

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of)	
)	
Amendment of Part 90 of the Commission's Rules)	WP Docket No. 07-100
)	
Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band)	PS Docket No. 06-229
)	
Service Rules for the 698-746, 747-762 and 777-792 MHz Bands)	WT Docket No. 06-150
)	

To: The Commission

**COMMENTS OF
THE AMERICAN PETROLEUM INSTITUTE,
THE ENERGY TELECOMMUNICATIONS AND ELECTRICAL ASSOCIATION
AND
THE NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION**

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SUMMARY

Representing petroleum and natural gas companies, electric utilities and others in the energy industry that rely on access to spectrum to conduct their critical infrastructure businesses safely, reliably, efficiently and in the public interest, the *Energy Commenters* welcome the Commission's efforts to explore innovative opportunities to increase the efficient use of limited spectrum resources.

Primary Licensing Status for CII. The *Energy Commenters* support the Commission's proposal to permit access to the 4.9 GHz band by electric utilities, oil and gas companies and others in the critical infrastructure industry ("CII") on a primary licensed basis. CII has suffered a steady reduction in the amount of spectrum available for its use over the years as the FCC has favored revenue-generating auctions and consumer-based applications in various spectrum allocation decisions. Substantial spectrum formerly allocated for fixed CII use in the 1.85-1.99 GHz band, the 2 GHz band and the 12.2 -12.7 GHz band has been reallocated to a variety of other services, including Personal Communications Services, Advanced Wireless Services and Direct Broadcast Satellite Services. Access to the 4.9 GHz band will address at least some pending CII spectrum demands and likely will spur more efficient use of this spectrum and promote equipment development, as the Commission anticipates.

Fixed Operations Only. The 4.9 GHz band should be transitioned to fixed operations only and made available for use in conjunction with mobile applications in the 700 MHz band. Mobile services should be allocated on a secondary basis in the 4.9 GHz band as a way to encourage greater use of the 700 MHz mobile broadband network. The Commission should study the extent to which mobile services currently are deployed in the 4.9 GHz band and determine whether the 700 MHz broadband network may serve as a suitable replacement home.

If a transition can be accomplished without adversely impacting the communications requirements of Public Safety, the Commission should consider additional steps to migrate mobile uses from the band, such as freezing licensing of new mobile stations and grandfathering existing operations to facilitate a reallocation to fixed-only uses. The *Energy Commenters* also agree that FirstNet should be allowed to access the 4.9 GHz band for backhaul purposes in support of its efforts to deploy a public safety broadband network in the 700 MHz band.

Authorization by Coordination. Because the 4.9 GHz band ultimately is better suited for fixed rather than mobile uses, the *Energy Commenters* support Part 101-type coordination as the most efficient means of licensing. If the Commission does not adopt a coordination approach, then database registration is the next best option to identify and remedy interference cases. Regional planning committees are not active in all areas of the country, which disqualifies that option as a *bona fide* solution.

No Required Polarization. The Commission asks whether point-to-point links should be required to use a specific polarization in order to reduce the potential for interference. The *Energy Commenters* oppose such a requirement, which could reduce the density of links in the band without providing a corresponding benefit. The option for users to adjust polarization between fixed links will permit more intensive use of the band by increasing the ability to operate links in close proximity to one another.

API, ENTELEC, and NRECA support the Commission's efforts to explore ways to increase the efficient use of limited spectrum resources and urge the Commission to allocate the 4.9 GHz spectrum for CII use on a primary basis and to adopt other changes consistent with these comments.

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The Telecommunications Subcommittee of the American Petroleum Institute (“API”), the Regulatory Committee of the Energy Telecommunications and Electrical Association (“ENTELEC”), and the National Rural Electric Cooperative Association (“NRECA”) (together the “*Energy Commenters*”) submit these Comments in response to the Commission’s Fifth Further Notice of Proposed Rulemaking regarding the 4940-4990 MHz (4.9 GHz) band.¹ The *Energy Commenters* welcome the Commission’s efforts to explore innovative opportunities to increase the efficient use of limited spectrum resources and urge the Commission to permit access to the 4.9 GHz band by the critical infrastructure industry (“CII”) on a primary basis. The *Energy Commenters* also suggest other technical changes intended to facilitate increased use of

¹ See Amendment of Part 90 of the Commission’s Rules, WP Docket No. 07-100, Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-229, Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, *Fourth Report and Order and Fifth Further Notice of Proposed Rulemaking* (Rel. June 13, 2012) (“Fifth Further NPRM”).

this band, including an allocation of this spectrum for fixed purposes only with increased power limits and without specific polarization requirements.

I. BACKGROUND

The *Energy Commenters* represent petroleum and natural gas companies, electric utilities and others in the energy industry that rely on access to sufficient spectrum resources to conduct their critical infrastructure businesses safely, reliably, efficiently and in the public interest.

API. API is a national trade association representing more than 500 companies involved in all phases of the petroleum and natural gas industries, including exploration, production, refining, marketing and transportation of petroleum, petroleum products and natural gas. Among its many activities, API acts on behalf of its members before federal and state regulatory agencies. The API Telecommunications Subcommittee evaluates and develops responses to state and federal proposals affecting telecommunications facilities used in the oil and gas industries. API is supported and sustained by companies that make use of a wide variety of wireline, wireless and satellite communications services on both a private and commercial basis. API member companies are authorized by the Commission to operate facilities in the Private Land Mobile Radio (“PLMR”) service and Private Operational-Fixed Microwave Services (“POFS”), among other telecommunications systems. Spectrum is used for communications with remote oil and gas exploration and production sites for voice and data applications, communications with refineries, the extension of circuits to remote pipeline pump and compressor stations, and supervisory control and data acquisition systems (“SCADA”) that remotely monitor and control oil and gas wells, pipeline operations and other facilities.

ENTELEC. ENTELEC’s mission is to advance knowledge and ideas concerning the engineering, design, construction, maintenance, administration and operations of

telecommunications, automation, electric power, information processing systems and other electrical and electronic facilities employed in the energy industries. Much of the association's focus is on communications and control technologies used by petroleum companies, natural gas pipelines and electric utilities. The ENTELEC Regulatory Committee is a special committee of ENTELEC, established in 2011 to address regulatory requirements affecting the interests of the association's membership. ENTELEC also provides an educational platform for these industries, including technical presentations, equipment, exhibits and networking opportunities during the annual ENTELEC Conference & Expo.

NRECA. NRECA is the national service organization for more than 900 not-for-profit rural electric utilities that provide electric energy to approximately 42 million people in 47 states --approximately 12 percent of electric customers nationwide. Electric cooperatives generate nearly 5 percent of the total electricity produced each year, and kilowatt-hour sales by rural cooperatives account for approximately 11 percent of all electric energy sold in the United States. The vast majority of NRECA members are not-for profit, consumer-owned cooperatives serving predominantly rural areas. NRECA's membership includes approximately 65 generation and transmission ("G&T") cooperatives, which generate and transmit power to 668 of the 841 distribution cooperatives. The G&Ts are owned by the distribution cooperatives they serve. Both distribution and G&T cooperatives were formed to provide reliable electric service to their members at the lowest reasonable cost. NRECA's members rely on PLMR for mobile communications services and POFS for fixed and other telecommunications systems necessary to support and maintain their rural electric distribution systems, including broadband and smart grid applications.

II. COMMENTS

A. Access To The 4.9 GHz Band Should Be Expanded To Include Electric Utilities, Petroleum and Natural Companies and other CII Entities On A Primary Basis.

As recognized in the Fifth Further NPRM, only Public Safety entities currently are permitted to obtain a license in the 4.9 GHz band.² Non-public safety entities, including CII, are not entitled to receive licenses in their own right and may access the band only pursuant to a written sharing agreement with a Public Safety entity for “*operations in support of Public Safety.*”³ The Fifth Further NPRM asks whether eligibility for licensing in the 4.9 GHz band should be expanded to allow CII entities to hold 4.9 GHz band licenses on a primary basis, without a sharing agreement with a Public Safety entity. The *Energy Commenters* strongly endorse this approach and believe it will enhance operations in the band.

The commonalities between CII and public safety entities are well recognized. CII entities often work hand-in-glove with public safety entities in responding to natural disasters, oil spills, electric outages and other emergencies affecting the public. For example, electric utilities frequently coordinate with police, fire and rescue departments during storm recovery and restoration efforts. Petroleum refineries often include internal fire departments that work closely with first responders in the event of emergency. Pipelines are heavily involved with public safety personnel for training and incident response.

These shared interests in public safety are reflected in Congressional and Commission treatment afforded to CII communications services. In Section 309(j) of the Communications Act of 1934, as amended (the “Act”),⁴ Congress acknowledged that CII entities provide public safety-type radio services and exempted CII entities from certain competitive bidding processes

² Fifth Further Notice at para 43.

³ *Id.*

⁴ 47 U.S.C. § 309(j).

for spectrum.⁵ The Commission’s rules and decisions also show that CII entities provide services akin to public safety. For example, Section 90.7 of the FCC’s rules defines CII to include certain non-governmental entities that provide private internal radio services used to protect safety of life, health, or property.⁶ In the 800 MHz rebanding proceeding, the Commission defined CII as entities, including pipelines and utilities, that operate public safety radio services, stating that “*the very nature of the services provided by [CII] entities involves potential hazard to life and property... CII entities often work hand in hand with public safety officials at the scene of an incident,*” and “*reliable CII radio communications have long proven essential in speeding recovery from natural or man-made disasters.*”⁷

In its proceeding studying the impact of Hurricane Katrina on communications networks, the Commission recognized the need for robust and redundant CII systems during emergencies,⁸ as well as the critical services that CII entities provide in post-disaster situations.⁹ In some instances, CII and public safety are virtually synonymous. Indeed, prior to the establishment of the Public Safety and Homeland Security Bureau, the Commission’s Wireless Telecommunications Bureau housed a specific “Public Safety and Critical Infrastructure Division.”

⁵ See H.R. Conf. Rep. No. 105-217, 105th Cong., 1st Sess., at 572 (1997)(Stating that the exemption for public safety radio services includes “private internal radio services” used by utilities, pipelines, and others.).

⁶ 47 C.F.R. § 90.7.

⁷ *Id.*

⁸ *Id.*

⁹ See Recommendations of the Independent Katrina Panel Reviewing the Impact of Hurricane on Communications Networks, EB Docket No. 06-119, FCC 06-83 at 5 (2006) Reciting the Independent Katrina Panel’s recommendations that the Commission encourage regional, state and local emergency operating centers and the Joint Field Office to “*facilitate electric and other utilities’ maintenance of priority lists for commercial power restoration.*”

The Commission's records reflect numerous instances in which CII and public safety have operated on shared spectrum in the public interest. For example, the FCC released an Order in 2006 granting a waiver to Douglas Electric Cooperative, an electric co-operative, to permit it to share a county-wide trunked UHF communication system licensed to the county of Douglas, Oregon.¹⁰ The Commission has granted similar waivers to CII entities in multiple instances in the past, all in the public interest.¹¹

Despite recognition of the important ties between CII and public safety, however, CII actually has seen a steady reduction in the amount of spectrum available for its use as the FCC has often favored revenue-generating auctions and consumer-based applications in its spectrum allocation decisions. Over the years, substantial amounts of spectrum formerly allocated for CII use in the 1.85-1.99 GHz band, portions of the 2 GHz band, and the 12.2 -12.7 GHz band has been reallocated to a variety of other services, including Personal Communications Services, Advanced Wireless Services, and Direct Broadcast Satellite Services. No replacement spectrum was provided for CII use.

Licensing has been frozen in the 900 MHz and 470-512 MHz bands, the latter of which appears destined to be auctioned for commercial use. In 2001, the Commission auctioned many of the 900 MHz Multiple Address System (MAS) bands, which historically had been workhorse bands of the energy industry.

¹⁰ Douglas Electric Cooperative Request for Waiver of Section 90.179 of the Commission's Rules, Order, 21 FCC Rcd 11298 (rel. Oct. 6, 2006).

¹¹ See American Electric Power Service Corporation Request for Waiver of Section 90.179 of the Commission's Rules, Order, 15 FCC Rcd 15553 (2000); Commonwealth of Pennsylvania and GPU Energy request for Waiver of Section 90.179 of the Commission's Rules, Order, 13 FCC Rcd 8787 (1997); See Entergy Nuclear Indian Point 2, LLC, Request for Waiver of Section 90.179(a) of the Commission's Rules, File No. 0001242437, Order, 19 FCC Rcd 21256 (Chief, PSCID, WTB 2004) and Dominion Virginia Power, Request for Waiver of Section 90.20 of the Commission's Rules, Order, 19 FCC Rcd 12254 (Chief, PSCID, WTB 2004). While each of these waivers dealt with slightly differing factual backgrounds, both from each other and from this request, they each demonstrate the important role that utilities serve in protecting the public safety.

These types of spectrum allocation decisions have left CII with limited spectrum resources necessary to migrate to next-generation, IP-enabled broadband services in furtherance of their public interest (and public safety) responsibilities. In many instances, CII has been forced to rely on unlicensed spectrum as a fall back option, although their operations on unlicensed frequencies are not protected from interference and congestion is an increasingly limiting factor.

The Commission has responded in part to the CII spectrum crunch by introducing novel licensing approaches to certain new spectrum, such as the hybrid licensing available for CII applications in the 3.65 GHz band. This new approach – whereby national licenses are issued and individual sites are registered – has been embraced by many in the CII industry and has provided flexibility for some energy companies to access much needed spectrum. The *Energy Commenters* view the 4.9 GHz band as another potentially useful option, particularly for point-to-point and possibly certain shorter range point-to-multipoint applications.

The *Energy Commenters* wholeheartedly support the Commission’s proposal to expand eligibility in the 4.9 GHz band to include CII entities and believe that access to the band will spur efficient use of this spectrum and promote equipment development, as the Commission anticipates.

B. The 4.9 GHz Band Should Be Transitioned To Fixed Use Only And Made Available In Conjunction With Mobile Applications In The 700 MHz Band.

The Fifth Further Notice requests information regarding alternate licensing schemes for the 4.9 GHz band, including whether the band could be used as a complement to 700 MHz band broadband networks,¹² and asks whether fixed and mobile operations should be licensed under

¹² Fifth Further Notice at para 47.

separate radio service codes.¹³ The *Energy Commenters* believe that these questions are inter-related and that the licensing scheme for the 4.9 GHz band should be reevaluated in light of the developing 700 MHz band broadband network. Since the 700 MHz band is expected to provide a home for mobile Public Safety broadband applications, the 4.9 GHz band may be transitioned to fixed uses by both CII and Public Safety.

Although fixed links in the 4.9 GHz band originally were authorized only on a secondary basis, Section 90.1207(d) of the Commission's rules now permits licensing of permanent point-to-point and point-to-multipoint stations that deliver broadband services on a primary basis, while those stations that deliver narrowband traffic remain secondary to mobile, temporary fixed, and primary fixed links.¹⁴

Due to propagation limitations and the relatively low power authorized for use at 4.9 GHz, for mobile purposes the band is suitable only for very short range communications requirements. While mobile applications were envisioned a decade ago to serve an important need in the 4.9 GHz band, it is not at all clear that the band is efficiently used as a mobile service band at this time. The 4.9 GHz band was allocated long before the Middle Class Tax Relief and Job Creation Act of 2012 ("Spectrum Act") called for the creation of FirstNet and allocated the 700 MHz D Block to Public Safety. In light of the Spectrum Act, the Commission should consider allocating mobile services on a secondary basis to all fixed applications in the 4.9 GHz band as a way to encourage greater use of the 700 MHz mobile broadband network. The secondary restriction on narrowband fixed links also should be eliminated, as it unnecessarily restrains the use of the 4.9 GHz band for communications that may not require large amounts of bandwidth.

¹³ *Id* at para 44.

¹⁴ 47 C.F.R. 90.1207(d).

The Commission should study the extent to which mobile services are actually deployed in the 4.9 GHz band and whether the 700 MHz band broadband network may serve as a suitable replacement home for those services. If a transition can be accomplished without impacting the communications requirements of Public Safety, the Commission should consider additional steps to migrate mobile uses from the band, such as freezing licensing of new mobile stations and grandfathering existing uses to facilitate a reallocation to fixed-only operations.

Along these same lines, the *Energy Commenters* agree that FirstNet should be allowed to access the 4.9 GHz band for backhaul purposes in support of its efforts to deploy a public safety broadband network in the 700 MHz band. The *Energy Commenters* anticipate that CII entities will be partners with public safety in many aspects of the 700 MHz band, and access to the 4.9 GHz band will be an effective tool toward that end. Fixed point-to-point spectrum is congested in many urban areas, and the 4.9 GHz band may provide an effective solution for at least some of FirstNet's backhaul requirements. The *Energy Commenters* urge the Commission to explore other opportunities to make use of synergies between public safety and CII in these and other bands.

C. Coordination Is The Most Efficient Means Of Licensing Fixed Use In The 4.9 GHz Band.

The Fifth Further Notice requests comment on a number of options to authorize operations in the 4.9 GHz band, including coordination, database registration and regional planning.¹⁵ The *Energy Commenters* acknowledge that coordination is difficult in a band that includes mobile and fixed applications. However, because the 4.9 GHz band ultimately may be better suited for fixed uses, as described above, the *Energy Commenters* support Part 101-type coordination as the most efficient means of licensing fixed-only use in the 4.9 GHz band.

¹⁵ Fifth Further Notice at para. 21.

The Commission points to a number of potential problems with using a Part 101-type coordination in the 4.9 GHz band, including the lack of a specific definition for “permissive levels” of interference, the possibility of protracted and burdensome negotiations regarding coordination, and the difficulty of establishing technical criteria due to the diversity of networks and devices that may be deployed in the 4.9 GHz band.¹⁶

It appears, however, that each of these issues also exists under the database registration approach that the Commission proposes. Part 101 coordination occurs between users, not at the coordinator level like coordination for the Part 90 PLMR services. Coordinators do not certify applications and then file directly with the Commission. Instead, Part 101 coordination involves notice to potentially impacted licensees and an opportunity to respond with any interference concerns. Database registration presents a very similar mechanism, except that notice might not necessarily be given to other licensees until after registration of a link. The Commission’s database registration approach also appears to envision that no specific interference standards would be developed.

To provide more certainty and predictability to users and increase the utility of the band for all, it seems preferable to develop a coordination methodology for the 4.9 GHz band based on Part 101 coordination. If the Commission does not adopt a coordination approach, then the *Energy Commenters* believe database registration is the next best option to identify and remedy interference cases. As the Commission states, regional planning committees are not active in all areas of the country, which seems to disqualify that option as a *bona fide* solution.

¹⁶ *Id.*

D. Power Limits Should Be Increased For Fixed Links But Not For Mobile Operations, And Better Coordination Techniques And Larger Antennas Should Be Explored.

The *Energy Commenters* support fixed applications in the 4.9 GHz band and believe that this approach ultimately will increase usage of the band. In that regard, the *Energy Commenters* support the National Public Safety Telecommunications Council's suggestion to explore better coordination techniques and larger antennas to make more efficient use of the band for broadband backhaul. Currently, Section 90.1215 of the Commission's rules provides a maximum directional antenna gain for point-to-point and point-to-multipoint operations of up to 26 dBi with no corresponding reduction in maximum conducted output power. This discourages the use of narrower beamwidth antennas. The Commission initially imposed the 26 dBi antenna gain limit "*in order to avoid interference from fixed operations to mobile operations,*" however, if mobile operations were discontinued in the band, tighter radiation patterns from fixed links will serve to reduce congestion and allow for increased density of deployment. Thus, the Commission should remove the 26 dBi beamwidth restriction without adding a maximum ERP limit for point-to-point services. For point-to-multipoint services, the Commission should consider a higher power limit to increase the utility of the band for fixed use.

E. Fixed Links Should Not Be Required To Use A Specific Polarization.

The Fifth Further Notice asks whether point-to-point links should be required to use a specific polarization in order to reduce the potential for interference. The *Energy Commenters* oppose such a requirement, which could reduce the density of links in the band without providing any corresponding benefit.

The option to adjust polarization between fixed links allows for more intensive use of the band by increasing the users' ability to operate links in close proximity to one another. For

example, in the Commission's ongoing Part 101 omnibus proceeding, the engineering firm Comsearch stated that in the Part 101 6 GHz band, use of adjacent channel alternating polarization to achieve cross polarization is worth up to a 35 dB reduction in interference versus links licensed with co-polarization.¹⁷ Allowing licensees to adjust polarization at 4.9 GHz will allow greater options for interference mitigation/avoidance tools. Restricting polarization on fixed links would result in less, not more, utilization of the band.

¹⁷ Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees, Report and Order, Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order, FCC 11-120, Comment of Comsearch (Oct. 4, 2011).

III. CONCLUSION

API, ENTELEC and NRECA support the Commission's efforts to explore ways to increase the efficient use of limited spectrum resources and urge the Commission to allocate the 4.9 GHz spectrum for CII use on a primary basis and to adopt other changes consistent with the above comments.

Respectfully submitted,

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