negotiates with, or demonstrates protection to, licensees of 90 percent of existing site-channels in and within 70 miles of a county. For more details on the Draft Order, click through to the full alert.

At a high level, the Draft Order takes the following actions:

- Authorizes the creation of a 6 MHz broadband segment, which will limit narrowband communications to 4 MHz of the band.
- Establishes a market-based transition with mandatory relocation after an entity successfully negotiates with, or demonstrates protection to, licensees of 90 percent of existing site-channels in and within 70 miles of a county.
- Exempts "Complex Systems" from mandatory relocation.
- Protects narrowband incumbents through base station separation, power levels, Out-of-Band Emission (OOBE) limits, and remediation, but does not require further testing prior to broadband deployment.
- Modifies the Association of American Railroads' (AAR) Nationwide Ribbon License to facilitate AAR's relocation from the broadband segment, which will result in a net gain of 900 MHz of spectrum for AAR.

What to Know About the Draft Order

The Draft Order, which will be voted on at the FCC's May 13 open meeting, creates a 6 MHz broadband segment in the 900 MHz band, subject to a transition mechanism that is based primarily on private negotiations between incumbent licensees. The following outlines the impact of the Draft Order if approved without alteration. However, the Draft Order is not yet final, and parties are expected to advocate for changes before the May 13 vote. As drafted, the order accomplishes the following:

Authorizes the Creation of a 6 MHz Broadband Segment, which will Limit Narrowband Communications to 4 MHz of the Band

There are presently 10 MHz of spectrum available for narrowband licenses in the 900 MHz band. The Draft Order would authorize a 6 MHz (3 MHz downlink/3 MHz uplink) "broadband segment" within the 900 MHz band. In order to receive a broadband license, an entity must, on a county-by-county basis:

I. Hold the licenses for more than 50 percent of the total amount of licensed 900 MHz spectrum for the relevant county.

II. Hold the existing spectrum in the broadband segment or reach an agreement to clear the segment with incumbents holding at least 90 percent of the site-channels in the county, and within 70 miles of the county boundary.

Spectrum included in agreements to clear or relocate are credited against the 50 percent total spectrum requirement. Additionally, if the broadband licensee cannot reach an agreement with incumbents in the broadband segment, the prospective

broadband licensee can still receive a broadband license so long as it adheres to minimum base station separation requirements, generally 70 miles, between its base stations and these narrowband sites. If the broadband transition occurs in a county, the amount of available narrowband spectrum will be limited to 4 MHz.

Establishes a Market-Based Transition with Mandatory Relocation after an Entity Successfully Negotiates with, or Demonstrates protection to, Licensees of 90 Percent of Existing Site-Channels in and within 70 miles of a County

As alluded to above, the broadband segment will only be established in counties where an entity is able to (a) reach a private agreement with sufficient incumbents to acquire, relocate or protect those incumbent operations, or (b) demonstrate that it will protect incumbents by adhering to base station separation requirements that generally establish 70-mile separation, but that can be reduced to 55 miles under certain power level and antenna height configurations. The transition will occur, or not occur, on a county-by-county basis.

However, a prospective broadband licensee will only need to meet the above criteria for 90 percent of the sites in and within 70 miles of a county before it may mandatorily relocate the remaining incumbent licensee's sites, provided that these remaining sites are not part of a "Complex System," discussed below. Where mandatory relocation occurs, the broadband licensee must pay all reasonable relocation costs, including providing comparable facilities to the incumbents. Many in the critical infrastructure industry are opposed to mandatory relocation and their advocacy appears to have led the FCC to increase the threshold triggering mandatory relocation to 90 percent from the 80 percent threshold proposed in the Notice of Proposed Rulemaking (NPRM). The Draft Order does not place a time limit on voluntary negotiations, in contrast to a two-year limit in the NPRM, but the FCC states that it will evaluate the success of the 900 MHz band realignment in 2021 and explore whether it should adopt additional transition mechanisms.

The Draft Order does place some limitations on the private negotiations, potentially limiting the flexibility of incumbents to negotiate a voluntary transition, chief among them is a limitation on the number of channels a prospective broadband licensee can offer an incumbent to relocate. As drafted, the FCC prohibits the broadband licensee from offering more spectrum than the incumbent currently holds, except where doing so is necessary to achieve equivalent coverage and/or capacity.

Anterix, the proponent of this broadband transition, maintains a large holding of 900 MHz licenses and is expected to become the broadband licensee where a transition occurs.

Exempts "Complex Systems" from Mandatory Relocation

The Draft Order establishes an exemption from the mandatory relocation requirement for "Complex Systems," which are defined as a system with 45 or more functionally integrated sites. Where a licensee has any of the 45 or more sites in a county, or within 70 miles from the county, the prospective broadband licensee cannot require the licensee to relocate, but can still move forward with creation of the broadband segment, provided that it adheres to the base station separation requirements and is otherwise eligible to obtain a broadband license. In response to pressure from the critical infrastructure industry, the Draft Order's 45-site threshold is reduced from a 65-

site threshold in the NPRM, resulting in a broader exemption from mandatory relocation.

Protects Narrowband Incumbents through Base Station Separation, Power Levels, Out-of-Band Emission (OOBE) Limits, and Remediation, but Does Not Require Further Testing Prior to Broadband Deployment

The Draft Order relies on technical rules, including power level and out-of-band emissions limits, and requirements to remediate harmful interference, to protect incumbents. Given the critical safety-related nature of many of these narrowband communications, some incumbents remain concerned that after-the-fact mitigation is insufficient, and that additional real-world testing is necessary prior to deployment. However, the Draft Order ultimately concludes that no additional testing is necessary given the protections provided by the broadband segment technical rules.

With regard to what constitutes harmful interference, the FCC sets the threshold at a broadband signal level measured to be -104 dBm or higher at the RF input of narrowband licensees' mobile receivers and -101 dBm or higher at the radio frequency (RF) input of narrowband licensees' portable receivers. This interference threshold is more stringent than the level applied between narrowband licensees, which is -88 dBm for mobile receivers and -85 dBM for portable receivers. The FCC also sets a field strength limit along the county boundary, not to exceed 40 dBμV/m at any given point, consistent with the existing field strength limit between co-channel 900 MHz Specialized Mobile Radio (SMR) licensees.

Modifies the Association of American Railroads' (AAR) Nationwide Ribbon License to Facilitate AAR's Relocation from the Broadband Segment, which will Result in a Net Gain of 900 MHz Spectrum for AAR

The AAR holds a holds a nationwide ribbon license surrounding railroad rights-of-way for 70 miles on either side of the railroad for 150 kHz of spectrum, half of which is located in the new broadband segment. The AAR uses its nationwide ribbon license for railroad safety, such as directing control of wayside track switches and signals, ensuring proper train routing and speed, and maintaining electromagnetic tags to track operations. Because of the extent of these holdings in the broadband segment, if the AAR were not to agree to relocate, a broadband transition would be effectively impossible. Anterix and the AAR have reached an agreement whereby Anterix will contribute 250 kHz of its 900 MHz spectrum within the AAR's nationwide footprint of 900 MHz spectrum to facilitate the AAR's relocation to the narrowband segment. Unlike other incumbents, the Draft Order will approve the agreement between the AAR and Anterix that results in a net gain of 900 MHz to the AAR. As part of this agreement, the AAR agrees to pay its own relocation costs, estimated to be $70 million. The Draft Order provides the AAR five years to transition to its new spectrum holdings, consistent with timelines offered by the AAR.

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