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October 10, 2006

Via Electronic Filing

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: WT Docket Nos. 06-169
Ex Parte Presentation

Dear Ms. Dortch:

Attached for inclusion in the above-referenced docket please find the Comments of Access Spectrum, L.L.C., Columbia Capital III, LLC, Intel Corporation, and Pegasus Communications Corporation, filed on June 6, 2006, in WT Docket No. 96-86. The pleading addresses issues that are relevant to the above-referenced docket.

Sincerely,

/s/ Kenneth R. Boley
Kenneth R. Boley

Enclosure

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

In the Matter of)
)
The Development of Operational, Technical) WT Docket No. 96-86
and Spectrum Requirements for Meeting Federal,)
State and Local Public Safety Communications)
Requirements Through the Year 2010)

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COLUMBIA CAPITAL III, LLC
INTEL CORPORATION, AND
PEGASUS COMMUNICATIONS CORPORATION**

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June 6, 2006

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Attachment: Chart Comparing Broadband Proposals

**Before the
FEDERAL COMMUNICATIONS COMMISSION
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| State and Local Public Safety Communications |) | |
| Requirements Through the Year 2010 |) | |

**COMMENTS OF ACCESS SPECTRUM, L.L.C.,
COLUMBIA CAPITAL III, LLC
INTEL CORPORATION, AND
PEGASUS COMMUNICATIONS CORPORATION**

Access Spectrum, L.L.C. (“Access Spectrum”), Columbia Capital III, LLC (“Columbia Capital”), Intel Corporation (“Intel”), and Pegasus Communications Corporation (“Pegasus”) (collectively “Joint Commenters”)¹ respectfully submit these comments in response to the Eighth Notice of Proposed Rulemaking in the above-captioned proceeding.²

I. Introduction and Summary

At the request of the National Public Safety Telecommunications Council, the Commission has asked how best to accommodate broadband in the public safety allocation

¹ Access Spectrum, Columbia Capital (through its interest in Dominion 700, Inc.), and Pegasus are licensees in the Upper 700 MHz band. Intel has a longstanding interest in promoting technology-neutral public policies that foster broadband deployment.

² *The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, Eighth Notice of Proposed Rulemaking, 21 FCC Rcd 3668 (2006) (FCC 06-34) (“*Public Safety Broadband NPRM*”).

within the Upper 700 MHz band.³ As contemplated in the *Public Safety Broadband NPRM*, the Joint Commenters approached the question with two requirements in mind:

First, 12 MHz (6 MHz paired) of spectrum within public safety's allocation must remain devoted to narrowband voice operations. Voice communications are today, and will be for the foreseeable future, the primary method by which public safety entities communicate and are therefore are of the utmost importance.

Second, there must be approximately 1 MHz of "buffer" or "guard band" to protect narrowband voice operations from undue interference from broadband operations. While the A and B Block licensees, including Access Spectrum, Columbia Capital, and Pegasus, argued in their White Paper and Supplemental White Paper filed in 2005 that this is not necessarily the case,⁴ the National Public Safety Telecommunications Council ("NPSTC"), Lucent and Motorola have all essentially agreed that 1 MHz is necessary to provide adequate protection. Therefore, for purposes of these comments, Access Spectrum, Columbia Capital, and Intel have viewed the 1 MHz guard band requirement as a given.⁵ Pegasus, by contrast, offers a different view,

³ *Public Safety Broadband NPRM*, ¶¶ 9-10.

⁴ *Implementing the Vision for 700 MHz: Rebanding the Upper 700 MHz A and B Blocks for Next-Generation Wireless Broadband*, *ex parte* presentation by Access Spectrum, L.L.C., Pegasus Guard Band, L.L.C., Columbia Capital Equity Partners III, L.P., and PTPMS II Communications, L.L.C. with support from Enterprise Wireless Alliance, submitted via letter from Kenneth R. Boley to Marlene H. Dortch, WT Docket No. 05-157 (Aug. 3, 2005) ("White Paper"); and *Rule Changes to Implement the Proposed Rebanding of the Upper 700 MHz A and B Blocks for Next Generation Wireless Broadband*, *ex parte* presentation by Access Spectrum, L.L.C., Pegasus Guard Band, L.L.C., Columbia Capital Equity Partners III, L.P., and PTPMS II Communications, L.L.C. with support from Enterprise Wireless Alliance, submitted via letter from Kenneth R. Boley to Marlene H. Dortch, WT Docket No. 05-157 (Nov. 4, 2005) ("Supplemental White Paper").

⁵ Though these comments contemplate guard bands of 1 MHz, Access Spectrum, Columbia Capital, and Pegasus continue to support the position described in the White Paper and Supplemental White Paper that guard bands of less than 1 MHz could be sufficient. *See* Comments of Pegasus Communications Corporation, WT Docket No. 96-86 (June 6, 2006). If (*cont'd*) ...

elaborated in its separate supplemental comments in this proceeding, that there are other more efficient means than guard bands to mitigate harmful interference in the Public Safety spectrum, and that guard bands are not necessary. Pegasus nevertheless supports this proposal as superior to the proposals set forth in the NPRM.⁶

In addressing the question of how best to accommodate broadband operations in the 700 MHz public safety allocation, the Joint Commenters believe three public policy goals should be considered:

1. *Flexibility* – maximize flexibility to take advantage of broadband technologies. This would be accomplished by aggregating the widest possible blocks of contiguous spectrum.
2. *Spectral Efficiency* – maximize spectral efficiency by minimizing the amount of spectrum “wasted” in guard bands.
3. *Partnerships* – provide optimal conditions for public safety/commercial broadband partnerships in the future that share infrastructure, spectrum or both

The current Upper 700 MHz band plan, designed almost a decade ago, came into being before the spectacular wireless broadband advances of recent years and before this year’s establishment of a date certain for the DTV transition. Today, the band plan is suboptimal in

(cont’d) ...

the Commission determines that, in fact, guard bands of less than 1 MHz could provide sufficient interference protection, the Upper 700 MHz Optimization Plan proposed herein could accommodate that determination; such smaller guard bands would result in more spectrum available for public safety operations.

⁶ In its separate supplemental comments, Pegasus urges the Commission to broaden the scope of its inquiry in this proceeding to allow full consideration of the Upper 700 MHz Optimization Plan (“Optimization Plan”) proposed herein. In recognition of the Commission’s relatively narrow framing of this NPRM as addressing Public Safety allocation issues, however, Pegasus offers a variation of the Optimization Plan that would entail, at the present time, only a regrouping of the Public Safety Narrowband spectrum at one edge of the Public Safety allocation, without any additional changes to the A or B Block spectrum. Those issues would be preserved for full and fair consideration in the separate proceedings that the Commission has promised to conduct.

several respects. First, it limits public safety to broadband technologies that can be accommodated within the approximately 4 MHz of spectrum available between the voice narrowband channels, specifically eliminating the possibility of a 5 MHz channel which several more advanced broadband technologies require. Second, it is spectrally inefficient because it requires approximately eight 1 MHz guard bands and wastes the remaining 2 MHz of B Block spectrum, resulting in 10 MHz of “wasted” spectrum—4 MHz within public safety’s current allocation and 6 MHz of commercial spectrum. And third, the structure (with narrowband channels on either edge of the public safety allocation) makes public safety/commercial partnerships that share infrastructure, spectrum or both more difficult and more costly because it prevents commercial broadband operations from being adjacent to public safety broadband operations.

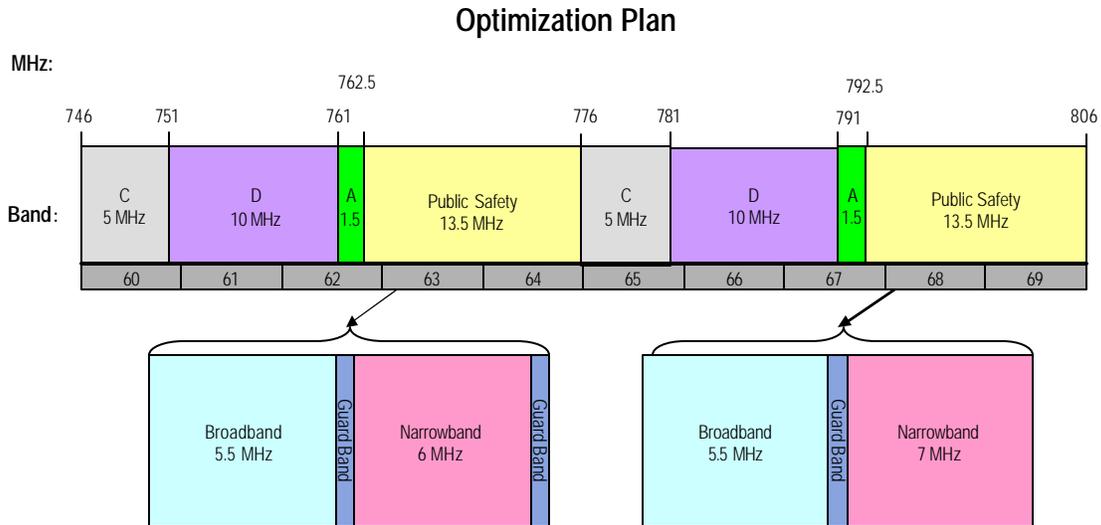
Given the constraints and the public policy goals described above, we propose the Upper 700 MHz Optimization Plan (“Optimization Plan”), which contemplates the following changes (see chart below):

- (1) The public safety allocation in the 700 MHz band should be reconfigured to consolidate narrowband operations at the upper ends of the public safety blocks, thus reducing the number of required guard bands from eight to three.
- (2) Three of the four MHz from the B Block (currently held by the FCC, Access Spectrum, Pegasus, and a few other licensees) should be allocated to the public safety block to be used for three guard bands of 1 MHz each controlled by the public safety community between broadband and narrowband operations.⁷ (No guard band would

⁷ Though it is illustrated herein as including only broadband and narrowband channels, this proposal also provides public safety agencies flexibility to deploy wideband to the extent desired. The plan provides 3 MHz of additional spectrum for use by public safety for interference protection to enable the deployment of public safety broadband operations, but exactly how that spectrum is used is within public safety’s control. The Optimization Plan provides flexibility to deploy broadband and/or wideband in addition to narrowband channels within the public safety allocation, with the sole restriction being that the public safety spectrum at 762.5 MHz, 776 MHz, and 792.5 MHz must be used for either broadband or a 1 MHz guard band. The band plan described here offers a way to maximize flexibility, spectral efficiency, and partnership (*cont’d*) ...

be necessary at 806 MHz, which is adjacent to 800 MHz public safety narrowband operations.)

- (3) The remaining 1 MHz of the B Block would be added to the A Block to enable its full utility by creating a broadband channel and permitting the use of next-generation broadband technologies within the A Block, and the A Block would be shifted to the lower side of the public safety block in order to facilitate public safety-commercial mixed-use partnerships.



The benefits of the proposed band plan are significant. The plan addresses the two requirements described above by maintaining 6 MHz paired of spectrum devoted to narrowband voice and by providing 1 MHz of guard band to protect narrowband voice and wideband from broadband. The proposed band plan also forwards the three public policy goals described above:

(cont'd) ...

opportunities, but subject to this sole restriction, the plan does not propose specific channelization or measures for preventing interference within public safety’s allocation. For example, if any “buffer” were needed between public safety operations, public safety would determine whether to achieve it by use of an explicit guard band for all geographies or by geographic frequency coordination so that neighboring geographies do not use adjacent frequencies.

- (1) It maximizes flexibility by increasing the public safety allocation from 24 MHz to 27 MHz, by creating a 5.5 MHz “block” of paired spectrum that can accommodate a wider variety of broadband technologies, or an extra 1.25 MHz channel.
- (2) It increases spectral efficiency by reducing the amount of spectrum “wasted” in guard bands in both public safety’s allocation and the commercial allocation from 10 MHz to 3 MHz.
- (3) It provides opportunities for commercial-public safety partnerships to deploy “mixed-use” or “shared” networks with public safety priority access by placing public safety’s broadband allocation adjacent to a commercial broadband allocation.

Finally, the plan has the added benefits of giving public safety agencies full control of three guard bands (totaling 3 MHz) that may be used to provide other non-broadband wireless solutions in addition to protection of the narrowband spectrum, and of providing a new 1 MHz of narrowband spectrum at 805-806 MHz that can be used for talk around channels.⁸

The costs of the Optimization Plan, if implemented today, are minimal. Fewer than ten percent of the 700 MHz Regional Planning Committees have had their plans approved by the Commission, and few of those plans have yet been implemented. The plan would require the relocation of some narrowband voice channels (though the quantity of spectrum allocated to each public safety allocation/municipality would not change), and there is also a small number of existing systems that have either been deployed or are under development that would need to be reprogrammed with new channel look-up tables. Although a meaningful number of dual-band

⁸ The most spectrally efficient way to administer guard bands is to grant control of the guard bands to the entities requiring protection. Although the comments suggest that guard band spectrum is often “wasted” or “lost,” in fact this plan contemplates giving public safety total control of its own internal guard bands, which will provide public safety the opportunity to properly coordinate and deploy other non-broadband wireless solutions in guard band spectrum.

(700/800 MHz) radios already have been deployed and are in use at 800 MHz, few are currently in use in the 700 MHz band and it is unclear how many will ever be utilized in the 700 MHz band. For any of those that would need to be reprogrammed, no hardware changes would be necessary. In any event, when compared to the overwhelming benefits for the public safety community inherent in this proposed plan and the immense costs of implementing it when both public safety and commercial systems are further deployed in the band,⁹ the costs are minimal on both an absolute and on a relative basis.

Therefore, the timing of this proceeding is critical. The ability to plan for and utilize the 700 MHz narrowband channels may be delayed pending FCC action in this proceeding, though such delay could be minimized if interested parties reach consensus outside the regulatory process. The costs of implementing the plan are very low today, but they will increase with each passing day.

This FCC rulemaking can create changes to ensure that public safety is not excluded from technological advances that have occurred in the years since the 700 MHz band plan was first designed. We believe the proposal we have outlined can create a winning scenario for the public safety community, existing commercial licensees, future commercial licensees and the public in general.¹⁰

⁹ Potentially, sub-optimal band design combined with disparate technologies on adjacent spectrum may result in a scenario in the 700 MHz band similar to that of the 800 MHz band, where channel placement and adjacent conflicting technologies together contributed to interference in public safety spectrum.

¹⁰ The Optimization Plan is the optimal solution for enabling broadband in public safety Upper 700 MHz spectrum, but it requires Commission action with regard to both public safety and commercial spectrum at 700 MHz. This optimal solution is achievable only if the rules for the A and B Blocks, as well as the public safety allocation, are considered and changed in a contemporaneous and coordinated fashion.

II. Discussion

The band plan for the Upper 700 MHz band that best serves the public interest would increase the ability of the public safety block to accommodate the widest possible array of current and future technologies, ensure the most efficient use of this valuable spectrum in both public safety and commercial allocations, and improve conditions for public safety/commercial broadband partnerships with public safety priority access by placing public safety broadband operations adjacent to commercial broadband operations. This section discusses these three policy goals in more detail and proposes an approach to providing public safety agencies with broadband operations in the Upper 700 MHz band which both meets these goals and is superior to any of the band plans featured in the *Public Safety Broadband NPRM*.¹¹

A. Any Plan for Broadband for Public Safety Agencies Should Serve Three Critical Policy Goals

All three of the policy goals described below are consistent with the continued need for mission-critical voice capability, including push-to-talk, for public safety agencies.¹² This crucial functionality must be maintained. All the detailed proposals in the *Public Safety Broadband NPRM*, and the approach below, would provide for the complete retention of narrowband voice capabilities. There are, however, three critical public policy goals against

¹¹ The chart provided as an Attachment to these comments provides a graphic comparison of the proposals featured in the *Public Safety Broadband NPRM* to the approach proposed in these comments. Because all band plans proposed so far in this proceeding would maintain public safety agencies' voice communications capabilities, the chart does not list that criterion, although its importance cannot be over-emphasized.

¹² The Commission has recognized that "especially during emergency response situations, voice is the primary method of communication." *The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010; Establishment of Rules and Requirements For Priority Access Service*, Second Notice of Proposed Rulemaking, 12 FCC Rcd 17706, ¶ 47 n.87 (1997).

which the various proposals for enabling broadband in the Upper 700 MHz band public safety block must be evaluated. They are:

- (1) *Flexibility* – provide public safety agencies maximum flexibility to take advantage of current and future developments in broadband technology. As the Commission has noted, the size of the spectrum block available for broadband will determine which technologies can be accommodated.¹³ Even as it plans for today, the Commission must also plan for technological developments years in the future. There are a number of broadband applications that would benefit public safety agencies today, such as tactical database access (*e.g.*, floor plans of a burning building), live video feeds, and advanced human recognition. There will also be new broadband applications that become critical to public safety operations in the future. If history is any guide, such applications will be developed for public safety agencies if suitable broadband spectrum is available. The right choices today would enable public safety agencies to use the advanced, innovative technologies of tomorrow; the wrong choices would continue to limit the ability of public safety agencies to keep pace with advances in communications capabilities.

Currently, the minimum standard commercial broadband channel is 1.25 MHz, which is sufficient for CDMA2000 including EVDO (the leading broadband wireless technology in use today), and FLASH-OFDM (the technology used in the public safety broadband trial of the Washington, DC Office of the Chief Technology Officer). Spectrum segments of 5 MHz could accommodate additional technologies, such as WCDMA (the wireless broadband technology adopted by Cingular and T-Mobile), UMTS-TDD (a standard broadband technology deployed in some locations and being trialed by Sprint), and potentially WiMAX. Public safety agencies should have the ability to take advantage of the technological advances and lower costs available through commercial off-the-shelf (“COTS”) products.

- (2) *Spectral Efficiency* – In its most recent Strategic Plan, the Commission stated, “The Commission shall develop policies that promote efficient and effective use of spectrum.”¹⁴ Maximizing spectral efficiency is critical in both the commercial and the public safety blocks, and this rulemaking has important implications for spectral efficiency in the Upper 700 MHz commercial spectrum because of the way in which

¹³ *Id.* ¶ 133 (noting that the Commission has chosen “to assign large blocks of spectrum, and allow individual licensees to decide how to channelize their spectrum in order to best accommodate” new technologies).

¹⁴ Strategic Plan 2006-2011, 2005 FCC LEXIS 5325, *19 (Sept. 30, 2005); *see also Development and Implementation of a Public Safety National Plan and Amendment of Part 90 to Establish Service Rules and Technical Standards for Use of the 821-824/866-869 MHz Bands by the Public Safety Services*, Report and Order, 3 FCC Rcd 905, ¶ 3 (1987) (“we intend to ensure *efficient use of the spectrum allocated for public safety*” [emphasis in original]).

the Upper 700 MHz band is configured. Public safety agencies and commercial licensees will both use the Upper 700 MHz band, and currently both narrowband (public safety) and broadband (commercial and possibly public safety) operations are contemplated. Wherever broadband and narrowband operations are adjacent to each other, interference concerns must be addressed; for example, through the use of guard bands and other technical requirements, which can affect spectrum efficiency. Moreover, the characteristics of the spectrum in the 700 MHz band, which include superior propagation characteristics and the ability to penetrate buildings, make this spectrum extremely valuable for both public safety and commercial operations. Consequently, great care must be taken to ensure that the maximum amount of unrestricted spectrum is fully available for use by both commercial and public safety licensees.

The benefit to consumer welfare of the commercial sale of 700 MHz band spectrum is estimated to be approximately 10 to 18 times the price for the spectrum at auction.¹⁵ For example, with an auction price of \$1/MHz-pop and a population of 300 million, each MHz of commercial spectrum in the 700 MHz band would generate \$300 million in revenues for the U.S. Treasury, and \$3 billion to \$5.4 billion in consumer welfare. Indeed, because of the highly desirable propagation characteristics of 700 MHz spectrum, an auction price of \$1/MHz-pop is likely very conservative, thus understating the benefit to the public of auctioning such spectrum. By foregoing billions of dollars in benefit in order to allocate spectrum to public safety agencies, the public presumably places at least as much value on public safety spectrum and the concomitant public welfare benefits. “Guard band spectrum” is effectively rendered unusable, particularly with regard to broadband. Consequently, guard bands—occupying any of our scarce spectrum resources, whether public safety or commercial—represent a significant loss in public welfare and should be minimized to the greatest extent possible.

- (3) *Partnerships* – create conditions conducive to public safety/commercial broadband partnerships. As the Commission noted in its *Report to Congress on Public Safety Spectrum*, “At a minimum, public safety entities may realize many benefits from entering into partnerships with commercial providers, especially with respect to non-mission critical duties, that allow public safety to leverage technological advances and increased competition.”¹⁶ Public safety/commercial broadband partnerships could enable public safety agencies to share spectrum and/or infrastructure on a

¹⁵ *Analysis of an Accelerated Digital Television Transition*, Coleman Bazelon, Analysis Group, at 12 (May 31, 2005), available at: <http://www.analysisgroup.com/AnalysisGroup/uploadedFiles/Publishing/Articles/DTV_Transition_Report.pdf>.

¹⁶ *Report to Congress on the Study to Assess Short-Term and Long-Term Needs for Allocations of Additional Portions of the Electromagnetic Spectrum for Federal, State and Local Emergency Response Providers*, 2005 FCC LEXIS 6907, ¶ 47 (Dec. 19, 2005) (“*Report to Congress on Public Safety Spectrum*”).

priority basis.¹⁷ By developing mixed-use networks in partnership with secondary user commercial entities, public safety agencies could defray the costs of constructing and maintaining networks by avoiding the need to deploy infrastructure dedicated to a small group of public safety users. Similarly, backhaul sharing with commercial users would allow more public safety agencies lacking such connectivity to participate in broadband initiatives. In addition to the efficiencies that mixed-use networks can provide public safety entities, the cost of such networks would be further reduced if the commercial and public safety broadband spectrum were contiguous, thereby eliminating the need to include additional filtering and other components in the radio system, as well as improving the system's spectral efficiency.¹⁸

B. Critique of NPRM Broadband-Narrowband Proposals

The NPSTC, Motorola, and Lucent band plans described in the *Public Safety Broadband NPRM* must be evaluated thoroughly in light of the three critical public policy goals described above. From a flexibility standpoint, Motorola's plan would accommodate only two broadband channels of 1.25 MHz, and the NPSTC and Lucent plans would accommodate three broadband channels of 1.25 MHz. None of the three band plans would provide public safety agencies the flexibility to deploy broadband systems in 5 MHz channels, such as WCDMA, UMTS-TDD, and potentially WiMAX, as well as other technologies requiring a standard channel of over 3.75 MHz. Thus, these three proposals provide public safety agencies insufficient flexibility.

¹⁷ The concept of "priority" could develop in a variety of ways. For example, commercial and public safety entities could share infrastructure but maintain separate spectrum or they could share both infrastructure and spectrum and grant public safety users priority or preemptive rights to the network in case of an emergency. The Joint Commenters do not seek to take a position on this topic, but rather to point out that it is important to plan now so as to ensure maximum flexibility later if commercial and public safety entities decide to collaborate.

¹⁸ Mixed-use networks could exist in both commercial as well as public safety spectrum. Until public safety agencies receive authority to lease spectrum on a secondary basis to commercial users, however, mixed-use networks would be limited to commercial spectrum or to networks that share infrastructure but maintain separate spectrum. *See* Spectrum Policy Task Force, ET Docket No. 02-135, Report at 43-44 (Nov. 15, 2002) (recommending that public safety agencies should be given the flexibility to lease spectrum to secondary users during low-use periods).

From a spectrum efficiency perspective, the NPSTC, Motorola and Lucent proposals all assume that guard bands of approximately 1 MHz between broadband and narrowband operations would be necessary. As a result, each of those proposals specifies four guard bands inside the public safety block of approximately 1 MHz each and requires additional guard bands in the adjacent commercial segments. The Motorola plan would require a total of 4 MHz of the 24 MHz in the public safety block be used for guard bands between public safety narrowband and broadband operations. NPSTC's most broadband-centric proposal would designate 3.9 MHz of public safety spectrum for guard bands, and the Lucent plan would designate 4.5 MHz for guard bands. All of these proposals would also use 6 MHz of commercial spectrum (the current A and B Blocks)¹⁹ to serve as guard bands between commercial broadband and public safety narrowband operations. Thus, the NPSTC, Motorola and Lucent plans restrict 9.9 MHz, 10 MHz, and 10.5 MHz of valuable 700 MHz band spectrum respectively for guard bands, representing untold billions of dollars in lost public benefits.

Finally, from a potential partnership perspective, none of the three proposals in the *Public Safety Broadband NPRM* would locate commercial and public safety broadband spectrum adjacent to each other, therefore failing to create conditions conducive to mixed-use networks with public safety priority access. Under all of these proposals, mixed-use networks would incur equipment costs and suffer spectrum inefficiencies that could be avoided if the commercial broadband spectrum were located adjacent to the public safety broadband spectrum.²⁰

¹⁹ Though the A and B Block guard bands are currently useful for some purposes, existing technical rules significantly restrict their use, and they cannot accommodate broadband technologies such as CDMA2000 (EVDO) FLASH-OFDM, WCDMA, UMTS-TDD, or WiMAX, either on a stand-alone basis or in combination with commercial neighbors.

²⁰ See the chart attached to these comments for a comparison of these proposals to the Optimization Plan described below.

C. Proposal for Broadband-Narrowband Co-existence That Maximizes Public Benefits

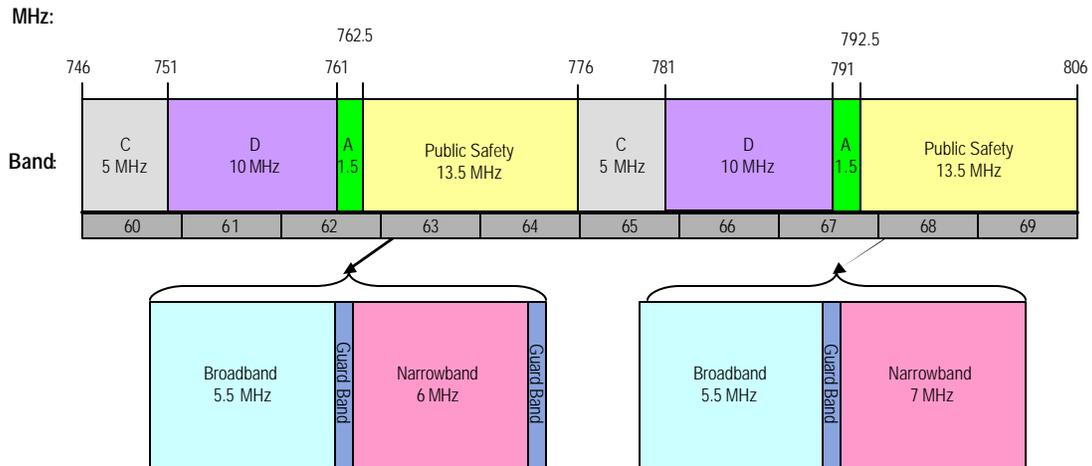
In the 700 MHz band, where spectrum is an extremely valuable national asset for both commercial and public safety operations, it is critical to explore options that reduce the amount of spectrum used for guard bands and increase the technology options available to public safety agencies, assuming this can be done in a way that preserves public safety access to voice capabilities. The *Public Safety Broadband NPRM* properly focuses on issues of interference between broadband and narrowband operations. The Joint Commenters believe that the best way to address potential interference, while achieving the policy goals described above, is to reconfigure the public safety block by consolidating the narrowband channels at the upper ends of each public safety segment, thereby minimizing the number of interfaces between narrowband and broadband.

1. Description of Optimization Plan

Under this proposal, the public safety blocks would be increased by appending at the lower ends of each segment an additional 1.5 MHz, as illustrated below. In addition, the A Block would be increased by 500 kHz paired and relocated adjacent to the spectrum newly added to the public safety block. The total of 1 MHz added to the A Block and 3 MHz added to the public safety block would come from the current 4 MHz in the B Block, which would be eliminated under this proposal.²¹ The C and D Blocks would remain the same size and be relocated 1 MHz lower in the band plan, so that the C Block would be 746-751 MHz and 776-781 MHz, and the D Block would be 751-761 MHz and 781-791 MHz.

²¹ Currently, of the 52 B Block licenses, 42 are held by the FCC. As noted in the White Paper (at 22), the holders of the remaining 10 licenses (including Access Spectrum and Pegasus) would need to be compensated fairly for the diminution of their license holdings.

Optimization Plan



Within the public safety block, narrowband channels (currently totaling 6 MHz paired) would be consolidated at the upper end of each segment. Thus, at 806 MHz, public safety narrowband operations would be adjacent to public safety narrowband operations in the 800 MHz band, as in the current band plan. Public safety broadband channels would be consolidated at the lower end of each block, and spectrum newly added to the public safety block under this proposal would be utilized primarily for internal guard bands.

This proposal calls for only three guard bands of approximately 1 MHz to separate broadband from narrowband operations, and all of the guard bands would be controlled by public safety agencies. Two of these 1 MHz guard bands would separate public safety narrowband operations from public safety broadband operations. One additional guard band would be required between public safety narrowband operations and the C Block at 776 MHz, because this is commercial spectrum anticipated to be used for broadband. However, unlike the current band plan, which uses commercial spectrum for this guard band, this proposal would put public safety agencies in control of the 1 MHz guard band at 776 MHz. Such a change is possible because of the need for fewer guard bands and the addition of spectrum to the public safety block from the current B Block, as described above.

2. Benefits of the Proposal

This band plan would advance the three critical public policy objectives described earlier in these comments.

Flexibility. This proposal would maximize the flexibility of public safety spectrum, positioning public safety agencies to take advantage of developments in future broadband technologies. The public safety blocks would increase from 24 MHz to 27 MHz, including spectrum sufficient for a 5 MHz broadband channel pair or four 1.25 MHz broadband channel pairs. This would accommodate a variety of current broadband technologies, including CDMA2000 (EVDO) FLASH-OFDM, WCDMA, UMTS-TDD, or WiMAX. In addition, the upper public safety block would have approximately 1 MHz of additional spectrum, because it would not be necessary to have a guard band at 806 MHz. This non-paired spectrum could be used in a coordinated fashion by public safety agencies to accommodate services such as talk-around, simplex communications, point-to-point, point-to-multipoint, TDD, data broadcast, and other localized communication. In addition, this plan is sufficiently flexible to support implementation of the concepts the NPSTC, Motorola, and Lucent proposals seek to implement, including: the availability of broadband; the availability of a combination of broadband and wideband; and/or the ability of the individual RPCs to determine the best combination of broadband and wideband channels for their individual regions.²²

Spectral Efficiency. This band plan would also maximize spectral efficiency, most notably because it would reduce the amount of spectrum used for guard bands. Specifically, this band plan would decrease the number of guard bands between public safety operations from four (as proposed by NPSTC, Motorola, and Lucent) to two, freeing 2 MHz for other public safety uses, including broadband applications. In addition, while the other proposals described in the *Public Safety Broadband NPRM* would dedicate approximately 6 MHz of spectrum to guard bands between public safety operations and commercial operations, this proposal would require far less spectrum for that purpose—only 1 MHz total. In all, by reconfiguring to minimize the number of guard bands, the amount of usable spectrum in the public safety block would increase by a total of 4 MHz. Of the full 60 MHz of spectrum in the Upper 700 MHz band, both

²² We do not take a position on whether both wideband and broadband should be permitted as Motorola suggests, or whether the non-narrowband spectrum should be limited to broadband as Lucent suggests. Should the decision be made to permit deployment of wideband operations, this proposal provides public safety flexibility to do so, with the sole restriction that the public safety spectrum at 762.5 MHz, 776 MHz, and 792.5 MHz be used for either broadband or a 1 MHz guard band. Thus, for example, if a Regional Planning Committee (“RPC”) is given the flexibility to and decides to deploy wideband exclusively (and not to use any spectrum for broadband), the internal guard bands would be relocated to the lower end of the public safety block to separate the public safety wideband operations from the adjacent commercial broadband operations.

public safety and commercial, this proposal would reduce the amount of guard band spectrum by 7 MHz, from a total of 10 MHz to only 3 MHz.

Partnerships. Finally, this proposal supports the public policy goal of creating conditions conducive to mixed-use, public safety-priority networks by locating public safety broadband operations adjacent to commercial broadband operations, which would eliminate the need to include additional filtering and other components in the radio system, thereby reducing equipment costs. The larger contiguous spectrum segments created under this plan would also increase the spectrum efficiency of the network by enabling operators to access more capacity from the spectrum than if it were divided into smaller segments. Under this proposal the A Block would be capable of accommodating next generation broadband services, as the C and D Blocks can today. As a result, the A Block licensees could partner with public safety agencies to create mixed-use broadband networks over contiguous spectrum. In addition, a mixed-use network over a significantly larger contiguous segment could be created by potential partnerships involving the A Block licensee, the D Block licensee, and the public safety entities controlling the spectrum adjacent to the A Block, thus enabling the use of an even wider range of current and future broadband technologies.

In addition to meeting the three public policy goals above, this proposal would place the guard bands within the public safety allocation and not within the commercial allocation, as is the case today with the A and B Blocks. This would provide public safety agencies direct control over potential interference and would allow public safety agencies to “meter” incrementally the guard band required for their specific situations in their specific regions, including the ability to set requirements for use of the guard bands. Public safety agencies would also control the size of the guard bands, enabling them to obtain more or less separation between narrowband and broadband, as desired. Finally, public safety agencies would have the flexibility to benefit from any future applications they wished to deploy in that spectrum while meeting their own interference protection requirements.

Consolidating narrowband channels as proposed also makes sense because a key rationale for splitting them has been eliminated. Under the current band plan, narrowband channels were placed in each of the four broadcast channels that comprise the public safety block: 63 and 64 in the lower segment, 68 and 69 in the upper segment. The Commission was

concerned that before there was a hard date for the DTV transition, occupation of one or more of these channels by a broadcaster would preclude narrowband operations in that spectrum, thus making standard channel pairings unworkable. The Commission allowed flexible, non-standard channel pairings to enable narrowband operations even if a broadcaster occupied one or more of the four channels.²³ Consolidating narrowband primarily in Channels 64 and 69 as proposed here would at that time have increased the risk that a single broadcaster could preclude all narrowband operation by occupying spectrum used for either the base transmit/mobile receive or mobile transmit/base receive channel. With a hard date set for the DTV transition,²⁴ this concern is eliminated.

3. Mitigation of Potential Concerns

When compared to the overwhelming benefits for the public safety community inherent in this proposed plan and the immense costs of implementing it when both public safety and commercial systems are further deployed in the band, the costs of this plan are minimal on both an absolute and on a relative basis.

The Joint Commenters understand that while a meaningful number of dual-band (700/800 MHz) radios already have been deployed, most if not all are in use at 800 MHz, and few are currently in use in the 700 MHz band. In fact, it is unclear how many of these radios ever will be utilized in the 700 MHz band. There is also a small number of existing systems that have either been deployed or are under development that would need to be reprogrammed with new channel look-up tables.

²³ *The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010*, First Report and Order and Third Notice of Proposed Rulemaking, 14 FCC Rcd 152, ¶ 30 (1998).

²⁴ 47 U.S.C. § 337(e)(1), as amended by Pub. L. No. 109-171 (Feb. 8, 2006).

The Joint Commenters recognize that consolidating the public safety narrowband channels as proposed herein could entail another potential cost, primarily because the four Regional Planning Committees (“RPCs”) that have already assigned and allotted channels to specific public safety agencies and geographic areas would have to adjust their approved plans.²⁵ However, of those four approved plans, most of them have not included any planning for the wideband channels and so will need to be modified even under the current band plan in order to make wideband or broadband channels available. Under the Optimization Plan, the RPC plans would still need to be modified, but in a different way: by moving and consolidating narrowband channels 1 MHz from the upper end of the public safety block and adding broadband channelization. After consultation with many RPC Chairmen and the National Law Enforcement and Corrections Technology Center (“NLECTC”), we do not expect any significant costs or delay to be caused by such modification. Much of the work of coordinating the narrowband channels has already been done and will not need to be repeated, and, with the help of such tools as the Computer Assisted Pre-Coordination Resource and Database System (“CAPRAD”),²⁶ any new work required is straightforward and not costly in terms of either time or money. Specifically, RPCs have determined the number of channels each geographic area or public safety agency/municipality will receive, and those decisions will not require revisiting. The RPCs will, however, need to revise in some cases the assignment of specific frequencies or allotments of channels to public safety agencies and municipalities, a task that could be easily completed in real time by CAPRAD. The effort required to consolidate the narrowband channels

²⁵ *Public Safety Broadband NPRM* ¶¶ 25 n.82, 35.

²⁶ CAPRAD is facilitated and administered by the National Law Enforcement and Corrections Technology Center operated by the Denver Research Institute. *See CAPRAD, available at:* <<http://caprad.nlectc.du.edu/cp/index.jsp>>.

would be minimized if it were undertaken in the near term, before systems are deployed in the band. Furthermore, once the Upper 700 MHz C and D Blocks are auctioned and deployments begin, relocating these blocks 1 MHz down in the band will be extraordinarily difficult, if not impossible.

Finally, there is a potential concern that the ability of public safety agencies to plan for and utilize the 700 MHz narrowband channels may be delayed pending FCC action in this proceeding. Any such delay, however, could be minimized if interested parties were to reach consensus outside of the regulatory process and if the FCC were to act with dispatch.²⁷

III. Conclusion

For the foregoing reasons, the Joint Commenters urge the Commission to adopt the alternative band plan outlined above which optimizes the Upper 700 MHz band by:

- preserving public safety's mission-critical narrowband voice allocation;
- enhancing the protection of public safety's narrowband voice allocation by providing public safety control over the guard bands;
- increasing public safety's overall spectrum allocation;
- increasing public safety's broadband capacity;
- providing public safety the most flexibility to accommodate current and future technologies;
- maximizing public safety's control of its spectrum environment;
- enhancing the utility of *both* the public safety spectrum and adjacent spectrum;

²⁷ Because the Optimization Plan requires changes to the A and B Blocks as well as public safety spectrum, the Commission should move immediately to address issues relating to the Upper 700 MHz commercial spectrum simultaneously with the public safety issues and in the near term. For example, the Commission could expand the scope of the *Public Safety Broadband NPRM* to include commercial spectrum issues, or it could adopt a Notice of Proposed Rulemaking to address the A and B Block issues, as the Commission committed to do in the *Public Safety Broadband NPRM* ¶ 34.

- minimizing the quantity of wasted spectrum; and
- creating conditions conducive to partnerships between commercial and public safety entities, including mixed-use networks with public safety priority access.

The time to act is now. The costs associated with implementing this proposal are small compared to both the potential benefits and to the time and cost of implementing them in the future. If made today, the modifications proposed herein would enable significant future benefits and opportunities that otherwise would be foreclosed.

Respectfully submitted,

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ATTACHMENT

Comparison of Potential Upper 700 MHz Band Plans

| Category | Planning for the Future | | | Spectral Efficiency | | | | Mixed-Use Potential | Control of Guard Bands | Potential Costs | |
|----------------------------------|--|-------|--------------------|-----------------------------|-----------------|--------|---------------------------|--|--|--------------------------------|--|
| Public Safety Options | Public Safety Spectrum Capacity # of BB Channels | | Future Flexibility | Amount of "Wasted Spectrum" | | | | Optimal for PS/Comm. Partnership? Commercial Neighbor in PS Allocation? | Public Safety Control? Public Safety or Commercial? | Need to Move NB? Yes or No? | Amount of Optimal Commercial BB Spectrum Upper 700 MHz Band |
| | 1.25 MHz | 5 MHz | 5 MHz or Not? | Public Safety | Commercial | Total | Lost Value ⁽¹⁾ | | | | |
| Motorola, NPSTC and Lucent Plans | 2 or 3 | 0 | No | 4 MHz | 6 MHz | 10 MHz | \$30.0 - \$54.4 billion | No | Commercial | No | 30 MHz |
| Optimization Plan | 4 | 1 | Yes | 0 MHz | 3 MHz (B to PS) | 3 MHz | \$9.0 - \$16.2 billion | Yes | Public Safety | Yes | 33 MHz |

(1) Assumes spectrum value of \$1.00/MHz-pop; economic value = 10-18X the spectrum value

Value when Compared to Other Plans:

Green

 Superior
Red Inferior

Key:

PS - Public Safety
 MU - "Mixed-Use"
 Comm. - Commercial

BB - Broadband
 NB - Narrowband