

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

In the Matter of)
)
Implementing a Nationwide, Broadband,) PS Docket No. 06-229
Interoperable Public Safety Network in the)
700 MHz Band)

**Public Safety and Homeland Security Bureau Seeks Comment on the Technical and
Operational Feasibility of Enabling Flexible Use of the 700 MHz Public Safety Narrowband
Allocation and Guard Band For Broadband Services**

Submitted by:

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Executive Summary and Overview

I. The States of Delaware and Maryland, as well as Prince George's County, Maryland, offer comments in response to the Commission's Public Notice DA 10-1877. All of the parties to these comments support the deployment of a nationwide interoperable wireless broadband communications network for public safety in the 700 MHz frequency band. The parties also agree with the position of the National Governor's Association and other nationwide public safety organizations that advocate for the reallocation of the D Block to public safety to ensure that there is sufficient spectrum in 700 MHz for first responder broadband as well as land mobile radio voice operations.

To summarize the position of the respondents, it is believed that at some point in the future, broadband technology may develop sufficiently to integrate voice and data operations on a broadband platform in such a manner as to replicate the functionality found in a modern trunked radio system. However, at this point in time, none of the respondents have any detailed information that suggests such a technological platform is being developed that would be a viable alternative to meet public safety's operational requirements. The respondents would prefer that the Bureau collaboratively work with public safety to identify future technologies that support first responder operations in a manner that exceeds the functionality found today in contemporary trunked voice land mobile radio systems augmented by wireless broadband systems. If public safety and the Bureau collaboratively identify a technological strategy that requires additional spectrum beyond that found in the existing 700 MHz public safety broadband spectrum and D Block, then a path to reallocate 700 MHz narrowband spectrum for first responder broadband might be appropriate.

Standing and Statements of the Respondents

- II. Mark Grubb is the Director for the Division of Communications for the State of Delaware, the Statewide Interoperability Coordinator for Delaware, Chairman of Regional Planning Committee 28 (700 and 800 MHz), and a participant with the National Public Safety Telecommunications Council (“NPSTC”). Denis McElligott is the Director of Wireless Services with the State of Maryland Department of Information Technology (“DoIT”). Mr. Ray Lehr is the Statewide Interoperability Coordinator for the State of Maryland. Mr. Wayne McBride is the Deputy Director for the Prince George’s County, Maryland Public Safety Communications Division of the Office of Homeland Security. Mr. McBride also serves as Chairman of the Regional Planning Committee Twenty (“Region 20”) Technical Sub-Committee. Captain Thelmetria Michaelides of the Prince George’s County, Maryland Fire and EMS Department is project director for the Maryland First Microwave Communications Project. Collectively and on behalf of their organizations, these persons offer comments as “Respondents” to the Commission’s Public Notice DA 10-1877.
- III. The States of Delaware and Maryland hold geographic licenses¹ for the use of the 700 MHz “state” frequencies². Prince George’s County holds licenses³ in the 700 MHz band using “general pool” frequencies⁴. The State of Maryland has submitted a Waiver⁵ seeking authority for the early deployment of public safety broadband communications in the 700 MHz frequency band. The State of Delaware is vitally interested in the

¹ See WPTZ791 (Delaware) and WPTZ805 (Maryland)

² See 47 CFR §90.531(b)(5)

³ See WQJS917, WQJS918, WQJU812, and WQJU814

⁴ See 47 CFR §90.531(b)(6)

⁵ See Waiver submitted by the State of Maryland in Docket PS 06-229 on May21, 2010 and amended on October 18, 2010

deployment of public safety broadband services; however, is awaiting potential action in the United States Senate that would provide funding for the implementation of the technology. Prince George's County is also very interested in public safety broadband and is participating with the State of Maryland initiative led by the State's DoIT.

IV. The Respondents all appreciate the opportunity to provide comments in response to Public Notice DA 10-1877 as provided by the Public Safety and Homeland Security Bureau ("Bureau"). All of the respondents recognize the need for public safety broadband services in the 700 MHz frequency band and hope that administrative and regulatory issues affecting implementation are resolved soon and in favor of the views as expressed herewithin.

V. The comments are all offered in recognition of the following caveats.

A. The Respondents, as well as the Governors of Delaware and Maryland⁶, all support the reallocation of the "D Block" of 700 MHz spectrum from the proposed public auction process to public safety and do not support the "flexible" use of the 700 MHz narrowband channels as a substitution of the spectrum provided to public safety by the "D Block". In particular, the Respondents support the efforts of the "Public Safety Alliance" and the "Big 7" organizations representing State and local governments⁷ to foster the reallocation of this spectrum from the auction process to public safety.

⁶ See letter of the National Governor's Association to the Honorable Julius Genachowski dated April 9, 2010.

⁷ See letter of the National Governor's Association, National Conference of State Legislatures, The Council of State Governments, National Association of Counties, National League of Cities, U.S. Conference of Mayors, and International City/County Management Association to the Honorable Julius Genachowski dated November 22, 2010

- B. The respondents believe that the thirty-two (“32”) 700 MHz narrowband voice frequencies⁸ now reserved by the Commission for nationwide interoperability are vital to the homeland security program of the United States and should not be crippled by the flexible use of the narrowband voice channels for broadband use.
- C. The respondents believe that the ninety-six (“96”) 700 MHz narrowband voice channels reserved for “statewide” use⁹ as well as the general pool¹⁰ 700 MHz frequencies are vital to the public interest by permitting on-going operation of public safety voice communications systems. Both the States of Delaware and Maryland are in various stages of implementing statewide public safety trunked land mobile radio systems using the 700 MHz narrowband voice frequencies. In the case of the State of Maryland, it is anticipated that all “state” as well as many “general pool” 700 MHz channels will be used. Similarly, Prince George’s County, Maryland has implemented a large 700 MHz land mobile radio system that supports interoperability with all of the public safety agencies in the National Capital Region (“NCR”) as well as the non-NCR counties surrounding the jurisdiction. Without the 700 MHz narrowband voice channels, it would have been impossible for Prince George’s County to achieve public safety communications interoperability. Similarly without the narrowband voice spectrum, it would be virtually impossible for Delaware and Maryland to implement new statewide land mobile radio systems.

⁸ See 47 CFR §90.531(b)(1)

⁹ *Id.* 47 CFR §90.531(b)(5).

¹⁰ *Id.* 47 CFR §90.531(b)(6).

- D. The State of Delaware, with the State of Maryland concurring, as well as Prince George's County, Maryland submitted detailed Ex Parte communications¹¹ with the Commission outlining concerns related to flexible use of the 700 MHz narrowband channels. Additionally, the Commonwealth of Pennsylvania¹² and State of Ohio¹³ filed statements of support for the Delaware Ex Parte in Docket 06-229. The respondents request that the Bureau incorporate those Ex Parte statements in the review of DA 10-1877.
- E. This Public Notice seems to be in conflict with the National Broadband Plan released by the Commission which suggests that Ten ("10") megahertz of 700 MHz spectrum is sufficient for public safety broadband use. If ten megahertz is sufficient in the opinion of the Bureau for public safety broadband, what is the necessity of this Public Notice? The Deficit Reduction Act of 1997 requires that public safety be granted twenty-four ("24") megahertz of 700 MHz spectrum which obviates the potential use of this spectrum by non-public safety users.
- F. The respondents also note that the practical use of the 700 MHz narrowband voice channels only began in June of 2009 with the conversion of television channels from analog use to digital. Prior to the digital television transition, the use of the 700 MHz public safety narrowband channels was very limited. Further, even though Region 20, which covers all of Maryland, submitted its Plan for 700 MHz

¹¹ See *Ex parte* Letter from Mark Grubb, Statewide Interoperability Coordinator, Delaware Department of Safety and Homeland Security, to Marlene Dortch, Secretary, Federal Communications Commission (July 15, 2010); *ex parte* Letter from Ray Lehr, Statewide Interoperability Director, Maryland Interoperability Program Management Office, to Marlene Dortch, Secretary, Federal Communications Commission (July 23, 2010), and Ex Parte Letter from Vernon R. Herron, Deputy Chief Administrative Officer for Prince George's County to Marlene Dortch, Secretary, Federal Communications Commission (August 9, 2010).

¹² See *Ex parte* Letter from Charles Brennan to Marlene Dortch, Secretary, Federal Communications Commission (August 6, 2010)

¹³ See *Ex parte* Letter from Darryl L. Anderson to Marlene Dortch, Secretary, Federal Communications Commission (July 28, 2010)

at a very early stage and before the Second Report and Order¹⁴, it was not approved by the Commission until July 24, 2008¹⁵. In short, there have been many administrative and regulatory hurdles that have slowed the implementation of the 700 MHz frequency band. It is critically important to note that circa 2009 when the Digital Television transition occurred, the nation was at the height of an economic recession that has significantly reduced tax revenues for states, counties, and other local governments. The importance of this predicate is simply to note that the rollout of 700 MHz public safety land mobile radio throughout the country has been adversely impacted by regulatory and legislative delays as well as significant funding limitations facing State and local governments. Many jurisdictions are currently facing severe budgetary impacts which affect their ability to seriously plan or even consider new communications systems in the immediate future. However, the country's economic situation will improve in the future and many public safety agencies will need this important spectrum for expanded voice operations.

- G. With respect to the future use of 700 MHz by public safety for voice operations, the Bureau through public comments at NPSTC and APCO as well as in DA 10-1877 regarding flexible use of the 700 MHz narrowband channels may have created an unintended impediment to future use of this spectrum for voice land mobile radio operations. These collective Bureau comments may have created a chilling effect on the development of public safety land mobile radio systems in the minds of some administrators who must assess the longevity of any

¹⁴ See FCC 07-132, July 31, 2007

¹⁵ See DA 08-1730

investment made in public safety communications systems. The perceptible fear is that the Commission will reallocate the 700 MHz voice spectrum on a timetable that is adverse to the appropriate amortization of planned or implemented 700 MHz voice system investments. The respondents agree with the Department of Homeland Security and SAFECOM which have advocated a dual-path strategy that continues reliance on current narrowband land mobile radio communications while simultaneously moving forward with the development of the nationwide public safety broadband network.

- H. Notwithstanding the comments above, the Respondents believe that there may come a time in the distant future in which the convergence of broadband and traditional land mobile radio technologies may occur providing public safety first responders with a communications platform that meets all of their requirements and permits the enhanced delivery of communications services to the citizens of the United States. The respondents have been in contact with representatives of the major providers of mobile wireless broadband services. To date, only the most conceptual and non-specific allusions of a converged platform that replicates the technological user services provided by contemporary trunked radio systems have been described. Conversely the message heard frequently by public safety is that the Third Generation Partnership Project (“3GPP”) is focused on the development of international commercial telephone/broadband services and applications and that anything beginning to address public safety trunked radio services is not even being considered in any manner other than as a distant

concept that might be pursued when the international rollout of the 3GPP standards has been largely completed.

- I. The Respondents do not mean to close the door on spectrum flexibility permanently. It is possible that in the distant future the technology will emerge permitting all public safety communications to be supported as one of many broadband applications.
- J. It seems as if the underlying thesis of the Bureau's Public Notice is that broadband convergence is inevitable and to that end, the FCC should begin to consider the issue of additional spectrum in support of wireless broadband. As stated in the preceding paragraphs, the Respondents believe that it is possible that converged voice and data technology may occur at some point in the distant future. However, there are fundamental issues to be considered. First, who will develop the technology to support trunked operations in broadband? Public safety is a very specialized market with limited applicability outside of first responder applications. The financial investment to write computer code in support of trunked-like operations on a converged voice/data broadband platform will be substantial. Secondly, federal, state, county, and other local governments have expended large amounts of money over the years to achieve public safety interoperability on a local, regional, and nationwide basis. It will require years to transition the nationwide base of public safety land mobile radio from today's platforms to a converged network. How will nationwide interoperability be maintained during the years in which some systems operate on converged systems and others remain on today's platforms?

K. Finally, if the hypothesis of the Bureau is that converged voice and data operations are inevitable and that the future use of relevant spectrum must be considered, there is a critical leadership void that must be filled. Today, the predominant public safety communications organizations and the Bureau are not “on the same page” with respect to the future spectrum for broadband. If the Bureau believes that convergence is inevitable, it has a responsibility to provide its information and conclusions to public safety proactively to stimulate discussion and reach concurrence as to future operations and strategy. The schism that exists between the Bureau and public safety is best manifested in the current “D Block” debate. Apart from the perspectives of public safety and the Bureau, the objective observer might ask the question, “Why do two groups charged with important responsibilities see the relevant issue of 700 MHz spectrum for broadband so differently?” In many areas, the Bureau and the public safety communications organizations have an effective and collegial relationship. The respondent’s hope that some actions will result in the future leading to a path that joins both public safety and the Bureau in consensus relative to an understanding of appropriate broadband technologies and the resulting spectrum requirements that meet the needs of first responders.

Comments Relative to Specific Bureau Questions

VI. In DA 10-1877, the Bureau asks specific questions. The respondents attempt to answer the specific questions of the Bureau in the following pages.

1. *We seek to explore the circumstances, if any, under which allowing public safety the option of flexible use of the 700 MHz. narrowband allocation and guard band for broadband services would be operationally feasible and technically compatible with existing and future public safety narrowband operations, including any impact on interoperability.*

The respondents believe that the circumstances under which broadband use would be compatible with narrowband use are highly limited. As stated previously and explained in some detail in the Delaware Ex Parte filing¹⁶, the respondents note that the Commission has established thirty-two (“32”) nationwide interoperability channels in the 700 MHz band. Flexible use of the 700 MHz spectrum permitting broadband operations in the voice spectrum precludes use of the spectrum for nationwide interoperability.

2. *We seek comment on the potential level of interest in such flexible use within the public safety community, both in the short term and the long term.*

The respondents believe that in the distant future, public safety may migrate to a converged voice/data technology that necessitates additional spectrum. The preferred course of the respondents would be that the Bureau continuously work with public safety collaboratively and if or when first responder organizations conclude that additional spectrum is required to support their operations, both regulatory and practitioner efforts would start to achieve the needed spectrum.

3. *As public safety agencies confront decisions on devoting future funds and resources for communications, should they be able to consider options for expanding broadband operations as an alternative to new or expanded narrowband networks?*

¹⁶ *Id.* Ex Parte filing of Mark Grubb to Marlene Dortch, Secretary, Federal Communications Commission (July 15, 2010).

Voice land mobile radio and data broadband operations serve two distinctly different functions today. While both are vitally important, voice operations continue to be the most critical and “life and death” emergencies are supported by this technology. The respondents all utilize broadband technologies for first responders; however, are continuing to support, the expansion of voice capabilities on the 700 MHz narrowband voice channels to meet first responder support requirements. As stated earlier, the respondents support added spectrum for broadband through the D Block reallocation to public safety and do not wish to diminish the narrowband voice resources in the 700 MHz public safety band.

4. *We seek comment on these issues from the states and 700 MHz Regional Planning Committees (RPCs) that have responsibility for planning and coordination of the 700 MHz narrowband spectrum.*

A. *What is the current and anticipated use of 700 MHz narrowband networks?*

Both Delaware and Maryland plan extensive use of the 700 MHz narrowband channels for state government public safety operations. All available 700 MHz “state” narrowband voice channels will be used (and in some cases re-used) to implement the Maryland statewide 700 MHz trunked radio system. General pool channels will also be required to support interoperability with state and county/local government first responders.

B. *How extensively are 700 MHz public safety narrowband channels—including channels licensed directly to states, channels licensed pursuant to approved RPC plans, and channels designated for nationwide interoperability—being utilized currently for public safety narrowband operations?*

Due to the proximity of borders with other states, both Delaware and Maryland plan to use “general pool” 700 MHz channels to augment the limited number of 700 MHz state channels. Maryland has already initiated discussions with some of

its neighbors on channel coordination issues and obtained concurrence from Region 20 to use some general pool channel pairs. Delaware has also worked with its neighbors to coordinate the use of state 700 MHz channels. Both states note that the ninety-six state government (12.5 KHz) channel pairs are insufficient to construct their systems and will be required to augment statewide systems with general pool channels based upon additional RPC concurrence.

C. To what extent does use of the narrowband spectrum vary by geographic area?

Both Delaware and Maryland are states with borders that mandate extensive channel use coordination with neighbors. Delaware has a population density of 401 persons per square mile¹⁷ compared with the national average of 79.6 persons. Maryland has a population density of 541.9 persons¹⁸ compared to the national average. With population densities five to six times the national average, spectrum requirements are extensive throughout all parts of each state.

D. In particular, we seek quantitative metrics (e.g., number of channels in use, percentage of jurisdictional landmass covered) that will allow us to understand better the scope and scale of existing 700 MHz public safety narrowband operations.

Delaware has begun to deploy 700 MHz resources and has coordinated with the adjoining states for its first phase which uses forty-four (“44”) channel pairs. Maryland anticipates using all ninety-six (“96”) state government 700 MHz channel pairs (12.5 KHz operation) throughout the state. Maryland has also received approval from Region 20 to use two additional 700 MHz channel pairs in each county as well as the City of Baltimore. Maryland is also developing a state plan for the use of the 700 MHz Interoperability channels. Prince George’s

¹⁷ See Delaware Quick Facts, U.S. Census Bureau.

¹⁸ See Maryland Quick Facts, U.S. Census Bureau.

County has employed twenty-five (“25”) 700 MHz channel pairs in the operation of its 700 MHz radio system.

- E. What plans exist for future deployments of 700 MHz narrowband systems, and has funding been committed for these systems?*

Delaware received federal Public Safety Interoperable Communications (“PSIC”) funds to construct the first phase of its statewide 700 MHz system. Maryland has received funds from the State’s General Assembly and other sources to construct the statewide 700 MHz radio system.

- F. In what timeframe are such systems expected to be placed into operation, and how much channel capacity are they expected to use? Again, we seek quantitative metrics (e.g., dollars committed and channel utilization / geographic coverage obtained with committed dollars).*

The Delaware 700 MHz statewide system was substantially funded with federal PSIC money. Pursuant to federal statute as amended, PSIC funding must be fully expended by September of 2012. Maryland has administratively committed to full funding of the statewide 700 MHz system and executed a contract with a supplier to provide the system in five (“5”) phases of construction and deployment. Funds for the system for the system will come from state and other sources. The Prince George’s 700 MHz system was paid through federal and state funds as well as general obligation bonds issued against the County.

5. *Are there public safety jurisdictions that are planning to deploy both 700 MHz broadband and narrowband systems in the same geographic area?*

- A. If so, where?*

Separate statewide voice and data systems are planned for both Delaware and Maryland. Prince George’s County will operate broadband equipment as part of the Maryland broadband system.

- B. *Will these systems be constructed independently or will they share infrastructure, network operations, or other resources?*

Detailed system planning has not begun for broadband systems in either state. Delaware's public safety communications infrastructure consists of both publically and privately owned towers. Maryland has constructed a large base of towers over the last ten ("10") years in anticipation of the statewide radio system. Additionally, Maryland has developed an extensive backhaul system primarily composed of fiber and microwave resources. To the maximum extent practical, Maryland would intend to utilize its tower and backhaul infrastructure through a leveraged model as recommended by the Commission¹⁹.

6. *What information is available as to the costs of constructing separate or combined broadband and narrowband systems?*

- A. *Could flexibility benefit such jurisdictions by allowing them to shift spectrum from narrowband to broadband use over time?*

Flexibility would not be a benefit to the respondents until use of the 700 MHz narrowband frequencies was no longer required. This would not happen until the system investments made in 700 MHz land mobile radio systems were amortized fully or that the pace of technological change fosters a compelling argument that justifies the expenditure of funds to support a different technology operating in the 700 MHz narrowband voice spectrum.

- B. *Would the flexibility to offer broadband services in all or a portion of the 700 MHz narrowband spectrum and/or the guard band promote more efficient use of 700 MHz public safety spectrum?*

¹⁹ See OBI Technical Resources, "A Broadband Network Cost Model: A Basis for Public Funding Essential to Bringing Nationwide Interoperable Communications to America's First Responders."

No, the 700 MHz narrowband voice channels are needed by the respondents for their public safety trunked and conventional land mobile radio operations.

- C. *Are there efficiency gains that could be realized by enabling this flexibility? For example, could the use of the narrowband spectrum help satisfy needs for increased broadband capacity? Or could broadband spectrum help satisfy the needs for narrowband capacity over time? What would need to happen for this to occur?*

The respondents believe that the optimal use of the 700 MHz frequency band for public safety would be to support the reallocation of the D Block to the existing 700 MHz public safety broadband spectrum and leave the existing twelve (“12”) MHz of spectrum for narrowband voice operations as currently designated.

7. *If the Commission were to allow flexible use of 700 MHz narrowband spectrum and/or the guard band, would broadband operations in this spectrum potentially interfere with existing or future public safety narrowband operations?*

Yes as there are thirty-two (“32”) nationwide interoperability channel pairs in the 700 MHz spectrum. No other block of spectrum provides such a level of support for interoperability. The respondents believe that it would not be in the public interest to reduce the very limited spectrum existing for nationwide public safety interoperability. Additionally, every state has been geographically licensed for the use of ninety-six (“96”) 12.5 KHz channel pairs in 700 MHz. Because the state licenses are geographic in nature, absent extensive coordination between potential deployers of broadband and proximate state governments, interference could result. Both Delaware and Maryland require the 700 MHz spectrum for statewide voice systems.

- A. *We specifically seek technical information on the likely extent of such interference scenarios.*

The respondents believe that this level of technical detail could best be provided by manufacturers, the Telecommunications Industry of America (“TIA”), Public

Safety Communications Research (“PSCR”) or the Commission’s technical resources.

- B. What steps could be taken to mitigate such potential harm? Would guard bands continue to be necessary to protect adjacent channel narrowband operations, and how would they be configured? What interference protection criteria or coordination requirements would be necessary to allow narrowband and broadband systems to operate in adjacent spectrum in the same geographic area, or in the same spectrum in adjacent geographic areas?*

The respondents believe that this level of technical detail could best be provided by manufacturers, the Telecommunications Industry of America (“TIA”), Public Safety Communications Research (“PSCR”) or the Commission’s technical resources.

- 8. What impact would allowing flexible use of all or a portion of narrowband spectrum have on the continued ability to support nationwide narrowband interoperability?*

The respondents believe that nationwide 700 MHz narrowband interoperability would be lost if the narrowband spectrum is used for broadband operations. As was noted in the Delaware Ex Parte in some detail, the Commission has a long record of support for interoperability in the 700 MHz frequency band. Any denigration in this capability would not be in the public interest.

- A. Could nationwide narrowband interoperability be maintained based on the existing distribution of designated interoperability channels in the 700 MHz narrowband channel plan, or would reconfiguration of the channel plan be necessary to add or shift interoperability channels to other portions of the band?*

When one considers the nationwide 700 MHz interoperability channels, it is logical to also consider the use of the low-power 700 MHz channels which exist at the edges of the existing band plan. All of these channels serve an important purpose. As an example, in Prince George’s County, one of the low-power 700 MHz channels is used for emergency operations, including the command for

police snipers to disable dangerous suspects. In these cases, the analog use of the low-power channels, as permitted by the Region 20 Plan and Commission's rules, provides a unique capability necessary for public safety operations. Beyond the low power channels, the existing nationwide interoperability channels are spread throughout the bandplan. This method of deploying the channels throughout the spectrum is beneficial in preventing the potential of interference.

- B. For areas that do not construct narrowband 700 MHz systems, could narrowband interoperability occur on interoperable channels on other existing public safety spectrum bands in these areas?*

The obvious answer is yes, but one must ask at what cost? In any location where the narrowband nationwide interoperability channels cannot be used because of broadband operation, the nation, not a locality, state, or region, loses the ability to use first responders with interoperable communications from some other distant location to the scene of a disaster. In the case of Hurricane Katrina, first responders from all over the country went to Louisiana and Mississippi to render aid. As 700 MHz proliferates in public safety, more and more first responders would have the 700 MHz interoperability channels programmed into their radios permitting a first responder from New York to have immediate on scene interoperability with colleagues from California.

- 9. How much, if any, of the narrowband allocation and guard band should be made available for broadband operations? Should some portion of this spectrum (e.g., the upper portion of the band furthest from the existing public safety broadband spectrum) continue to be reserved exclusively for narrowband operations?*

The respondents do not support the reallocation of the narrowband spectrum until a consensus has been built within public safety that such a reallocation is in the public interest. It would be extremely helpful for the Bureau to bring together any groups

possessing clear and convincing evidence or information that such a reallocation is in the public interest and public safety so that a dialogue might begin resulting in a consensus opinion. This lack of consensus between the Commission and public safety has resulted in an unprecedented number of public safety communications and first responder organizations mounting a campaign in Congress to reallocate the 700 MHz D Block to public safety. Absent the development of consensus on important spectrum matters, this mode of operation could continue, which the respondents believe is not in the best interest of the Commission or public safety. The respondents hope that future spectrum matters can be reached through mutual consensus between the Bureau and public safety and not in the halls of Congress. However, for that to happen, the respondents believe the Commission must provide greater attention to the operational requirements of public safety that are distinct from commercial solutions designed for the general public.

10. *If flexibility in the narrowband spectrum were allowed, what role should the 700 MHz RPCs and the states play in its implementation?*

Both the States and RPCs are impacted by any changes in the Commission's rules that permit use of the narrowband spectrum and should be consulted for the purposes of spectrum use coordination. Our fear is that "due process" requirements will potentially place poorly funded state governments and RPCs against well-financed commercial companies lobbying for spectrum and against the interests of public safety when disputes arise. A reading of the Ex Parte filings in Docket 06-229 is replete with numerous filings by commercial interests and their hired "experts" expounding the positions of their clients and not necessarily those of public safety. The result will likely be that states and RPCs will have neither the technical expertise nor the financial resources to protect their users from the interference caused by well financed commercial systems.

11. *What would be the appropriate jurisdictional level for deciding whether to implement flexibility?*

Any permitted use of the 700 MHz narrowband spectrum for broadband ends nationwide Interoperability in the band. The respondents believe that the Commission would be required to accept the culpability for a failure to protect nationwide interoperability.

A. *Should such decisions be made at the state or regional level?*

Public safety operations do not always conform to state lines. A primary example is the National Capital Region which must provide support for citizens living in Maryland, Virginia, and the District of Columbia. It should be noted that both Regions 20 and 28 both support multiple states. As such, any decision by the Commission to permit flexible operation must take into account issues within both states and regions.

B. *How would decisions to implement flexibility impact the role of RPCs and existing regional plans for the 700 MHz narrowband spectrum?*

If flexibility is permitted, Regions would be required to amend their Plans to conform to the Commission's rulings, as was required following the Second Report and Order²⁰. In some cases, the 700 MHz Regional Plans would become moot as flexible broadband use might take the entire narrowband spectrum.

C. *Should state licensees be required to make any filings?*

Yes as they would be affected with respect to geographical as well as Interoperability licenses that had been issued by the Commission.

D. *Should states/RPCs be required to coordinate with one another regarding proposals for flexible use of the narrowband spectrum within their respective jurisdictions?*

²⁰ *Id.*

Yes, there are longstanding requirements for coordination. Since the technological impact of P25 and Long Term Evolution (“LTE”) are unknown, any state or RPC permitting broadband operations should be required to consult with their neighbors. Factually, LTE systems are designed to operate with interference. Conversely and as was noted in the Delaware Ex Parte, trunked radio systems are designed to “shut down” when foreign on-frequency RF carriers are sensed. Because systems may be disabled from broadband interference, coordination is necessary.

12. *What would be the impact of allowing flexibility on the development of broadband, narrowband, and dual-use equipment in the 700 MHz public safety spectrum?*

The respondents assume that such future radio devices would be capable of software defined operation, similar to a commercial eNodeB that can support all of the LTE industry-standard spectrum bandwidths through software selection. The respondents would defer to the TIA or manufacturers as to the practicality of such an application. The issue of concern for public safety is reliability and ruggedized operation in extreme field operating conditions. By the very nature of public safety operations, ruggedized devices will be unique to public safety and limited non-public safety industry segments. As a result, such devices are very different from typical commercial products and while there may be some components that operate in common with commercial products, the cost of a public safety device is often much greater than a commercial product used by the general public.

- A. *Would allowing flexible use prior to widespread deployment in the public safety broadband allocation create incentives for the development of broadband devices and equipment capable of operating in the narrowband spectrum as well?*

No and it could cause confusion as the Third Generation Partnership (“3GPP”) has developed frequency plans and coordinated their use with the Commission as Band Classes. Any changes in the current spectrum plan would cause a redefinition of the 3GPP “band class” regimens which could delay further, not promote production of devices supporting Band Class Fourteen (“BC 14”).

- B. Are there other steps the Commission could take to promote the development of such equipment?*

The Bureau should redouble its efforts to work collaboratively with public safety organizations to understand the operational requirements of first responders. Situations as presently exist between the Bureau and public safety regarding the D Block spectrum should be avoided whenever possible. The respondents do not mean to infer criticism of the Bureau or public safety organizations; however, the undisputable fact is that this lack of consensus has delayed the implementation of public safety broadband in the United States.

- C. What is the potential for development of dual-use equipment that could support both narrowband and broadband use?*

The respondents defer to manufacturers, TIA, and others in the radio production business for an answer to this question.

- D. Would such equipment be software-defined and programmable to allow for ease of transition between broadband and narrowband use?*

The respondents defer to manufacturers, TIA, and others in the radio production business for an answer to this question.

- E. For broadband devices built to operate in the 700 MHz public safety broadband spectrum, will there be interoperability issues if these devices operate in regions that opt to deploy broadband in narrowband spectrum as well? If so, how should these issues be addressed?*

The respondents believe that interference to interoperability will result absent coordination. If the Commission amends its rules to permit “flexible” use of the narrowband spectrum, the rules should require broadband capable devices to “sense” the amount of spectrum being used in an area and delimit operation to the appropriate amount of spectrum used for broadband operations. Such a strategy was contemplated for the Commission’s recent “White Space” Order which permits broadband operations on unused television spectrum. Similarly, the Commission could mandate that broadband operations in 700 MHz narrowband spectrum, if permitted, be capable of reduced operation when necessary. A similar strategy is contemplated in the rules relative to 700 MHz secondary trunking channels²¹. In this strategy, the Commission’s rules permit “secondary” trunking operations provided that the spectrum is not needed for single channel interoperability operations and operations can be immediately ended if spectrum is needed for interoperability. Such an approach could permit broadband to be deployed over unused portions of narrowband spectrum in 700 MHz and then be “instantly” reclaimed if the spectrum is needed for nationwide interoperability.

F. Conversely, if mobiles designed to transmit and receive broadband in the narrowband spectrum are used in regions that opt to deploy narrowband, will there be interference concerns between these devices and the narrowband network?

Yes, the mobiles attempting to operate on the narrowband spectrum in support of nationwide interoperability would be rendered useless.

G. If so, how should these issues be addressed?

Please see answer to #12-E (above).

²¹ See §47CFR 90.531(b)(7).

13. *If the Commission were to permit flexible use of the narrowband spectrum, what if any impact should this have on the existing rules that require 700 MHz narrowband systems to narrowband to 6.25 kHz bandwidth channels by December 31, 2016? Should the Commission reconsider this requirement?*

All licensees deploying 700 MHz narrowband systems either knew or should have known about the Commission's spectrum efficiency rule²² mandating 6.25 KHz or equivalent operation. This deadline is much like the Commission's narrowbanding mandate in the 150-512 MHz bands. The requirement has been known, or should have been known, for many years and absent some compelling reason, the respondents cannot offer a valid reason to delay implementation of the Commission's narrowband requirements.

14. *Would public safety resources be better spent transitioning 700 MHz narrowband operations onto a broadband platform?*

This is perhaps the most profound question asked by the Bureau in the Public Notice. As has been stated in this response, the respondents are unaware of any activity whatsoever that would help public safety to understand the issues leading to the potential convergence of voice and data operations on broadband that replicates the level of support found in a modern public safety trunked radio system. If there is to be convergence of voice and data operations on a broadband platform, the energy of public safety and the Bureau would be optimally spent collaboratively identifying the technological path(s) that leads to convergence. Instead of the Bureau and public safety disagreeing over spectrum, the respondents would prefer a collaborative approach that defines the next generation of public safety communications technology. Once the applications and their operational requirements have been defined, then spectral requirements needed to support the technologies mutually identified by the Commission and public safety could be identified.

²² See §47CFR 90.535.