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

In the Matter of	)	
	)	
Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band	)	GN Docket No. 12-354

To: The Commission

COMMENTS OF THE AMERICAN PETROLEUM INSTITUTE

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SUMMARY

The Telecommunications Subcommittee of the American Petroleum Institute ("API") has several recommendations regarding the Commission's proposals for the 3.5 GHz band to increase the likelihood that the band will be useful for critical infrastructure industry ("CII") companies. API is extremely concerned regarding the Commission's plans for reallocation of the adjacent 3650-3700 MHz ("3.65 GHz") band and.

Moving forward with transitioning the 3.65 GHz band in the manner proposed by the Commission would be a serious mistake. Only a few years ago the Commission lauded its 3.65 GHz band rules as "innovative" and "novel." In what has been a success story for the Commission, thousands of licensees have registered tens of thousands of sites in the 3.65 GHz band. Nearly all investment in the band has occurred in the last five years. It would be poor policy to require licensees to transition equipment recently deployed to support mission critical functions in favor of at this time what is effectively an experiment at 3.5 GHz. API strongly opposes the Commission's proposed transition, but believes that if such transition is adopted, existing licensees should be grandfathered and permitted to transition voluntarily over an extended time period.

API also recommends the FCC better define the Contained Access Facility concept to include certain oil and gas facilities, such as refineries, that may not be "indoor" and clarify that Contained Access Users include CII entities.

The Commission should expand the total term that licensees are able to hold Priority Access licenses to 10 consecutive years and should not adopt its proposal to license the Priority Access Tier by Census Tract, but should adopt licensing by service contour or a point/radius methodology.

API supports the Commission's proposal to reserve at all times for GAA use a minimum of 50 percent of the band that is not encumbered by Incumbent Access tier users in any given location. API recommends that all Citizens Broadband Radio Service operations conform to a standard channel plan consisting of 5 MHz and 10 MHz channels.

Due to security concerns and to promote reliability, particularly in remote areas in which the oil and gas industry operates, API recommends that SAS database administrators provide a non-Internet based method for database access and channel assignment and urges the Commission to reduce the size of its proposed exclusion zones.

API also believes the Commission should accommodate efforts by CII entities to participate in the 3.5 GHz band, possibly by providing a separate CII filing window or auction bidding credits for CII entities.

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The Telecommunications Subcommittee of the American Petroleum Institute ("API")[1] hereby submits Comments in response to the Commission's Further Notice of Proposed Rulemaking regarding the 3550-3650 MHz ("3.5 GHz") band.[2] API is extremely concerned regarding the Commission's plans for reallocation of the adjacent 3650-3700 MHz ("3.65 GHz") band and has several suggestions regarding the Commission's proposals for the 3.5 GHz band to increase the likelihood that the band will be useful for critical infrastructure industry ("CII") companies.

I. BACKGROUND

The United States is quietly in the middle of an energy revolution. The U.S. recently overtook Saudi Arabia as the world's largest oil producer, with production of crude oil, along

[1] 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.

[2] *See* Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, *Further Notice of Proposed Rulemaking*, GN Docket No. 12-354 (Apr. 23, 20144) ("FNRPM").

with liquids separated from natural gas, exceeding 11 million barrels of daily output in the first quarter of 2014.[3] New oil production that has come online since 2008 has reduced domestic oil imports by approximately 50%.[4]

In his January 2014 State of the Union Address, President Obama declared, "one of the biggest factors in bringing more jobs back is our commitment to American energy" citing statistics that businesses plan to invest nearly "$100 billion in new factories that use natural gas."[5] A recent study found that shale gas production alone will create 1.5 million jobs by 2015, and 2.4 million by 2035, and contribute $332 billion to U.S. gross domestic product (GDP) by 2035.[6]

In addition to economic benefits, the boom in the production of natural gas and its use as a clean fuel has *actually reduced* the United States' energy-related emissions of carbon dioxide, which have *fallen* 10% below the benchmark year of 2005 according to the U.S. Energy Department's Energy Information Administration.[7] In fact, the Wall Street Journal recently reported that U.S. energy-related carbon dioxide emissions were at their lowest levels since 1994, even while emissions of other countries continue to grow.[8]

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[3] *See* Grant Smith, *U.S. Seen as Biggest Oil Producer After Overtaking Saudi Arabia*, Bloomberg (Jul 4, 2014)(available online at http://www.bloomberg.com/news/2014-07-04/u-s-seen-as-biggest-oil-producer-after-overtaking-saudi.html).

[4] *See* David Blackmon, *Oil & Gas Boom 2014: Jobs, Economic Growth and Security*, Forbes (Feb. 20, 2014)(available online at http://www.forbes.com/sites/davidblackmon/2014/02/20/oil-gas-boom-2014-jobs-economic-growth-and-security).

[5] *See* President Barack Obama's State of the Union Address (Jan. 18, 2014)(available online at http://www.whitehouse.gov/the-press-office/2014/01/28/president-barack-obamas-state-union-address).

[6] *See* Shelly K. Schwartz, *Can the Natural Gas Industry Save the U.S. Economy*, CNBC (June 20, 2012)(available at http://www.cnbc.com/id/47280026).

[7] *See* U.S. Energy Information Administration, *Recent Trends in Energy-Related CO2 Emissions Vary Across Regions and States*, Today in Energy, http://www.eia.gov/todayinenergy/detail.cfm?id=16531.

[8] *See* Russell Gold, *Rise in U.S. Gas Production Fuels Unexpected Plunge in Emissions*, Wall Street Journal (April 13, 2013)(available online at http://online.wsj.com/news/articles/SB10001424127887324763404578430751849503848.

Producing oil and natural gas in an efficient, effective, and safe manner requires a significant investment in technology, including communications systems used to measure data such as flows rates, temperature, pressure and remotely control oil and gas infrastructure. The amount of information produced in modern oil and gas exploration, production, and transportation has multiplied by many times in just a few years. As a result, API's members are increasingly adopting broadband and IP-enabled radio technologies to support mission critical applications such as voice, data, and SCADA necessary to monitor, control and secure the nation's oilfield, pipeline, and plant infrastructure. For example, secure high-speed communications links are required for critical leak detection applications, which require real time information and are not served well by VSAT services (due to latency), congested commercial systems, or high interference unlicensed radios. Bandwidth intensive video security applications are becoming more heavily in demand. Many companies have begun utilizing the Commission's "hybrid" licensed/unlicensed 3.65 GHz band for higher speed point-to-multipoint systems. The industry is cautiously optimistic about opportunities provided by the nearby 3.5 GHz band provided that a few changes are made to the rules proposed in the FNPRM.

II. COMMENTS

API appreciates the Commission's continued efforts to refine its proposed rules for the 3.5 GHz band. However, API is alarmed regarding the Commission's proposals for transition of the 3.65 GHz band. API also suggests herein changes for the 3.5 GHz band rules, including changes to the licensing criteria for the Priority Access Tier, Exclusion Zones, and Contained Access Facility concepts.

A. The Commission Must Honor Industry Investments Made in the 3.65 GHz Band.

The most disconcerting aspect of the FNRPM is the Commission's proposal for transition of the 3.65 GHz band to the proposed rules for the Citizens Broadband Radio Service in the 3550-3650 MHz band, particularly the proposal to provide a limited 5-year grandfather period for incumbent 3.65 GHz band users.[9] In 2012, API originally supported transitioning the 3.65 GHz band to the 3.5 GHz band rules, which at that time included priority interference protections for CII users. Based on the revised proposals in the FNPRM, API no longer supports transitioning the 3.65 GHz band and has strong objections to the proposed transition suggested by the Commission.

i. The Commission Must Not Adopt Its Proposed 5-year Transition for the 3.65 GHz Band.

The Commission opened the 3.65 GHz band for licensing on November 15, 2007. The very next day, the Commission granted an API member company, Chevron, the first ever issued 3.65 GHz band license.[10] At the time there was limited equipment available for the "Restricted Protocol" portion of the band (3650-3675 MHz) and none whatsoever available for the "Unrestricted Protocol" portion of the band (3675-3700 MHz). Applicants sought to register fewer than 1,500 locations that first year and fewer than 5,000 locations the year after.

The Commission certified the first piece of "Unrestricted Protocol" equipment in December 2009, effectively opening the full 50 MHz of the band.[11] From there, the popularity of the band quickly took off. That next year nearly 10,000 applications were filed to register 3.65 GHz band locations. Registrations have continued at a similar pace ever since. Within the

[9] FNPRM at para. 96.

[10] Call sign WQHV404.

[11] *See* Airspan Receives FCC Certification for upper "Unrestricted" 25 MHz of FCC 3.65 GHz band Spectrum: Only WiMax Vendor Supporting Full 50 MHz (available online at http://www.airspan.com/2009/12/01/airspan-receives-fcc-certification-for-upper-%E2%80%9Cunrestricted%E2%80%9D-25-mhz-of-fcc-3-65-ghz).

past year since July 2013, more than 9,200 registration applications were filed with the Commission. Today there are more than 2,600 nationwide 3.65 GHz band licensees and tens of thousands of registered sites.

This demonstrates two things.

First, the 3.65 GHz band has been a proven success story for the Commission. Although there are certainly minor modifications that could be made to improve the band (such as power increases, an ability to register fixed "subscriber" units according to an area of operation, and a better defined earth station coordination procedure), 3.65 GHz is the only site-based licensed band available for higher speed point-to-multipoint private internal communications. The band fills an important need for companies that need access to spectrum not available under the Part 15 bands because of congestion or other limitations. For that reason, the band increasingly has become an important option for the oil and natural gas industry and many CII companies have made significant investments in the band. It would be a poor decision and unsound public policy to hastily undo the success at 3.65 GHz in favor of what Commissioner O'Rielly accurately calls "one big experiment" with a never before attempted licensing regime at 3.5 GHz.[12]

Second, nearly all investment in the 3.65 GHz band has been made within the last few years. 3.65 GHz band licensees who relied on the Commission's existing regulatory scheme stand to lose significant investments in the band if the Commission moves forward with a brief five-year transition period to its new 3.5 GHz band rules. To the extent the Commission transitions the 3.65 GHz band to the Citizens Broadband Radio Service, it must provide a substantially longer transition period than the proposed 5 years. 3.65 GHz band equipment has

[12] *See* FNRPM, statement of Commissioner O'Rielly.

not been in existence long enough to accurately judge expected lifecycles, however, any reasonable estimate is closer to 15 years than five.

It is almost unconscionable that the Commission would give licensees only a few years to transition from systems that were just authorized. By comparison, in the Part 90 Private Land Mobile Radio Service UHF and VHF bands, the FCC began to consider the possibility of narrowbanding in 1992. A deadline to development of narrowband capable equipment was implemented in 1997. The narrowbanding transition was completed in 2013 -- a 20 year transition process. In the Part 101 Private Operational Fixed Service, the Commission allowed more than 10 years to transition to the 2 GHz band.[13] And each of these transitions occurred in mature bands in which licensees were able to relocate to other services or to replace equipment on a rolling basis. Equipment that meets the Commission's 3.5 GHz band Spectrum Access System requirements does not even exist, yet, and may never prove to be a viable option for CII.

The Commission should not forget that its 3.5 GHz band proposal is largely an experiment in whether small cells can be authorized by a dynamic spectrum database. Not too long ago, the Commission lauded the 3.65 GHz band rules as "innovative" and "novel".[14] The Commission should restrain the impulse to pull the rug out from licensees that invested in the already successful 3.65 GHz band in favor of an unproven technology. The Commission should not expand its 3.5 GHz band licensing rules to the 3.65 GHz band as proposed in the FNPRM.

ii. If the 3.65 GHz Band is Transitioned, the Commission Should Adopt an Alternate Transition Framework

API recommends that the Commission retain the successful 3.65 GHz band allocation in Part 90 of its rules at this time. If the Commission does move forward with transitioning the

[13] 47 C.F.R. § 101.79.

[14] *See* Wireless Operations in the 3650-3700 MHz Band, Report and Order and Memorandum Opinion and Order, 20 FCC Rcd 6,502, Statements of Chairman Powell and Commissioner Adelstein (FCC 2005).

band to the new 3.5 GHz band rules, the Commission should adopt an alternative transition scheme under which 3.65 GHz band users have the option, but not the obligation, to migrate to the Citizen Broadband Radio Service rules.

For example, existing 3.65 GHz band users could be grandfathered and locations registered in ULS could be added to the Part 96 Spectrum Access System. Once grandfathered, existing 3.65 GHz band licensees should retain the ability to update their licenses to add or modify sites. The Commission could incent equipment development by requiring that after a suitable interim development period (at least 10-15 years), to be certified, new 3.65 GHz band equipment must include the capability to be compatible with Citizens Broadband Radio Service requirements. Over time, market forces will determine whether 3.65 GHz band licensees migrate voluntarily from Part 90 to the Citizens Broadband Radio Service.

Transitioning 3.65 GHz band users to the Citizens Broadband Radio Service as proposed by the Commission will likely result in substantial loss of investment for many current licensees. API opposes the Commission's proposal to transition the 3.65 GHz band to the speculative Citizens Broadband Radio Service at this time.

B. The Commission Should Better Define the Concept of "Contained Access Facilities".

The FNPRM introduces the concept of a Contained Access Facility ("CAF"), which is defined as "an indoor or otherwise physically contained location used by Contained Access Users for the express purpose of performing core mission operations."[15] Contained Access Users would be entitled to reserve up to 20 MHz of spectrum for use within CAFs.[16]

The Commission should better define its CAF concept to more clearly include CII use. For example, the term "physically contained" is not defined. The FNRPM implies that

[15] FNPRM at para 60.

[16] *Id.*

"physically contained" means "indoor" or the functional equivalent.[17] The Commission should confirm that areas in which a Contained Access User has the ability to physically restrict access by third parties, whether indoor or outdoor, fall within the meaning of "physically contained" and are eligible for treatment as CAFs. Many oil and gas facilities would fall within this category, including refineries and certain production facilities as both are large industrial areas that are closed to the public, but are not considered "indoor."

The Commission should also specifically clarify that Contained Access Users include CII entities. The proposed definition of Contained Access User is "qualified government and non-government entities entitled to protection within CAFs in furtherance of a mission that supports the public interest." The FNPRM narrows that slightly by stating that hospitals, public safety organizations, and local governments would be considered Contained Access Users. The Commission should make clear that oil and gas companies and other CII entities are presumptively Contained Access Users. This is consistent with the Commission's original proposal for the 3.5 GHz band, which was intended to provide priority to CII entities.

C. The Commission Should Refine Its Proposals for the Priority Access Tier and GAA Concepts.

In 2012, the Commission originally proposed to reserve the Priority Access Tier for users with critical quality of service requirements, such as CII entities. API and other commenters applauded that proposal.[18] The Commission's FNPRM, however, now removes consideration of service quality requirements from the Priority Access Tier eligibility equation. Instead, the Commission proposes to open the Tier to all applicants and hold periodic auctions to resolve

[17] *See* FNPRM, proposed 47 C.F.R. § 96.3, Contained Access Facility.

[18] *See* API Reply Comments, Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, *Notice of Proposed Rulemaking and Order*, GN Docket No. 12-354 (Dec. 12. 2012).

instances in which mutually exclusive Priority Access Tier applications are filed. Auction participants would bid on licenses with one-year terms with the option to purchase up to five consecutive years in any given auction. The Commission would authorize Priority Access Tier licenses by U.S. Census Tract.

In essence, the Commission proposes to replace its original quality of service requirements with revenues to be generated by auction. API believes that changes are necessary to improve the Priority Access Tier and GAA concepts.

i. The License Term Must Be Expanded

The Commission should expand the total term that licensees are able to hold to 10 consecutive years. Limiting license terms to 5 years, which is not enough time to realize investments in infrastructure, will discourage investment in the band and cause confusion and turmoil in the industry.

In addition, the Commission should adopt some form of preference or renewal expectancy for current licensees that may otherwise be forced to repeatedly compete with others to retain authority for their systems. For example, the Commission could provide bidding credits to current licensees or provide a separate filing window for licensees that demonstrate they are using their licenses in the public interest. Doing so will add stability to the process and encourage participation in auctions for the Priority Access Tier.

ii. Licensing Should not be Conducted by Census Tract

The Commission also should not adopt its proposal to license the Priority Access Tier by Census Tract, but should adopt licensing by service contour or a point/radius methodology. Wireless operations will rarely if ever conform to Census Tract boundaries. Pigeon-holing licensees into artificial geographic boundaries conflicts with market requirements and creates inefficiencies in the auction process. For example, a point-to-point user may be required to

license several Census Tracts to operate its link, but in practice will only occupy a small percentage of the geography it purchases. Because licensees may need to hold rights to several Census Tracts to authorize a single system, the regime will encourage gamesmanship in the licensing process as prospective licensees will be able to jeopardize system investments by bidding on a limited number of Census Tracts.

iii. The Commission Should Adopt its Proposal to Reserve 50% of the Band for GAA Use

API does support the Commission's proposal to reserve at all times for GAA use a minimum of 50 percent of the band that is not encumbered by Incumbent Access tier users in any given location. This strikes a reasonable balance between potential user requirements.

iv. The Commission Should Adopt a Standard Channel Plan

API recommends that all Citizens Broadband Radio Service operations conform to a standard channel plan. A channel plan consisting of 5 MHz and 10 MHz channels will simplify intra- and inter- area user coordination by minimizing interference brought on by frequency overlap, help segregate classes of users, and provide equipment vendors a uniform target to which to build, which in turn provides users confidence that replacement equipment will be compatible with their spectrum allocation.

v. The Commission Should Require that SAS Database Administrators Provide a Non-Internet Based Method for Database Access

The FNPRM proposes to require that to be certified for operation in the Citizens Broadband Radio Service, end user devices must identify at least one of the databases operated by a designated SAS database administrator that the *device* will access for channel/frequency availability and affirm that the *device* will conform to the communications security methods used by such databases. The Commission does not explicitly prescribe that such access must be made

by Internet connection, but API is concerned that the type of automated database access envisioned by the Commission will lead to Internet access becoming the default access method.

This may constrain the ability of CII to use the band. In many of the remote locations in which the industry operates, a reliable internet connection simply does not exist. Even in instances in which Internet access is available, adding the presence of the Internet as a dependency will reduce overall reliability. Perhaps most important, use of the Internet brings inherent cyber security risks that are unacceptable in certain applications.

As a result, API recommends that SAS database administrators provide a non-Internet based method for database access and channel assignment. For example, the Commission could provide that fixed devices may be professionally installed by a party that would determine a device's geographic location and contact the database system to determine the available unused channels at that location.

D. The Commission Must Reduce the Size of its Proposed Exclusion Zones.

The Exclusion Zones the Commission has proposed are unnecessarily large. As Commissioner O'Rielly notes, "the 3.5 GHz Band would be largely unusable on the east and west coasts and along the Gulf."[19] "New England, Florida, South Carolina, Louisiana, almost all of New York, Virginia, California; and half of Texas are in exclusion zones."[20] Eliminating this much of the country from inclusion in the 3.5 GHz band will constrain investment and hamper equipment development, particularly for the oil and gas industry. Now that the Commission has refined its approach for 3.5 GHz, it should accordingly refine its Exclusion Zone proposals.

[19] *See* FNRPM, statement of Commissioner O'Rielly.

[20] *Id.*

E. The Commission Should Accommodate Efforts by CII Entities to Participate in the 3.5 GHz band.

As stated above, the Commission originally proposed to reserve the Priority Access Tier for users with critical quality of service requirements, such as CII entities. The Commission recognized that dedicated spectrum for private, internal mission critical operations is in short supply and that allocating spectrum in this manner would promote a need for specialized services that are not or cannot be met by commercial providers. That initial concept has been eviscerated to the point that it remains in the FNRPM only in the limited concept of the CAF.

Critical infrastructure companies historically have not been successful at competing for auctioned spectrum against commercial carriers. Geographic area licenses often do not correlate in any meaningful way to the service areas that the energy industry and other private radio users seek to cover. As a result, an enterprise user not serving subscribers and using spectrum for internal applications has little to no ability to compete for spectrum due to the manner in which market areas for auctioned spectrum are allocated.

For example, an oil and natural gas company has no realistic chance to acquire spectrum for communications at a Los Angeles based refinery by competing at auction against commercial service providers for the rights to serve the entire Los Angeles Economic Area. To confirm this point, one need only review recent Commission auction records to see the almost complete lack of licenses awarded to entities not in the commercial telecommunications business. By licensing the Citizens Broadband Radio Service by Census Tract, the Commission is, *de facto*, would be providing an advantage to one class of users, commercial licensees, over others.

API urges the Commission to retain the spirit of its original proposal to allocate the 3.5 GHz band primarily for the benefit of increasingly spectrum constrained entities with critical quality of service requirements. If the Commission does decide to move forward with the

proposal for auctions in the FNRPM, API suggests that the Commission retain the spirit of its original proposal by giving certain licensing preferences to critical infrastructure. For example, a separate, earlier filing window could be opened for CII licensees. If auctions are held for mutually exclusive applications, CII could be granted bidding credits to promote the ability of such companies to access the band.

III. CONCLUSION

API urges the Commission to adopt rules for the 3.5 and 3.65 GHz bands consistent with these Comments.

Respectfully submitted,

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