acquire enough spectrum to fit their intended service areas,[122] and permit new entrants to acquire spectrum.[123] Some commenters argue that smaller geographic areas are required because there is a lack of service to rural areas by national carriers,[124] and that large geographic areas favor large companies.[125]

57. Many commenters generally support licensing by larger geographic service areas, *i.e.*, over REAGs. 4G Coalition, which supports licensing a larger block in the Upper 700 MHz Band over REAGs, states that it is expensive and difficult to cobble together smaller license areas and that auction exposure risks are present with smaller areas.[126] Google, which also supports REAG-based licenses over a larger block in the Upper 700 MHz Band, asserts that large service areas assist in providing access for new entrants.[127] PISC (a coalition of public interest and consumer groups) contends that the number of REAGs should be maximized.[128] In particular, PISC opposes the adoption of further small geographic area licenses in the Upper 700 MHz Band, arguing that the Commission has already determined to provide over 800 additional licenses over CMAs and EAs in the Lower 700 MHz Band. PISC also suggests that some larger carriers that have expressed support for smaller licenses may not be seeking to provide relief to rural areas, but instead, are attempting to use the regulatory process to block competitors from developing a national market.[129] Verizon Wireless comments that the entire Upper 700 MHz Band should be licensed over REAGs, and that REAGs are necessary to achieve the goals of providing a mix of licenses and ensuring that advanced services will be deployed on a timely basis.[130] AT&T's proposed band plan contains REAGs and an EA in the Upper 700 MHz Band.[131]

58. Some of the commenters on the appropriate mix of geographic area license sizes also specify which license sizes should be adopted for particular blocks. Many commenters express support for the Commission's proposal relating to the Lower 700 MHz Band to license the A, B, and E Blocks over EAs, CMAs, and REAGs, respectively.[132] For example, among the commenters supporting EAs in

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[122] *See* Cellular South *700 MHz Further Notice* Comments at 8, 10 (increasing likelihood of acquiring licenses for areas they intend to serve); Frontier *700 MHz Further Notice* Comments at 4 (enabling acquisition of licenses for rural areas alone); RTG *700 MHz Further Notice* Comments at 5 (commenting that large companies can acquire spectrum for needed urban areas without acquiring spectrum for rural areas).

[123] *See* Alltel *700 MHz Further Notice* Comments at 3; Cellular South *700 MHz Further Notice* Comments at 8-9, 10; Embarq *700 MHz Further Notice* Comments at 6.

[124] *See* Cellular South *700 MHz Further Notice* Comments at 9; Centennial *700 MHz Further Notice* Comments at 6-7.

[125] *See* Centennial *700 MHz Further Notice* Comments at 6.

[126] 4G Coalition *700 MHz Further Notice* Comments at 8-9.

[127] *See* Google *700 MHz Further Notice* Comments at 2, 7. The 4G Coalition and Google support licensing Proposal 3's smaller 10-megahertz block (comprised of paired 5-megahertz blocks) over MEAs. *See* 4G Coalition *700 MHz Further Notice* Comments at 8-9; Google *700 MHz Further Notice* Comments at 7.

[128] *See* PISC *700 MHz Further Notice* Comments at 35-36.

[129] *Id.* at 36.

[130] *See* Verizon Wireless *700 MHz Further Notice* Comments at 10-11, 12-14. Verizon Wireless also comments that these REAGs should be paired, and notes that the role which the Commission has stated REAGs have in promoting advanced services. *Id.* at 12.

[131] *See* AT&T *700 MHz Further Notice* Comments at 4-7.

[132] *See, e.g.*, AT&T *700 MHz Further Notice* Comments at 3-4; Cellular South *700 MHz Further Notice* Comments at 9-11; Leap *700 MHz Further Notice* Comments at 3; MetroPCS *700 MHz Further Notice* Comments at 13; RCA *700 MHz Further Notice* Comments at 11-12; Union *700 MHz Further Notice* Comments at 3-5; *see also* U.S. (continued....)

the Lower 700 MHz Band's A Block is RCA, which states that licensing that block over EAs will allow carriers of various sizes an opportunity to participate in the auction.[133] Several commenters specify support for licensing the Lower 700 MHz Band's B Block over CMAs.[134] Commenters noted the potential for aggregation opportunities by having a CMA license located adjacent to the C Block spectrum which already has been licensed over CMAs,[135] with the 700 MHz Independents and RTG commenting that the aggregation potential with these adjacent CMA spectrum blocks is important because of certain technical issues arising with respect to operations in C Block.[136] As for the Lower 700 MHz Band E Block, Cellular South and RCA agree with our proposal to license the block over REAGs.[137] On the other hand, Aloha requests that this E Block be licensed over EAs, claiming that the proposed geographic service area is too large and too expensive for its projected limited use.[138] Cyren Call suggests that, if Frontline's proposal is adopted for the Upper 700 MHz Band, two spectrum blocks in the Upper 700 MHz Band should be licensed over CMAs and EAs.[139]

59. In response to our inquiry in the *700 MHz Further Notice* whether to maintain a larger spectrum block in the 700 MHz Band, the record reflects disparate views. Several commenters support the adoption of a larger spectrum block and argue against greater use of smaller spectrum blocks. For example, PISC states that "the push by SpectrumCo and large wireless carriers for smaller licenses appears designed to bolster their ability to block potential competitors from developing powerful national networks that would challenge their existing broadband and wireless offerings."[140] 4G Coalition asserts that the Commission is already providing smaller blocks in the overall band plan for the Lower and Upper 700 MHz Bands, and recommends inclusion of at least one large block in the Upper 700 MHz Band, which it claims would offer benefits for advanced broadband service.[141] Google comments that a large spectrum block would provide greater flexibility to technologies with adjustable signal bands, such as

(Continued from previous page)
Cellular *700 MHz Further Notice* Reply Comments at 5 (supporting lower band proposal based on the proposal's widespread support).

[133] RCA *700 MHz Further Notice* Comments at 12; *see also* Cellular South *700 MHz Further Notice* Comments at 10.

[134] *See* 700 MHz Independents *700 MHz Further Notice* Comments at 3-4; Aloha *700 MHz Further Notice* Comments at 2-3; Blooston *700 MHz Further Notice* Comments at 3; Cellular South *700 MHz Further Notice* Comments at 10; Dobson *700 MHz Further Notice* Comments at 3; NTCA *700 MHz Further Notice* Comments at 3-4; RTG *700 MHz Further Notice* Comments at 3; RCA *700 MHz Further Notice* Comments at 11-12; WISPA *700 MHz Further Notice* Comments at 4-5.

[135] *See* 700 MHz Independents *700 MHz Further Notice* Comments at 4-5; Aloha *700 MHz Further Notice* Comments at 2-3; Cellular South *700 MHz Further Notice* Comments at 10; Union Telephone *700 MHz Further Notice* Comments at 4.

[136] *See* 700 MHz Independents *700 MHz Further Notice* Comments at 5; RTG *700 MHz Further Notice* Comments at 4-5.

[137] *See* Cellular South *700 MHz Further Notice* Comments at 10-11; RCA *700 MHz Further Notice* Comments at 11-12.

[138] *See* Aloha *700 MHz Further Notice* Comments at 3; Aloha *700 MHz Further Notice* Reply Comments at 2.

[139] *See* Cyren Call *700 MHz Further Notice* Comments at 39.

[140] *See* PISC *700 MHz Further Notice* Comments at 36; *see also* "*Ex Parte* Reply Comments of the *Ad Hoc* Public Interest Spectrum Coalition," WT Docket No. 06-150 (filed July 6, 2007)(arguing that increasing the number of licenses increases the ability of incumbents to block new entrants).

[141] *See* 4G Coalition *700 MHz Further Notice* Comments at 2-4, 6 (urging the adoption of a 22-megahertz block); CCIA *700 MHz Further Notice* Comments at 3.

WiMax, and additional capacity for technologies with fixed waveforms, like EvDO.[142] Verizon Wireless contends that wireless broadband deployment and emerging 4G technologies require a large spectrum block to achieve the fastest data rates.[143] Ericsson proposes that the Commission maintain a 20-megahertz block.[144]

60. Other commenters, however, support a band plan that would eliminate the large spectrum block from the existing band plan and provide for two smaller spectrum blocks.[145] For example, Cellular South claims that smaller blocks will enable new entrants to obtain licenses and that a single large block restricts competition for the spectrum.[146] RCA comments that while large entities may have an interest in a larger block, offering it on such a basis would be "conspicuously unfair"[147] and MetroPCS claims that a 22-megahertz REAG block would be a "set-aside for larger auction participants."[148] SpectrumCo claims that dividing a larger block would maximize flexibility and "would provide bidders with opportunities to customize their service areas, expand into new markets, and/or strategically supplement spectrum holdings in existing geographic areas."[149]

61. Google recommends that the Commission designate the 6-megahertz unpaired spectrum block in the Lower 700 MHz Band E Block as suitable, primarily or exclusively for the deployment of broadband communications platforms. Specifically, Google recommends that this block should be utilized for interactive, two-way broadband services, connected to the public internet, and used to support innovative software-based applications, services, and devices. Google contends that adopting such a service requirement will help maximize the commercial utility of this spectrum band. In particular, Google alleges that the unpaired E Block in the Lower 700 MHz Band "appears to lack any significant immediate commercial value, due to the relatively limited bandwidth available and its unpaired nature."[150] Google comments that the Commission has supported ubiquitous broadband deployment as one of the nation's top priorities.[151] On the other hand, a number of commenters opposed Google's proposal

[142] *See* Google *700 MHz Further Notice* Comments at 7 (discussing 22-megahertz block).

[143] *See* Verizon Wireless *700 MHz Further Notice* Comments at 11 (commenting on the need for at least a 20-megahertz block to meet such data rates), 16 (commenting that 22-megahertz of paired spectrum supports broadband deployment).

[144] *See* Ericsson *700 MHz Further Notice* Comments at 24. Ericsson also comments that a 22-megahertz block is unnecessarily large. *Id.* at 2.

[145] *See* 700 MHz Independents *700 MHz Further Notice* Comments at 6-7; Aloha *700 MHz Further Notice* Comments at 3; Blooston *700 MHz Further Notice* Comments at 4; Cellular South *700 MHz Further Notice* Comments at 11-19; Centennial *700 MHz Further Notice* Comments at 3; Leap *700 MHz Further Notice* Comments at 3-4; Leap *700 MHz Further Notice* Reply Comments at 2-3; MetroPCS *700 MHz Further Notice* Comments at 24-26; MetroPCS *700 MHz Further Notice* Reply Comments at 4-9; SpectrumCo *700 MHz Further Notice* Comments at 9-10; Sprint Nextel *700 MHz Further Notice* Comments at 2-5; T-Mobile *700 MHz Further Notice* Reply Comments at 10-11; Union *700 MHz Further Notice* Comments at 5; U.S. Cellular *700 MHz Further Notice* Comments at 8; AT&T *700 MHz Further Notice* Comments at 4-5.

[146] *See* Cellular South *700 MHz Further Notice* Comments at 11-12.

[147] *See* RCA *700 MHz Further Notice* Comments at 13.

[148] *See* MetroPCS *700 MHz Further Notice* Comments at 25-26.

[149] *See* SpectrumCo *700 MHz Further Notice* Comments at 2, 15.

[150] *Google Ex Parte Letter* at 4-5. WTB sought comment on Google's proposal in its ex parte letter, including its position regarding the E Block of the Lower 700 MHz Band. *See Google 700 MHz Service Rules PN* at 2. Elements of Google's proposal, other than those regarding its proposal relating to E Block of the Lower 700 MHz Band, are addressed elsewhere.

[151] *See* Google *Google Ex Parte* Reply Comments at 7-9.

regarding E Block in the Lower 700 MHz Band. For example: AT&T alleges that Google's proposal is counter to the principles of technical and service neutrality and licensee flexibility; CTIA claims that Google's proposal would adversely affect competition in mobile services generally; Qualcomm comments that Google's proposed standard is too vague, is contrary to the flexible allocation adopted for the Lower 700 MHz Band, and that there is commercial value for this spectrum; RTG opposes limiting the use of any spectrum to the services proposed by Google; and Verizon Wireless comments that the proposal should be rejected in light of the Commission's longstanding policy for maximum licensee flexibility.[152]

(ii) Discussion

62. In the *700 MHz Report and Order*, we determined that a balanced mix of geographic service area licenses – CMAs, EAs, and REAGs – would be appropriate for the commercial 700 MHz Band licenses that will be auctioned.[153] We reaffirm that determination for all of this commercial spectrum except for that associated with the 10-megahertz commercial license (comprised of paired 5-megahertz blocks), which will be auctioned on a nationwide basis for use as part of the 700 MHz Public/Private Partnership with the Public Safety Broadband Licensee. We further determine that a mix of spectrum block sizes, including one large 22-megahertz block (comprised of paired 11-megahertz blocks), is appropriate for the 700 MHz Band licenses that remain to be auctioned.

63. In evaluating the appropriate balance of license areas and block sizes in this revised band plan, we consider the 700 MHz Band as a whole, including both the commercial spectrum that has not yet been auctioned and the previously auctioned spectrum. Recent statutory and regulatory changes have served to harmonize these spectrum bands and warrant our consideration of the 700 MHz Band spectrum as a whole. The DTV Act provides a uniform transition date for the entire spectrum in both the Lower and Upper 700 MHz Bands, which will make all of the spectrum nationwide available simultaneously. In addition, in the *700 MHz Report and Order*, we revised the power limit requirements for the spectrum in the Lower 700 MHz Band that has not yet been auctioned to make them substantially similar to those applicable to the Upper 700 MHz Band. Finally, the Commission's secondary markets rules will allow auction winners to aggregate previously auctioned spectrum with spectrum they win in the upcoming auction.

64. In determining the specific mix of geographic licensing areas and block sizes for the spectrum to be auctioned, we seek to achieve the kind of reasonable balance that we achieved when adopting a mix of licenses and block sizes in the band plan for the AWS-1 spectrum. The 700 MHz Band spectrum, like the AWS-1 spectrum, is particularly well-suited for wireless broadband services. Given that these bands are likely to be used for similar services, our goals here are similar to those for the AWS-1 Band. In particular, our goals for the 700 MHz Band are to promote dissemination of licenses among a wide variety of applicants, accommodate the competing need for both large and small licensing areas, meet the various needs expressed by potential entrants seeking access to spectrum and incumbents seeking additional spectrum, and provide for large spectrum blocks that can facilitate broadband deployment in the band.

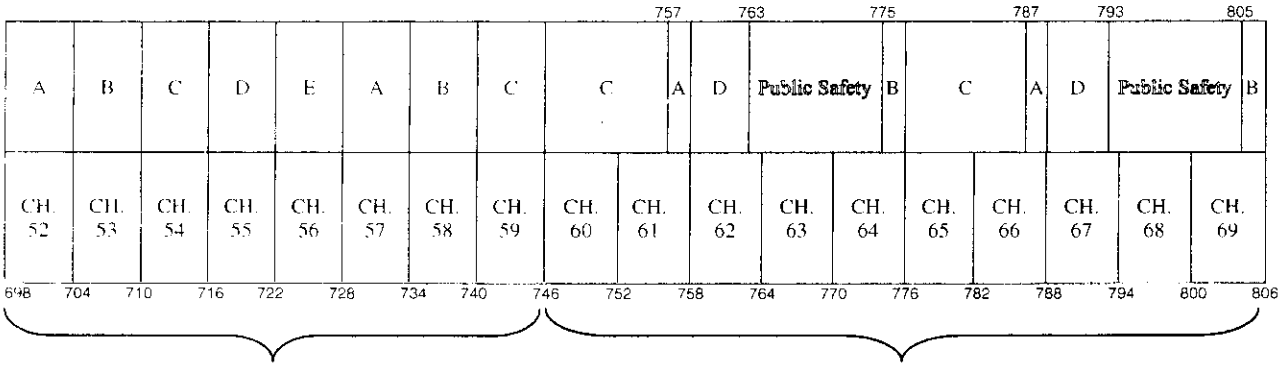
65. To achieve these goals, we will license three commercial blocks of paired spectrum -- one 12-megahertz block (comprised of paired 6-megahertz blocks) licensed on a CMA basis, one 12-

[152] *See* AT&T *Google Ex Parte* Comments at 9-10; CTIA *Google Ex Parte* Comments at 3; Qualcomm *Google Ex Parte* Comments at iii, 2-6; RTG *Google Ex Parte* Comments at 3; Verizon Wireless *Google Ex Parte* Comments at 2, 7; *see also* MetroPCS *Google Ex Parte* Comments at 3-4 & n.9 (commenting on inconsistencies in Google's position); Qualcomm *Google Ex Parte* Reply Comments at 2-4 (arguing that there is no legitimate reason to prohibit certain uses of the E Block and allow only other particular uses).

[153] *See 700 MHz Report and Order*, 22 FCC Rcd at 8082-86 ¶¶ 42-45.

megahertz block (comprised of paired 6-megahertz blocks) on an EA basis, and one 22-megahertz block (comprised of paired 11-megahertz blocks) on an REAG basis – as well as one 6-megahertz block of unpaired spectrum on an EA basis. The following figure shows this new band plan:

FIGURE 8: REVISED 700 MHZ BAND PLAN FOR COMMERCIAL SERVICES



Block	Frequencies	Bandwidth	Pairing	Area Type	Licenses
A	698-704, 728-734	12 MHz	2 x 6 MHz	EA	176
B	704-710, 734-740	12 MHz	2 x 6 MHz	CMA	734
C	710-716, 740-746	12 MHz	2 x 6 MHz	CMA	734*
D	716-722	6 MHz	unpaired	EAG	6*
E	722-728	6 MHz	unpaired	EA	176
C	746-757, 776-787	22 MHz	2 x 11 MHz	REAG	12
D	758-763, 788-793	10 MHz	2 x 5 MHz	Nationwide	1**
A	757-758, 787-788	2 MHz	2 x 1 MHz	MEA	52***
B	775-776, 805-806	2 MHz	2 x 1 MHz	MEA	52***

*Blocks have been auctioned.
**Block is associated with the 700 MHz Public/Private Partnership.
***Guard Bands blocks have been auctioned, but are being relocated.

66. With respect to the mix of geographic service area licenses under our revised band plan for the 70 megahertz of commercial spectrum in the 700 MHz Band that is neither Guard Band spectrum nor spectrum designated for the Public/Private Partnership, a total of 24 megahertz will be provided on a CMA basis (including 12 megahertz already auctioned), 18 megahertz on an EA basis, and 28 megahertz on an REAG/EAG basis (including 6 megahertz already auctioned on an EAG basis, which are large licenses similar to REAGs).

67. This mix achieves a balance among different geographic area sizes that is similar to that provided in the AWS-1 band plan. The following figure compares the amount of spectrum for CMAs, EAs, and EAGs/REAGs in the AWS-1 Band to that for the revised 700 MHz Band, excluding the Guard Band spectrum and the spectrum designated for use as part of the 700 MHz Public/Private Partnership.

FIGURE 9: COMPARISON OF AWS AND 700 MHZ SPECTRUM

	AWS		Unauctioned and Auctioned 700 MHz Band		Unauctioned 700 MHz Band	
	Spectrum (megahertz)	Percent	Spectrum (megahertz)	Percent	Spectrum (megahertz)	Percent
Analysis of Paired Spectrum Only						
CMA	20	22.2 %	24	41.4 %	12	26.1 %
EA	30	33.3 %	12	20.7 %	12	26.1 %
REAG/EAG	40	44.4 %	22	37.9 %	22	47.8 %
Total	90		58		46	
Analysis of Paired and Unpaired Spectrum						
CMA	20	22.2 %	24	34.3 %	12	23.1 %
EA	30	33.3 %	18	25.7 %	18	34.6 %
REAG/EAG	40	44.4 %	28	40.0 %	22	42.3 %
Total	90		70		52	

Analysis does not include 10 megahertz for the Upper 700 MHz D Block License and 4 megahertz for Guard Bands.

68. As with AWS-1, the majority of the spectrum in the 700 MHz Band will be licensed by CMAs or EAs. Specifically, in the AWS-1 Band, 55.5 percent of the entire spectrum was licensed by CMAs or EAs (22.2 percent and 33.3 percent, respectively), while for the 700 MHz Band, 60 percent will be licensed by CMAs or EAs (34.3 and 25.7 percent). In addition, a substantial portion of the 700 MHz Band will be licensed by large service areas (REAGs/EAGs). Whereas 44.4 percent of the AWS-1 Band was licensed by REAGs, 40 percent of the 700 MHz Band will be licensed by either REAGs or EAGs.

69. Regarding the size of available spectrum blocks, we provide for one large, 22-megahertz spectrum block (comprised of paired 11-megahertz blocks) in the 700 MHz Band to promote more innovative and efficient broadband deployment in this band. As the Commission found in the AWS-1 proceeding, 20-megahertz (or larger) spectrum blocks enable a broader range of broadband services (including Internet access at faster speeds), accommodate future higher data rates, and provide operators with additional capacity and, importantly, flexibility.[154] Based on that finding, in the AWS-1 band plan, three of the five spectrum blocks (66% of the total available spectrum) were made available in large 20-megahertz blocks.[155] Although we are departing from the AWS-1 band plan by licensing most spectrum

[154] *AWS-1 Order on Reconsideration*, 20 FCC Rcd at 14066-67 ¶ 15 (larger 20-megahertz blocks should enable a broader range of broadband services, and accommodate future higher data rates); *see also* Service Rules for Advanced Wireless Services in the 1.7 and 2.1 GHz Bands, WT Docket No. 02-353, *Report and Order*, 18 FCC Rcd 25162, 25178 ¶ 44 (2003) (*AWS-1 Report and Order*).

[155] *AWS-1 Order on Reconsideration*, 20 FCC Rcd at 14066-67¶ 15, 14068-69 ¶ 19-20. In the AWS-1 band plan, three of the six license blocks, involving two-thirds of the band (totaling 60 megahertz) were licensed by large, 20-megahertz blocks. *Id.* at 14069 ¶ 20.

blocks in the 700 MHz Band in smaller sizes,[156] we conclude that licensing one of the 700 MHz Band spectrum blocks as a 22-megahertz spectrum block enhances broadband deployment and stimulates new entry.

70. We discuss in more detail below the revised band plan, including our decisions regarding the specific placement of the CMA, EA, and REAG licenses and the size of the spectrum blocks. We revise the size and location of the spectrum blocks in the Upper 700 MHz Band, consistent with our decisions to change the spectral location of the Guard Bands and make an additional 2 megahertz of commercial spectrum available for auction based on our reducing the size of the Guard Band B Block, and designate a 10-megahertz spectrum block (comprised of two 5-megahertz paired blocks) adjacent to the Public Safety spectrum as part of the 700 MHz Public/Private Partnership.

71. *CMAs in a 12-Megahertz Spectrum Block (Comprised of Paired 6-Megahertz Blocks) in the Lower 700 MHz Band B Block.* We will license one additional spectrum block in the 700 MHz Band on a CMA basis, to be located in the B Block of the Lower 700 MHz Band immediately adjacent to the existing CMA-based licenses. As reflected in the record, there is demand by small and rural providers for smaller areas such as CMAs.[157] Providing for an additional 700 MHz Band spectrum block licensed on a CMA basis may allow small and rural providers to obtain license areas that meet their needs while avoiding the transaction costs associated with obtaining access to spectrum in the secondary market, costs that are incurred when these small providers must arrange the terms by which another licensee grants access to its spectrum by means of partitioning, disaggregation, or spectrum leasing.[158] Accordingly, we

[156] We depart from the AWS-1 band plan by licensing most of the 700 MHz Band over smaller blocks as part of our effort to balance several competing goals in the band plan. We note in particular our decision to assign the Upper 700 MHz Band's D Block over 10 megahertz (comprised of paired 5 megahertz blocks) as part of a unique Public/Private Partnership. In addition, we facilitate access to spectrum by smaller service providers by maintaining the size of all the spectrum blocks in the Lower 700 MHz Band. This approach to the Lower 700 MHz Band is consistent with our proposal in the *700 MHz Further Notice*, 22 FCC Rcd at 8130 ¶ 178 which was supported by several parties in the record, *see* TCA *700 MHz Further Notice* Reply Comments at 2-4; Leap *700 MHz Further Notice* Comments at 3; Cellular South *700 MHz Further Notice* Reply Comments at 6.

[157] *See* 700 MHz Independents *700 MHz Further Notice* Comments at 2; Blooston *700 MHz Further Notice* Comments at 2-4; Centennial *700 MHz Further Notice* Comments at 3, 5; C&W *700 MHz Commercial Services Notice* Comments at 3; Core *700 MHz Commercial Services Notice* Reply Comments at 4; Frontier *700 MHz Further Notice* Comments at 2-4, 6; Embarq *700 MHz Further Notice* Comments at 8; NTCA *700 MHz Further Notice* Comments at 3-5; RCA *700 MHz Further Notice* Comments at 2; RTG *700 MHz Further Notice* Reply Comments at 4-7; WISPA *700 MHz Further Notice* Comments at 5; Union *700 MHz Further Notice* Reply Comments at 7; USA Broadband *700 MHz Further Notice* Reply Comments at 2; *see also* Vermont et al. *700 MHz Further Notice* Reply Comments at 5-6. We note that McBride asks that we license all of the spectrum over CMAs, but we already have decided in the *700 MHz Report and Order* to license the spectrum using a mix of geographic areas. *700 MHz Report and Order*, 22 FCC Rcd at 8082 ¶ 42. We also note that Frontier requests that we consider licensing spectrum over a geographic area smaller than CMAs, but we have already declined to adopt service areas smaller than CMAs. *Id.* at 8085 ¶ 46.

[158] *See* Union *700 MHz Commercial Services Notice* Comments at 3 (stating that the "process of aggregating, disaggregating, and partitioning add significant costs and complexity, and can delay initiation of service, especially for small rural carriers"); U.S. Cellular *700 MHz Commercial Services Notice* Comments at 9; *see also* Howard/Javed Comments at 12 ; 700 MHz Independents *700 MHz Further Notice* Comments at 2 (commenting that due to factors including transaction costs, large companies generally have been uninterested and unwilling to partition or lease the rural portions of their license areas); Corr *700 MHz Commercial Services Notice* Comments at 2 (partitioning and disaggregation has not worked to break up larger pieces of spectrum); Consumer Federation of America, *et al. 700 MHz Commercial Services Notice* Comments at 5 (prospective new entrants often are at mercy in the secondary market of license holders); Sprint Nextel *700 MHz Further Notice* Comments at 6 (stating that bidders interested in smaller geographic license areas would have to convince larger area license winner to partition, and then incur the "often quite substantial transaction costs").

find that additional small area licenses based on CMAs should be available in the 700 MHz Band to allow smaller and more rural bidders to match their particular needs to the licenses available at auction and avoid potential transaction costs.[159] This approach is consistent with the Commission's objectives to promote economic opportunity and competition, as well as the dissemination of licenses to a wide variety of applicants, including small and rural providers.[160]

72. We find that the 12-megahertz B Block (comprised of paired 6-megahertz blocks) in the Lower 700 MHz Band is the appropriate spectrum band for the CMA licenses. As discussed above, several commenters specifically recommend that the B Block be assigned using CMAs.[161] By providing for CMAs in the Lower 700 MHz Band B Block, licensees will be afforded the opportunity to combine B Block licenses with licenses in the adjacent C Block, which already have been licensed over CMAs.[162] The Commission has favored placing spectrum blocks with the same type of geographic area licenses adjacent to one another because this approach enables licensees to more easily aggregate the adjacent channel licenses, whether at auction or in the secondary market.[163] While we are not creating a larger spectrum block for CMAs (*e.g.*, a 20-megahertz block), as requested by some parties,[164] we do not find

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[159] *See* 700 MHz Independents *700 MHz Further Notice* Comments at 5; U.S. Cellular *700 MHz Commercial Services Notice* Reply Comments at 4; Blooston *700 MHz Commercial Services Notice* Comments at 2; RTG *700 MHz Commercial Services Notice* Comments at 5; Howard/Javed *700 MHz Commercial Services Notice* Comments at 10. In the AWS-1 proceeding, the Commission stated that "RSAs and MSAs allow entities to mix and match rural and urban areas according to their business plans and that, by being smaller, these types of geographic service areas provide entry opportunities for smaller carriers, new entrants, and rural telephone companies." *AWS-1 Order on Reconsideration*, 20 FCC Rcd at 14066 ¶ 14.

[160] *See Lower 700 MHz Report and Order*, 17 FCC Rcd at 1061 ¶ 95 (*quoting* 47 U.S.C. § 309(j)(3)(B)). The Commission also is to "prescribe area designations and bandwidth assignments that promote ... economic opportunity for a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by members of minority groups and women." 47 U.S.C. 309(j)(4)(C).

[161] *See, e.g.*, 700 MHz Independents *700 MHz Further Notice* Comments at 2; Aloha *700 MHz Further Notice* Comments at 3-4; Blooston *700 MHz Further Notice* Comments at 2-3; Cellular South *700 MHz Further Notice* Comments at 10; Dobson *700 MHz Further Notice* Comments at 3; NTCA *700 MHz Further Notice* Comments at 3-4; RTG *700 MHz Further Notice* Comments at 3; RCA *700 MHz Further Notice* Comments at 11; WISPA *700 MHz Further Notice* Comments at 4; MilkyWay *700 MHz Commercial Services Notice* Comments at 1; ; MetroPCS *700 MHz Further Notice* Comments at 15; Leap *700 MHz Further Notice* Comments at 3; Corr *700 MHz Commercial Services Notice* Reply Comments at 4; *see also* Comments of Rural Telecommunications Group, Inc. in Support of Modification of License Area Sizes for 700 MHz Spectrum, Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), GN Docket No. 01-74, Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, Rural Telecommunications Group, Inc. (filed Sept. 27, 2005) (requesting that MSA/RSA licenses be provided for Lower Band Block B and Upper Band Block C, totaling 22 megahertz of spectrum).

[162] *See* Corr *700 MHz Commercial Services* Reply Comments at 4; RTG *700 MHz Further Notice* Comments at 4; 700 MHz Independents *700 MHz Further Notice* Comments at 4-5; Cellular South *700 MHz Further Notice* Comments at 10; Union *700 MHz Further Notice* Comments at 4; USA Broadband *700 MHz Further Notice* Comments at 2.

[163] *AWS-1 Order on Reconsideration*, 20 FCC Rcd at 14067 ¶ 20. We recognize that our decision may alter the ability of licensees in Blocks A and B of the Lower 700 MHz Band to aggregate those licenses since they will be licensed using EAs and CMAs. However, our overall decision respecting the size of geographic service areas and spectrum blocks provides opportunities for licensees to obtain wider bandwidth, including through the potential aggregation of Blocks B and C of the Lower 700 MHz Band.

[164] *See* Polar *700 MHz Commercial Services Notice* Comments at 1 (arguing that a 20 megahertz block should be auctioned over CMAs); *see also* NTCA *700 MHz Commercial Services Notice* Comments at 2, 6-7 (prior to (continued....)

that this step is necessary because converting the B Block to CMA licensing creates opportunities for small or rural service providers to create a 24-megahertz CMA block in any given geographic area by aggregating spectrum in the revised B Block and the existing C Block. As a result, small and rural bidders may acquire rights to a large amount of contiguous spectrum over small geographic service area, which provides the potential for more flexibility in broadband services to be offered and technologies to be deployed. These opportunities are particularly important because the boundaries of CMA-based licenses do not match the boundaries of licenses based on EAs, EAGs, or REAGs, and therefore may be most usefully aggregated with other CMA licenses.

73. For these reasons, we do not adopt EAs for the B Block.[165] Providing for an additional CMA spectrum block in the Lower Band B Block comports with the record and will help us achieve a balanced mix of geographic service area sizes in this band that is similar to the Commission's approach to the AWS-1 spectrum. As part of this balance, and as discussed below, we also establish two EA license blocks in the 700 MHz Band in order to address concerns raised by those parties requesting EA licenses.

74. *REAGs in a 22-Megahertz Spectrum Block (Comprised of Paired 11-Megahertz Blocks) in the Upper 700 MHz Band C Block.* In addition to making licenses available by a variety of geographic areas sizes, including CMAs, we also find that we need to make available at least one large spectrum block. Having determined that we will provide for a 12-megahertz CMA block in the Lower 700 MHz B Block and a 10-megahertz spectrum block adjacent to the Public Safety spectrum, we conclude that a 22-megahertz block of paired spectrum should be located in the C Block in the Upper 700 MHz Band and licensed on a REAG basis. This approach is consistent with our goal of promoting broadband services in this band, and will provide important benefits to potential users of this spectrum that may need large spectrum blocks as well as large geographic areas. Because we provide for package bidding for licenses in this spectrum block, as discussed below, this large REAG block will be particularly important for potential new entrants and other bidders that seek to provide a nationwide service.[166]

75. With regard to the size of spectrum blocks, this C Block will be the only spectrum block larger than 12 megahertz in the 700 MHz Band.[167] The inclusion of this large block results in a greater mix of licenses in the 700 MHz Band and gives prospective licensees an additional choice in acquiring the amount of spectrum consistent with the technologies and spectrum architecture they may plan to deploy. A large spectrum block makes available licenses of varying bandwidth and provides for the 700 MHz Band the sort of reasonable balance that we achieved for AWS-1 spectrum.[168] As the Commission previously determined for AWS-1 spectrum, which is similarly useful for providing wireless broadband service,[169] larger spectrum blocks offer important benefits, including providing sufficient spectrum to

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supporting Balanced Consensus Plan, arguing that a 20 megahertz block should be auctioned over CMAs); Dobson *700 MHz Commercial Services Notice* Comments at 4-5 (prior to supporting Balanced Consensus Plan, arguing that two CMA blocks should be auctioned, one comprised of 20 megahertz and one comprised of 10 megahertz).

[165] *See* Navajo Nation *700 MHz Commercial Services Notice* Comments at 1.

[166] As we discuss elsewhere in this order, this 22-megahertz block will be revised to provide for two paired blocks of spectrum in the event certain provisions relating to the aggregate reserve price for that block are not met.

[167] For the AWS-1 spectrum, three of the six licenses were of wider bandwidth, *i.e.*, 20 megahertz (comprised of two 10-megahertz paired blocks). *See AWS-1 Order on Reconsideration*, 20 FCC Rcd at 14069 ¶ 20.

[168] However, as we discuss elsewhere, with respect to sizes of spectrum blocks, we are departing from the AWS-1 band plan by licensing more spectrum blocks in the 700 MHz Band in smaller sizes.

[169] *See AWS-1 Report and Order*, 18 FCC Rcd at 25178 ¶ 44; *AWS-1 Order on Reconsideration*, 20 FCC Rcd at 14066-67 ¶ 15.

support the deployment of new and emerging competitors[170] and the opportunity to achieve high data transmission rates for large numbers of customers.[171] Large blocks also offer benefits with respect to economies of scale, providing an opportunity for licensees to develop new technologies and services, and additional flexibility.[172]

76. Licensing a spectrum block of this size in the 700 MHz Band could also enable the development of technologies that will produce bit rates far beyond those available with today's technologies.[173] Although existing 3G technologies, such as CDMA-2000 and Wideband CDMA, can readily be accommodated on blocks of 2.5-megahertz (paired 1.25-megahertz blocks) and 10-megahertz (paired 5-megahertz blocks),[174] respectively, we anticipate that Fourth Generation (4G) technologies will be able to take advantage of wider spectrum blocks, such as the 22-megahertz block we adopt in this Second Report and Order, to produce bit rates that are a significant increase beyond those currently achievable with today's technologies.[175] By creating a larger spectrum block in the 700 MHz Band, we will enable the provision of many services, including VoIP, broadband internet access, and streaming audio and video programming, to be offered at higher speeds, to a greater number of subscribers, and with more advanced capabilities than could be offered on smaller-sized spectrum blocks in the band.

77. These capabilities are especially important for new entrants that want to compete directly

[170] *See* CTIA *700 MHz Commercial Services Notice* Comments at 6-7 (addressing a 20-megahertz block); CCIA *700 MHz Further Notice Comments* at 3 (commenting that a larger block will improve chances for creating a new nationwide wireless broadband network).

[171] *See* Qualcomm *700 MHz Commercial Services* Comments at 11-12, 18; Motorola *700 MHz Commercial Services* Comments at i, 3, 5-6; Verizon Wireless *700 MHz Further Notice* Comments at 11-12 (stating that 4G services will require large blocks to achieve fastest data rates).

[172] *See* CCIA *700 MHz Further Notice* Comments at 3 (stating that a new nationwide wireless broadband network resulting from use of large block could take advantage of economies of scale); Verizon Wireless *700 MHz Further Notice* Comments at 7-8 (commenting that a larger spectrum block "will help to ensure the near-term deployment of next generation wireless broadband networks, providing the best opportunity for the United States to lead the world in 4G wireless development."); 4G *700 MHz Further Notice* Comments at 2-4 (technologies with adjustable signal bands can benefit from larger blocks, as can technologies with fixed waveforms); Google *700 MHz Further Notice* Comments at 7 (commenting that a larger block will provide greater flexibility for some technologies, and provide greater capacity for others); Motorola *700 MHz Commercial Services Notice* Comments at 5 (commenting that wider blocks afford licensees the flexibility to deploy advanced broadband services that operate using wider channels); Qualcomm *700 MHz Commercial Services Notice* Comments at 18 (commenting that a larger spectrum block will facilitate the delivery of the most technically advanced wireless services in this and the next decade); *see also* DIRECTV/EchoStar *700 MHz Commercial Services Notice* Comments at 12 (commenting that a block of 20-megahertz may not be enough for the services they envision; technology now under development would use larger, contiguous spectrum blocks).

[173] *See* Verizon Wireless *700 MHz Further Notice* Comments at 11-12 ("wireless broadband deployment requires more contiguous spectrum, and emerging 4G technologies require 20 megahertz of spectrum to achieve the fastest possible data rates").

[174] Certain commenters argue that paired 5 megahertz blocks provide sufficient capacity for some technologies, *see* Sprint Nextel *700 MHz Further Notice* Comments at 2, MetroPCS *Further Notice* Comments at 7-8, or that a 22-megahertz block is unnecessary and diverts the use of spectrum from frequency arrangements that could lower the technical requirements for the broadband technologies, *see* Ericsson *700 MHz Further Notice* Comments at 2.

[175] While 1x EVDO Rel 0 supports 2.4 Mbps over a 1.25 MHz channel, 1x EVDO Rev C or Ultra MobileBroadband (UMB) 4G technology is projected to support 40 Mbps data rate in a paired 10 MHz channel or approximately twice the spectral efficiency. *See* Qualcomm, "Qualcomm Introduces Complete solution for Ultra Mobile Broadband" at http://www.qualcomm.com/press/releases/2007/070327_complete_solution_ultra.html.

with wireline broadband alternatives, which are increasingly moving to fiber networks capable of very high data rates. While many planned 4G technologies may offer narrow channel bandwidths for migration purposes, a 20-megahertz block (comprised of paired 10-megahertz blocks) is the minimum size needed to accommodate anticipated higher data rates. Based on the Third Generation Partnership Project 2 (3GPP2) standards, 1x-EVDO Rev. C, or UMB is expected to support 40 Mbps data rate on the down link.[176] Based on the Third Generation Partnership Project (3GPP) Long Term Evolution (LTE) technology, down link peak data rates up to 50 Mbps in a 10-megahertz paired channel are anticipated.[177] In addition, the IEEE 802.16m project targets a minimum of 65 Mbps in a 10-megahertz paired channel.[178] None of these standards groups expect 4G technologies data rates to reach these anticipated, or higher peak data rates with less than a 20-megahertz block (paired 10-megahertz blocks). Thus, a 22-megahertz spectrum block, or effectively 20 megahertz (2 x 10 MHz), will enable licensees to deploy Fourth Generation (4G) wireless technologies designed to compete with high-capacity wireline offerings.

78. Providing for a large spectrum block also eliminates the need for internal guard bands that would otherwise be necessary if two smaller spectrum blocks were acquired by different licensees. The use of two, rather than four, internal guard bands, associated with a larger spectrum segment, allows increases in network capacity and higher data throughput rates even with existing technologies. For example, as we observed in the *700 MHz Commercial Services Notice*, if a large spectrum block were divided into two smaller blocks, the overall data throughput rates of 1xEV-DO transmissions would decrease by 14 percent.[179] This lower data throughput level would be caused by the need to place 0.625-megahertz guard bands at both ends of two separate blocks and the resulting loss of usable spectrum from having four, rather than two, internal guard bands.[180]

79. A larger 22-megahertz spectrum block (comprised of paired 11-megahertz blocks) also would provide flexibility for C Block licensees to address potential interference issues. Base stations in certain blocks in the Lower 700 MHz Band may operate at power levels up to 50 kW ERP if specific power flux density (PFD) limits are met.[181] The 22-megahertz Upper 700 MHz Band C Block would contain sufficient spectrum for a licensee to designate some spectrum as an internal guard band without unduly compromising data rates. Given the elimination of the Guard Band A Block previously at the bottom of the Upper 700 MHz Band, *i.e.*, at 746-747 MHz, this would permit Upper 700 MHz Band C Block licensees to address any potential concerns regarding interference from high power operations in

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[176] *Id.* Note that 4G systems may utilize higher modulation schemes and MIMO systems to increase the data rate in both the down and up links.

[177] *See* 3G americas "Mobile Broadband, EDGE, HSPA & LTE" at http://www.3gamericas.org/PDFs/white_papers/2006_Rysavy_Data_Paper_FINAL_09.15.06.pdf at 55 (Sept. 2006).

[178] *See* IEEE 802.16 Broadband Wireless Access Working Group, "Draft IEEE 802.16m Requirements" at http://ieee802.org/16/tgm/docs/80216m-07_002r2.pdf. Using a minimum spectral efficiency of 6.5 bps/Hz will yield a minimum peak data rate of 65 Mbps in 10 MHz bandwidth (2 x 10 MHz).

[179] *700 MHz Commercial Services Notice*, 21 FCC Rcd at 9371 n.144.

[180] The CDMA Development Group reports that a single 1xEV-DO (Rev. 0) transmission on a 10-megahertz block produces a throughput of 4200-6090 kb/s, but two 1xEV-DO (Rev. 0) transmissions on two 5-megahertz blocks produce a throughput of only 3600-5220 kb/s. *700 MHz Commercial Services Notice*, 21 FCC Rcd at 9371 n.144, citing Delivering Voice and Data: Comparing CDMA2000 and GSM/GPRS/EDGE/UMTS, CDMA Development Group, Dec. 2005 available at http://www.cdg.org/resources/white_papers/files/Capacity%20Dec%202005.pdf. The CDMA Development Group is a consortium comprised of CDMA service providers and manufacturers, application developers, and content providers.

[181] *See* 47 C.F.R. § 27.50(c).

the Lower 700 MHz C Block.[182] Accordingly, under our revised band plan, the 22-megahertz block not only provides flexibility for the deployment of 4G services and technologies, but offers Upper 700 MHz Band C Block licensees the flexibility to address any interference concerns they may have.

80. For all these reasons, we find that providing for one 22-megahertz spectrum block serves the public interest. We reject the band plan proposals of Northrop Grumman, AT&T, Cyren Call, and Frontline, because each of these proposals are premised on the adoption of a band plan with spectrum blocks that are significantly smaller than the new 22-megahertz C Block.[183] We also reject arguments that by adopting a single large block we are favoring a particular business model or potential bidder,[184] or limiting competition or participation in the auction.[185] Adopting a large spectrum block is part of our effort to provide an appropriate mix of licenses and is consistent with the positions of many other commenters. Many commenters responding to the *700 MHz Commercial Services Notice* supported the retention of a larger, *e.g.*, 20-megahertz block,[186] and the record has continued to demonstrate support for a larger spectrum block in the band.[187]

81. With regard to the size of geographic service areas, the use of REAGs for the Upper 700 MHz Band C Block also will provide a number of benefits. First, as the Commission noted in adopting the AWS-1 band plan, the use of REAGs may meet the needs of carriers interested in creating a large regional or nationwide service area, which may be especially important for new entrants.[188] In particular, the use of large geographic service areas helps reduce transaction costs to both auction participants seeking to aggregate adjoining smaller geographic areas at auction and licensees seeking to consolidate such areas post auction. At the same time, REAGs are not so large as to preclude medium-sized providers from acquiring them at auction. For example, in the auction for AWS-1 licenses, MetroPCS acquired a REAG license for the highly populated Northeastern U.S., and Cricket acquired a REAG license for the Central U.S.

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[182] *See* Verizon Wireless *700 MHz Further Notice* Comments at 16-17 (stating that sufficient spectrum would be available with a 22-megahertz block to allow the commercial licensee to designate a potion of the spectrum as an internal guard band); *see also* 4G Coalition *700 MHz Further Notice* Comments at 3-4 (commenting on the potential for a buffer to account for potential interference).

[183] *See* Northrup Grumman *700 MHz Further Notice* Comments at 5-6; AT&T *700 MHz Further Notice* Comments at 4-5; Cyren Call *700 MHz Further Notice* Comments at 39; Frontline *700 MHz Further Notice* Comments at 51-54.

[184] *See* Cellular South *700 MHz Further Notice* Reply Comments at 7; MetroPCS *700 MHz Further Notice* Comments at 6, 26; SpectrumCo *700 MHz Further Notice* Comments at 13.

[185] *See, e.g.*, Cellular South *700 MHz Further Notice* Comments at 12, 15; Leap *700 MHz Further Notice* Reply Comments at 2-3; Sprint *700 MHz Further Notice* Comments at 3-5;

[186] *See, e.g.*, DIRECTV/EchoStar *700 MHz Commercial Services* Reply Comments at 7-8 (dividing the 20-megahertz D Block would artificially limit the types of services available in the 700 MHz Band); Motorola *700 MHz Commercial Services* Comments at 5 (generally recommending that commercial spectrum be licensed in wider spectrum blocks); Qualcomm *700 MHz Commercial Services* Comments at 18 (the D Block should remain intact because certain technologies require 20-megahertz bandwidth for fastest possible data transmission); Verizon Wireless *700 MHz Commercial Services* Reply Comments at 6-7 (asserts that a 20-megahertz paired license should be retained); CTIA *700 MHz Commercial Services* Comments at 6-7 (supports maintaining at least 20 megahertz of paired spectrum in the Upper 700 MHz Band D Block).

[187] *See* PISC *700 MHz Further Notice* Comments at 36; 4G Coalition *700 MHz Further Notice* Comments at 2-4, 6; Google *700 MHz Further Notice* Comments at 7; Verizon Wireless *700 MHz Further Notice* Comments at 11, 16; WCA *700 MHz Further Notice* Comments at 3.

[188] *See AWS-1 Report and Order*, 18 FCC Rcd at 25176 ¶ 38.

82. Whether used for providing service over a region or aggregated to provide nationwide service, because REAGs represent larger geographic areas, they help lower the costs of acquiring a larger customer base to achieve economies of scale.[189] To the extent licensees are better able to create large service areas and achieve economies of scale, they are better able to offer new and innovative services, including advanced broadband services. When combined with a large spectrum block, the use of REAGs may be even more effective in promoting these benefits, especially the provision of wireless broadband services.

83. *EAs in a 12-Megahertz Spectrum Block (Comprised of Paired 6-Megahertz Blocks) in the Lower 700 MHz Band A Block.* We adopt EAs as the geographic service area for licenses in Block A of the Lower 700 MHz Band, making 176 licenses available in this block. Similar to the Commission's approach for the AWS-1 spectrum, we find that there may be benefits to locating the EA block next to a CMA block, given that smaller providers can benefit from both CMA and EA blocks.[190] Because other portions of the 700 MHz Band are more appropriate for CMAs and REAGs, for reasons described above, we therefore will assign licenses based on EAs in the A Block of the Lower 700 MHz Band.

84. By adopting EAs in the 700 MHz Band, the Commission will provide potential applicants additional flexibility to implement their business plans by allowing these parties the option of bidding on a geographic license area based on a size that is between smaller CMAs and larger REAGs.[191] This benefit may occur in several ways. Bidders that want license areas smaller than REAGs but larger than CMAs will have an opportunity to acquire spectrum more appropriate for their business plans either by obtaining a single EA license or aggregating multiple EA licenses.[192] The transaction costs of such aggregation should be lower than they are for licenses based on CMAs, which are smaller and thus require more licenses to cover the same geographic area. In addition, because EAs are building blocks for REAGs, EA licenses and REAG licenses can be combined to form larger service territories or larger spectrum holdings within certain geographic markets.[193] Existing service providers also can acquire EA

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[189] *Id.*

[190] *AWS-1 Order on Reconsideration*, 20 FCC Rcd at 14066 ¶ 14, 14068 ¶ 18.

[191] The Commission provided for a 10-megahertz block of EA licenses in the AWS auction, and the data from that auction demonstrates that 10-megahertz EA licenses provided an alternative to CMA licenses for small bidders. Of the 176 Block C licenses offered in Auction No. 66, 173 licenses were won (98.3 percent). Of those 173 licenses, 40 licenses (23.1 percent) were won by small businesses that were eligible for bidding credits in the auction. The Commission also provided for a 20-megahertz block of EA licenses in the AWS auction.

[192] *See* Union *700 MHz Commercial Services Notice* Comments at 3-4 (obtained EA and CMA licenses in Auction No. 66 due to affordability and ability to integrate); WCA *700 MHz Further Notice* Comments at 12 (commenting that EAs allow companies of various sizes and with a variety of business plans to compete for spectrum); Navajo Nation *700 MHz Commercial Services Notice* Comments at 1 (EA licensees will have more of a localized interest and allow for focusing on improving services in local area); *see also* SpectrumCo *700 MHz Further Notice* Comments at 10 (commenting that EAs accommodate the demand of bidders to acquire licenses with an array of service territory sizes and license configurations). In Auction No. 66, of 104 winning bidders, 70 (approximately 67%) won CMA licenses only, and 21 (approximately 20%) won only EA or combinations of EA and CMA licenses. *See* U.S. Cellular *700 MHz Commercial Services Notice* Comments at 6; U.S. Cellular *700 MHz Commercial Services Notice* Reply Comments at 8.

[193] *See AWS-1 Report and Order*, 18 FCC Rcd at 25176 ¶ 37; *see also* 47 C.F.R. § 27.6(a) (reflecting that REAGs and MEAs are based on EAs). This building block approach makes EA and REAGs, coupled with existing MEA licenses in the 700 MHz Band, preferable to the use of Metropolitan Trading Areas (MTAs) which we decline to adopt for this spectrum. We note that the Vermont Department of Public Service, *et al.* initially proposed the use of MTAs, but subsequently stated its support for our lower band proposal in the *700 MHz Further Notice* which does not include MTAs. *Compare* Vermont Department of Public Service, *et al. 700 MHz Commercial Services Notice* Comments at 4 (suggesting adoption of MTAs) *with* Vermont Department of Public Service, *et al. 700 MHz Further* (continued....)

license areas to supplement their existing spectrum capacity.[194] For these reasons, service providers will be afforded flexibility by the availability of EA licenses and REAG licenses in the 700 MHz Band,[195] and this flexibility will serve to advance opportunities for broadband deployment, including timely deployment to rural areas.

85. We find that the 12-megahertz A Block (comprised of paired 6-megahertz blocks) in the Lower 700 MHz Band is appropriate spectrum for EA licenses. This determination will create opportunities for a variety of bidders, including small and regional providers, to acquire licenses for small geographic service areas in the Lower 700 MHz Band.[196] Because the A Block is next to a second 12-megahertz block of spectrum, the B Block, that will be licensed using CMAs, small, regional, and rural providers will also have opportunities to combine these blocks.[197] This is consistent with the AWS-1 band plan, which also included a spectrum block of this size on an EA basis that was located immediately adjacent to a CMA block.[198] Also, licensees will have additional flexibility resulting from the opportunity to combine the spectrum in A Block with the adjacent unpaired E Block spectrum which, as we determine below, also will be licensed over EAs. We conclude that licensing the paired spectrum in Block A of the Lower 700 MHz band on an EA basis is in the public interest.

86. *EAs in a 6-Megahertz Unpaired Spectrum Block in the Lower 700 MHz Band E Block.* We also adopt EAs for the unpaired 6-megahertz E Block of the Lower 700 MHz Band. A second spectrum block comprised of EA licenses in the 700 MHz Band further enhances the mix of geographic sizes for licenses in the band. By providing for EA-licensing in this block, the licenses in the 700 MHz Band will consist of two licenses for each of the geographic areas we adopted in the *700 MHz Report and Order* – CMAs, EAs, and REAGs/EAGs. We find that such a balance of service areas in this spectrum is consistent with goals we discussed in the *700 MHz Report and Order*, including providing greater access to the spectrum by a variety of potential licensees.[199]

87. An EA service area for the E Block provides licensees with flexibility through the opportunity to combine spectrum. First, the E Block spectrum can be combined with the adjacent A Block spectrum which, as we discuss above, also will be licensed over EAs. Second, the E Block spectrum can be combined with the adjacent D Block spectrum, which has been assigned over EAGs, because EAs are building blocks for EAGs and thus provide the opportunity for licensees to combine spectrum and thus enhance flexibility.

88. Adopting EAs for the E Block also affords a wider range of potential licensees with the opportunity to take advantage of the power level that applies to the Lower 700 MHz Band. As we found in the *700 MHz Report and Order*, unpaired spectrum blocks provide an environment "conducive to the

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Notice Comments at 5-6 (fully supporting the lower band proposal in the *700 MHz Further Notice*). We also note that the geographic areas we adopt in this Second Report and Order are consistent with the geographic areas used for AWS-1 licensing, while MTAs are not, which may further facilitate spectrum use.

[194] *See* SpectrumCo *700 MHz Further Notice* Comments at 10; WCA *700 MHz Further Notice* Comments at 12-13.

[195] *See AWS-1 Report and Order*, 18 FCC Rcd at 25176 ¶ 37 ("[T]he licensing areas we have chosen will allow licensees to make adjustments to suit their individual needs.").

[196] *See* WCA *700 MHz Further Notice* Comments at 12; Balanced Consensus Proposal Reply Comments, Attach.; SpectrumCo *700 MHz Further Notice* Comments at 10-11.

[197] We note, for example, that the AWS-1 band plan locates the CMA block immediately adjacent to an EA block. *See AWS-1 Order on Reconsideration*, 20 FCC Rcd at 14069 ¶ 20.

[198] *See* Auction of Advanced Wireless Services Licenses Closes; Winning Bidders Announced for Auction No. 66, Attach. A, *Public Notice*, 21 FCC Rcd 10521, 10529-84 (2006).

[199] *See 700 MHz Report and Order*, 22 FCC Rcd at 8082-85 ¶¶ 42-45.

provision of broadcast-type operations," and we therefore decided to permit these unpaired blocks to operate at a power level of 50 kW ERP.[200] Although some commenters argue that E Block should be licensed over REAGs,[201] by adopting geographic areas smaller than REAGs for this block, we enable access to spectrum by a wider range of licensees who may want to take advantage of the power level for this spectrum but who do not require a license covering a large geographic area.[202]

89. *Additional Issues Raised Regarding the Commercial Spectrum in the 700 MHz Band.* As mentioned above, in response either to the *700 MHz Commercial Services Notice* or the *700 MHz Further Notice*, some parties have raised additional issues regarding the band plan for this commercial spectrum. These remaining issues are addressed below.

90. We reject the proposal of Howard/Javed respecting the delivery of fixed broadband to underserved areas.[203] These proposals are beyond the scope of both the *700 MHz Commercial Services Notice* and the *700 MHz Further Notice*.[204] In addition, our other actions in this Second Report and Order, including the provision of a mix of different size service areas with small area licenses, take significant steps toward enhancing the 700 MHz Band spectrum for a wide variety of uses, including fixed wireless broadband.

91. We also reject Howard/Javed's proposal to adjust the band plan to reflect 10- and 14-megahertz blocks in the A and B Blocks, respectively, of the Lower 700 MHz Band. There is record support to maintain the size and location of the spectrum blocks in the Lower 700 MHz Band.[205] As we explain elsewhere in this Second Report and Order, we have decided to maintain the B Block at 12 megahertz (comprised of 6-megahertz pairs) to provide licensees the opportunity to combine that block with the C Block, which has already been licensed and also is a 12 megahertz block (comprised of 6-megahertz pairs) based on CMAs.[206] We also decline to adopt Howard/Javed's alternative suggestion that the B Block be made an asymmetrically paired 12-megahertz block with an unpaired E Block increased to 8 megahertz, to incorporate asymmetric download and upload capacity in broadband systems.[207] While Howard/Javed state that these proposals may be supported by the upcoming WiMax standards for this spectrum, these proposals are not necessary for the provision of WiMax in the 700 MHz Band. There also is little support in the record for such a band plan.

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[200] *Id.* at 8100 ¶ 95.

[201] *See* Cellular South *700 MHz Further Notice* Comments at 10-11; RCA *700 MHz Further Notice* Comments at 12.

[202] *See* Aloha *700 MHz Further Notice* Comments at 3 (commenting that EAs should be adopted for this block to accommodate small concerns interested in using the spectrum for one-way high powered transmissions).

[203] Howard/Javed propose that the Commission mandate that B Block of the Lower 700 MHz Band be used for delivering fixed wireless broadband to "underserved areas formally designated as such." *See* Howard/Javed *700 MHz Commercial Services* Comments at 38-40. Alternatively, they ask that separate procedures for MSAs, on the one hand, and RSAs, on the other hand, be employed respecting the use of fixed wireless broadband in those license areas, and that such procedures obligate B Block licensees to enter into agreements with parties proposing to use that spectrum to serve underserved areas. *Id.* at 40-41.

[204] *See generally 700 MHz Commercial Services Notice; 700 MHz Further Notice; see also* Howard/Javed *700 MHz Commercial Services* Comments at 38.

[205] *See* TCA *700 MHz Further Notice* Comments at 3-5; Leap *700 MHz Further Notice* Comments at 3; Cellular South *700 MHz Further Notice* Reply Comments at 6.

[206] We also determine elsewhere in this Second Report and Order that there are benefits associated with having a 12-megahertz A Block licensed on an EA basis next to the 12-megahertz B Block licensed on a CMA basis because small and regional providers will be able to combine these smaller area licenses with identical spectrum block sizes.

[207] Howard/Javed *700 MHz Commercial Services* Comments at 23.

92. In addition, we will not adopt the recommendation of Tropos that the A and B Blocks of the Lower 700 MHz Band should be auctioned and awarded to licensees that "would administer a contention based unlicensed spectrum environment."[208] We agree with CTIA and AT&T that Tropos's proposal is not consistent with the flexible use intended for this spectrum.[209] We also find that the technical rules are sufficient to permit the use of Tropos's technologies by a licensee in the 700 MHz Band. Finally, there is little support in the record for Tropos's proposal.

93. Corr requests that the C and D Blocks of the Upper 700 MHz Band be realigned to form two 15-megahertz blocks (each comprised of paired 7.5-megahertz blocks), with one licensed over EAGs and the other over REAGs.[210] Our decision to reconfigure the Upper 700 MHz Band in the manner adopted in this Second Report and Order meets the needs of a broad range of spectrum providers and the public. First, our decision to maintain a license with a wider bandwidth helps to provide a mix of license sizes throughout the entire 700 MHz Band so bidders will have options in acquiring licenses that best meet their requirements. Second, our decision to provide another license, with appropriate conditions, in conjunction with a public/private partnership to address broadband for public safety addresses important concerns relating to an interoperable public safety network.

94. We decline to adopt NextWave's proposed band plan, which is based on the use of unpaired spectrum blocks to allow for the development of TDD technologies.[211] Similarly, we will not adopt Navini's suggestion to allocate additional spectrum in the 700 MHz Band for mobile WiMAX deployment that is specially conducive to the use of TDD technology, *i.e.*, 15- or 30-megahertz spectrum blocks.[212] The 700 MHz Band already provides for two unpaired licenses, one of which remains to be assigned (*i.e.*, E Block of the Lower 700 MHz Band). In addition, the Commission provided for a flexible use approach with respect to the services and technologies, "including provision of the full range of FDD- and TDD-based wireless services."[213] The band plan we are adopting today is carefully crafted to provide a mix of licenses of various sizes and bandwidths for the entire 700 MHz Band to meet the competing needs of a wide range of commenters and to meet a number of important policy goals, and we find that maintaining the current size of the unauctioned unpaired spectrum band is consistent with our decisions

[208] *See* Tropos *700 MHz Commercial Services* Comments at 10.

[209] *See* CTIA *Commercial Services Notice* Reply Comments at 10-11; AT&T *Commercial Services Notice* Reply Comments at 13.

[210] *See* Corr *700 MHz Commercial Services* Comments at 3.

[211] *See* NextWave *700 MHz Commercial Services* Comments at 6-10 & Attach. I; NextWave *700 MHz Commercial Services* Reply Comments at 2-9 & Attach. I. NextWave's modified proposal includes two new *unpaired* 10-megahertz blocks and one new *paired* 10-megahertz block (comprised of two 5-megahertz blocks) in the Upper 700 MHz Band, and two new unpaired 12-megahertz blocks in the Lower 700 MHz Band. The size and location of the current unpaired 6-megahertz block, E Block in the Lower 700 MHz Band, would not be altered. *See* NextWave *700 MHz Commercial Services* Reply Comments at Attach. I. NextWave's original proposal suggested adopting unpaired spectrum blocks of 6-15 megahertz. *See* NextWave *700 MHz Commercial Services Notice* Comments at 7-8 & Attach. I. The reasons for opposing NextWave's proposal include: it would hamper the growth of alternative services, *see* AT&T *700 MHz Commercial Services* Reply Comments at 13-14 & n.32; MetroPCS *700 MHz Commercial Services* Reply Comments at 15; it has not been demonstrated that TDD will be successful in the marketplace, *see* MetroPCS *700 MHz Commercial Services* Reply Comments at 15; Alltel *700 MHz Commercial Services* Reply Comments at 5; and the Commission's decision should not favor a particular technology, *see* Cingular *700 MHz Commercial Services* Reply Comments at 10; AT&T *700 MHz Commercial Services* Reply Comments at 14.

[212] Navini *700 MHz Commercial Services* Comments at 1. Navini states that its current offering is built on a TDD scheme utilizing 16.5 megahertz bands. *Id.*

[213] *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1070-71 ¶ 125, 1051-52 ¶ 70.

regarding the rest of the band plan.

95. We also decline to adopt Google's suggestion that the Commission should require two-way broadband platforms in the E Block of the Lower 700 MHz Band.[214] The Commission has provided for flexibility in services to be offered and technologies to be deployed in the 700 MHz Band. In the *Lower 700 MHz Report and Order*, the Commission adopted a flexible allocation for the Lower 700 MHz Band which "will allow service providers to select the technology they wish to use to provide new services that the market may demand."[215] Google's proposal regarding the use of the Lower 700 MHz Band's E Block could reduce this flexibility, and thus restrict the extent to which any potential bidder and licensee could operate in the band. Google does not present evidence of any significant support for the Commission deviating from its policy respecting flexible use, and we do not agree with Google's suggestion that the E Block lacks any immediate commercial value. The record reflects that the similar unpaired 6-megahertz D Block in the Lower 700 MHz Band, which is adjacent to E Block, is being used by Qualcomm for its MediaFLO service.[216] As discussed elsewhere in this Second Report and Order, service providers that hold licenses for the Lower 700 MHz Band E Block will have significant incentives to provide advanced broadband and other services. In addition, by licensing the E Block over smaller geographic areas, EAs, we are providing the opportunity for a wider range of potential licensees to access this spectrum. We therefore see no need to condition the use of this block as requested by Google.

96. Finally, we do not address a reallocation of additional spectrum for public safety purposes as discussed by Association of Public-Safety Communications Officials-International, Inc. (APCO), International Association of Chiefs of Police, International Association of Fire Chiefs, Major Cities Chiefs Association, Major County Sheriffs Association, and National Sheriffs' Association in their comments on the *700 MHz Commercial Services Notice*.[217] As these commenters acknowledge, such a reallocation is beyond the Commission's current statutory authority.[218] In any event, we are adopting

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[214] *See* Letter from Richard S. Whitt, counsel for Google Inc. to Marlene H. Dortch, Secretary, FCC, in WT Docket No. 06-150 (filed May 21, 2007) ("Google May 21 *Ex Parte* in WT Docket No. 06-150") at 4-5. Specifically, Google argues that the E Block "only should be (1) utilized for interactive, two-way broadband services, (2) connected to the public Internet, and (3) used to support innovative software-based applications, services, and devices." *Id.* at 4.

[215] *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1023 ¶ 1. The Commission further found that a flexible use approach was consistent with Section 303(y) of the Communications Act, which requires the Commission to make affirmative findings that a proposed flexible use allocation (1) is consistent with international agreements; (2) would be in the public interest; (3) would not deter investment in communications services and systems, or technology development; and (4) would not result in harmful interference among users. *Id.* at 1030 ¶ 15 (citing 47 U.S.C. § 303(y)). The Commission's rules allow non-guard band 700 MHz licensees to provide "any services for which its frequency bands are allocated." 47 C.F.R. § 27.2(a).

[216] *See* Qualcomm *Google Ex Parte* Comments at 3-4. Qualcomm comments that other mobile video technologies also operate in a 6-megahertz unpaired block of spectrum. *Id.* at 4.

[217] *See* APCO et al. *700 MHz Commercial Services Notice* Reply Comments at 2.

[218] *Id.* The Balanced Budget Act mandated that with respect to the 60 megahertz in the Upper 700 MHz Band, the Commission allocate 24 megahertz of spectrum for public safety services and the remaining 36 megahertz of spectrum for commercial use to be assigned by competitive bidding. *See* 47 U.S.C. § 337(a) (enacted by the Balanced Budget Act of 1997, Pub. L. No. 105-33, § 3004, 111 Stat. 251, 266 (adding new Section 337(a) and establishing initial timetable for conducting auctions)); Balanced Budget Act of 1997 § 3004 (adding new § 337 of the Communications Act) The Commission has made that allocation. *See* Reallocation of Television Channels 60-69, the 746-806 MHz Band, ET Docket No. 97-157, *Report and Order*, 12 FCC Rcd 22953 ¶ 1 (1998), *recon.*, 13 FCC Rcd 21578 (1998) (Upper 700 MHz Reallocation Order). The DTV Act requires that the Commission auction the "recovered analog spectrum" which does not include the spectrum required by Section 337 of the Act to be made (continued....)

provisions elsewhere concerning the 700 MHz Public Safety Band and to establish nationwide interoperable wireless broadband for public safety.

b. Guard Bands Spectrum

(i) Background

97. In the *700 MHz Further Notice*, we proposed to change the sizes and locations of the Upper 700 MHz Guard Bands.[219] We sought comment on these changes within the framework of our tentative conclusion to designate the lower portion of the 700 MHz Public Safety Band for broadband communications, and to consolidate the narrowband channels to the upper portion of the public safety spectrum.[220] We tentatively concluded that the Commission should not adopt the BOP for the Guard Bands spectrum, or other proposals to the extent that they propose a reallocation of commercial spectrum for public safety use or the assignment of spectrum from our auction inventory without competitive bidding.[221] We reasoned that, prior to the completion of the DTV transition, Section 337 of the Act appears to prohibit the Commission from reallocating commercial spectrum for public safety use as proposed by the BOP and Ericsson.[222] Similarly, we stated that Section 337 appears to require competitive bidding to assign spectrum allocated for commercial use, making the BOP and the critical infrastructure industries (CII) proposals potentially unlawful.[223] Finally, we tentatively concluded that even if the Commission possessed legal authority to adopt the BOP, Ericsson, or CII proposals, they would not serve the public interest because they seek to assign additional spectrum to current licensees without competitive bidding.[224]

98. We also noted that a reconfiguration of the 700 MHz Public Safety Band could result in interference to the relocated public safety narrowband channels from existing Canadian and Mexican TV broadcasters in certain border areas.[225] The Canadian government has agreed to clear broadcasters from TV channels 63 and 68 and to use the spectrum for public safety purposes, and will clear broadcasters from all TV channels above channel 52 by August 31, 2011.[226] As such, channels 64 and 69, where all of the reconfigured narrowband channels will reside, are unlikely to be cleared until at least that date. Consequently, if we consolidate the public safety narrowband channels onto only channels 64 and 69, all narrowband channels will be subject to interference from Canadian broadcast operations within border areas during Canada's DTV transition. Furthermore, Mexico has not yet announced a date for

(Continued from previous page)
available for public safety services. DTV Act § 3003(a)(2); *see also 700 MHz Commercial Services Notice*, 21 FCC Rcd at 9349 ¶ 5, 9350-51 ¶ 9.

[219] *See 700 MHz Further Notice*, 22 FCC Rcd at 8132 ¶ 183.

[220] *Id.*

[221] *Id.* at 8147 ¶ 227. The Commission initially sought comment on the BOP and other proposals regarding the Guard Bands in the *700 MHz Guard Bands Notice*. *See 700 MHz Guard Bands Notice*, 21 FCC Rcd at 10430-35 ¶¶ 40-48.

[222] *See 700 MHz Further Notice*, 22 FCC Rcd at 8147 ¶ 227.

[223] *Id.*

[224] *Id.* The Commission added that the BOP also could create an increased potential for interference between 700 MHz Band public safety and commercial operations. *Id.*

[225] *See 700 MHz Further Notice*, 22 FCC Rcd at 8136 ¶¶ 195-196; *see also 700 MHz Guard Bands Notice*, 21 FCC Rcd at 10432 ¶ 45.

[226] Broadcasting Public Notice CRTC 2007-53 (May 17, 2007), available at http://www.crtc.gc.ca/archive/ENG/Notices/2007/pb2007-53.htm.

transitioning its TV channels, including channels 64 and 69.[227] Accordingly, we proposed that public safety narrowband operations be permitted in Canadian border areas within the public safety allocation's internal guard band until the end of Canada's DTV transition. We also proposed to impose a license condition upon the non-Guard Bands commercial licensee adjacent to the public safety broadband allocation, creating temporary access in those border areas to 1 megahertz of that adjacent block to preserve the full 5-megahertz bandwidth of the public safety broadband allocation.[228]

99. After reaching tentative conclusions to not adopt the BOP, CII, or Ericsson proposals, we invited comment on an alternative proposal filed by the BOP proponents (the Access Spectrum/Pegasus Alternative Proposal), which sought to address legal concerns raised by the BOP. Under the alternative proposal, 32 megahertz of commercial broadband spectrum would be auctioned, but the size of the public safety allocation would remain unchanged.[229] Specifically, the proposal assumes reconfiguration of the 700 MHz public safety spectrum and seeks to remedy potential public safety narrowband interference issues by shifting the entire 700 MHz Public Safety Band downward by 1 megahertz from its current location. In addition, as part of this shift, the current Guard Band A Block (at 746-747 MHz and 776-777 MHz) would be relocated immediately below the paired public safety broadband spectrum, and the Guard Band B Block would be relocated immediately above the public safety narrowband spectrum, and reduced from a 4-megahertz block (paired 2-megahertz blocks) to a 2-megahertz block (paired 1-megahertz blocks). The relocated Guard Band B Block would then serve as a Commission-held guard band, still within the commercial allocation, to protect the public safety narrowband channels.

100. The Access Spectrum/Pegasus Alternative Proposal (a component of the Upper 700 MHz band plan Proposals 3, 4, and 5 in the *700 MHz Further Notice*) would require incumbent Guard Bands A and B Block licensees to "repack" their licenses into the reconfigured Guard Band A Block. The proposal also includes a commitment of the participating Guard Band licensees to fund the reconfiguration of the public safety spectrum, provided that the reconfigured Guard Band A Block would be subject to the same service rules as the adjacent non-Guard Band commercial licenses, including the flexibility to deploy cellular architectures. In the *700 MHz Further Notice*, we recognized that this proposal, particularly the spectrum "repacking," contemplates agreement of the incumbent licensees regarding the revised band plan, including geographic area assignments.[230] We tentatively concluded that we should reject the proposal if the incumbent licensees could not reach an agreement.[231]

101. As explained below, in response to the *700 MHz Further Notice*, we received comments on the Access Spectrum/Pegasus Alternative Proposal. We also received comments on our proposal to provide temporary access to 1 megahertz of non-Guard Band commercial spectrum to address potential interference to public safety communications at the Canadian border. Cyren Call and Ericsson submitted additional proposals concerning the 700 MHz Guard Bands. Finally, on July 6, 2007, all but one of the Guard Band licensees joined in a proposal ("July 6, 2007 Guard Bands Proposal") that addresses a

[227] Access Spectrum/Pegasus *700 MHz Further Notice* Comments at 8. Mexican television broadcasters operate in the border areas on TV channels 63 and 64. *Id.* According to Access Spectrum/Pegasus, having interoperable public safety channels on both channels 63 and 68 in the United States helps alleviate interference issues. Access Spectrum/Pegasus *700 MHz Further Notice* Comments at 10.

[228] *See 700 MHz Further Notice*, 22 FCC Rcd at 8136 ¶¶ 195-196.

[229] *Id.* at 8136-8137 ¶¶ 195-199.

[230] *Id.* at 8137 ¶ 199.

[231] *Id.*

number of objections to the Access Spectrum/Pegasus Alternative Proposal and which informs our determinations below.[232]

102. *Border Interference.* There is widespread support for those aspects of the Access Spectrum/Pegasus Alternative Proposal that address potential interference to public safety narrowband operations in border areas. Northrop Grumman states that the proposal is the most appropriate plan to attain nationwide availability of public safety narrowband interoperability channels, absent a frequency shift or migration requirement.[233] In most respects, WCA supports band proposals that would incorporate Access Spectrum/Pegasus' Alternative Proposal.[234] WCA asserts that these proposals would ensure public safety interoperability via a uniform reconfiguration throughout the United States including along the borders.[235] The 4G Coalition notes that the alternative proposal would resolve funding and Computer Assisted Pre-Coordination Resource and Database ("CAPRAD") reprogramming issues, while other band plan proposals do not.[236]

103. Verizon Wireless states that the alternative proposal would address public safety interference issues in border areas, minimize the potential for interference between 700 MHz Band licensees,[237] and permit the Commission to provide public safety entities with spectrum assignments aligned with Canadian allocations.[238] NPSTC also favors band plans that incorporate the alternative proposal because it would address potential conflicts with Canadian TV broadcasters at the border arising from reconfiguration of the public safety spectrum.[239] Arcadian also supports the alternative proposal because it would address border area interference concerns and provide funding for reconfiguration of the 700 MHz Public Safety Band.[240]

104. Conversely, Alcatel-Lucent contends that the 1-megahertz downward shift under the alternative proposal would complicate international coordination and result in underutilization of the public safety broadband spectrum.[241] AT&T also opposes the alternative proposal, arguing that a guard band is required between the Lower and Upper 700 MHz C Blocks due to interference (or "noise-rise") potential, particularly where the types of services and power limits may differ.[242] MetroPCS claims that the alternative proposal would not resolve interference issues, and that the additional flexibility and

[232] *See* Letter from Kathleen Wallman, on behalf of Access Spectrum, LLC, Dominion 700, Inc., Pegasus Communications Corporation, and Radiofone Nationwide PCS, LLC, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 96-86, 06-150, 06-169, PS Docket No. 06-229 (filed July 9, 2007) ("Access Spectrum/Pegasus July 6, 2007 *Ex Parte*").

[233] *See* Northrop Grumman *700 MHz Further Notice* Comments at 4.

[234] *See* WCA *700 MHz Further Notice* Comments at 4.

[235] *Id.* at 4-6, 9.

[236] *See* 4G Coalition *700 MHz Further Notice* Comments at 22.

[237] *See* Verizon Wireless *700 MHz Further Notice* Comments at 16.

[238] *Id.* at 17. Verizon Wireless suggests that the proposal would diminish the risk of interference to public safety licensees because it would retain the 1-megahertz guard band that separates the commercial and public safety spectrum, and also would provide enough spectrum in a larger 22-megahertz Upper 700 MHz Band C Block to allow for the use of an additional internal guard band to protect against high-power operations from the Lower 700 MHz Band C Block. *Id.* at 18.

[239] *See* NPSTC *700 MHz Further Notice* Comments at 25.

[240] *See* Arcadian *700 MHz Further Notice* Reply Comments at 3.

[241] *See* ALU *700 MHz Further Notice* Comments at 22.

[242] *See* AT&T *700 MHz Further Notice* Reply Comments at 25-28.

capabilities afforded the 700 MHz Guard Band licensees would create a "windfall" for the incumbents.[243] Finally, some commenters continue to support the BOP.[244]

105. *Temporary Public Safety Access to Commercial Spectrum in the Upper 700 MHz Band.* Alcatel-Lucent opposes temporary access into the commercial Upper 700 MHz Band spectrum, adjacent to the 700 MHz Public Safety Band, for public safety broadband in Canadian border areas, and instead advocates flexible operating parameters for the 700 MHz Public Safety Band's internal guard band.[245] To ensure rapid deployment of public safety services, Alcatel-Lucent urges us to permit limited narrowband use of the internal public safety guard band in border areas and to expeditiously conclude temporary international agreements.[246] Access Spectrum/Pegasus oppose Alcatel-Lucent's proposal for flexible use of the public safety internal guard band to address border interference issues because it would only provide a temporary solution and preclude the permanent availability of interoperability channels.[247] They also argue that Alcatel-Lucent's proposal to permit temporary use of the public safety internal guard band for narrowband communications would effectively reduce the size of the available bandwidth of the public safety broadband spectrum because a 1-megahertz guard band between public safety's broadband and narrowband operations is necessary to prevent interference between the two uses.[248]

106. Northrop Grumman contends that providing public safety entities temporary access to commercial spectrum in the Upper 700 MHz Band would not meet their needs because it would create incompatibility with non-border areas by temporarily relocating the narrowband channels in border areas, thereby thwarting nationwide interoperability.[249] WCA also contends that such an interim allocation shift would frustrate interoperability and not serve the public interest.[250] The 4G Coalition contends that any band plan that the Commission adopts should not isolate public safety agencies in border areas, which would impede nationwide interoperability.[251] It argues that the temporary access plan is unlawful for some of the same reasons we have tentatively concluded not to adopt the BOP.[252] NPSTC similarly argues that the temporary access proposal would fail to solve public safety interoperability at the border and that the costs associated with returning it to permanent status are not known at this time.[253]

107. Ericsson argues that if temporary access into commercial Upper 700 MHz Band spectrum is created to maintain the full bandwidth of the public safety broadband spectrum, it would be more difficult to modify the band plan and the spectrum would be significantly devalued, possibly impeding use of the spectrum.[254] Ericsson also asserts that the temporary access proposal does not address

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[243] *See* MetroPCS *700 MHz Further Notice* Comments at 24; *see also* Letter from Mark Stachiw, MetroPCS to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket No. 06-169 (filed Mar. 22, 2007).

[244] *See, e.g.*, Access Spectrum/Pegasus *700 MHz Further Notice* Comments, App. B; Northrop Grumman *700 MHz Further Notice* Comments at 10.

[245] *See* Alcatel-Lucent *700 MHz Further Notice* Comments at 24.

[246] *Id.* at 21.

[247] *See* Access Spectrum/Pegasus *700 MHz Further Notice* Reply Comments at 10-11.

[248] *Id.* at 12.

[249] *See* Northrop Grumman *700 MHz Further Notice* Comments at 4.

[250] *See* WCA *700 MHz Further Notice* Comments at 8.

[251] *See* 4G Coalition *700 MHz Further Notice* Comments at 22.

[252] *Id.* at 22.

[253] *See* NPSTC *700 MHz Further Notice* Comments at 23, 24.

[254] *See* Ericsson *700 MHz Further Notice* Comments at 17.

broadcast interference at the Mexican border, and that licensees in the 700 MHz Band would have problems in certain border areas.[255] Ericsson urges the Commission to include the entire 700 MHz Band in its interoperability objectives, and to pursue bilateral talks to relieve spectrum constraints by February 2009.[256] Ericsson asserts that the temporary access proposal fails to address whether Mexico would agree to shut down broadcast operations in the band, and that it is better to harmonize the entire 700 MHz Band than to adopt temporary solutions that would be difficult to reverse.[257]

108. *Cyren Call Proposal.* Cyren Call supports a new band plan (based on Proposal 4 in the *700 MHz Further Notice*), where the Guard Bands A and B Block licenses would be "repacked" into a reconfigured Guard Band A Block between two non-Guard Band commercial blocks (a revised D Block and a new "E Block") in the Upper 700 MHz Band, rather than between the non-Guard Band commercial block (the new "E Block") and the public safety spectrum. Cyren Call contends that this approach would make the public safety broadband spectrum, and adjacent non-Guard Bands commercial spectrum, more attractive to carriers seeking a nationwide footprint of up to 22 megahertz (or 24 megahertz if acquiring the revised Guard Band A Block).[258]

109. *Ericsson Proposal.* Ericsson argues that the Guard Band B Block should move to 747-749 MHz and 777-779 MHz, immediately above the existing Guard Band A Block.[259] Ericsson contends that this approach would improve interference protection for the public safety narrowband channels, providing an additional buffer between the Upper 700 MHz C Block and the public safety spectrum.[260] Ericsson adds that, on the lower half of the paired spectrum, its band plan would provide an additional buffer between the Lower and Upper 700 MHz C Blocks, where operations in the Lower 700 MHz Band have significantly higher power limits and may pose a threat to the Upper 700 MHz C Block.[261] Verizon Wireless opposes the Ericsson proposal, stating that it fails to address the Canadian border issue because public safety entities would lack the flexibility to deploy cross-border interoperable narrowband systems wherever blocked by Canadian broadcast facilities.[262]

110. *July 6, 2007 Guard Bands Proposal.* Access Spectrum/Pegasus, joined by other Guard Bands licensees, filed a new proposal dated July 6, 2007, which is based on Cyren Call's plan (discussed above), whereby all Guard Band A Block licensees (except PTMPS II) voluntarily "repack" into a new Guard Band A Block that is located between two non-Guard Band commercial 700 MHz Band blocks (the C and D Blocks) rather than adjacent to the public safety spectrum.[263] As explained in more detail below, these licensees provided signed waivers of their rights to object to these license modifications and have agreed to transfer their Guard Band B Block licenses to the Commission.

(ii) Discussion

111. We adopt a revised band plan for the 700 MHz Guard Bands spectrum and the Upper 700 MHz Band, which includes features of Cyren Call's additional band plan proposal and the July 6, 2007

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[255] *Id.*

[256] *Id.*

[257] *Id.* at 21.

[258] *See* Cyren Call *700 MHz Further Notice* Comments, Att. 1.

[259] *See* Ericsson *700 MHz Further Notice* Comments at 23.

[260] *Id.* at 23-24.

[261] *Id.* at 26-27.

[262] Verizon Wireless *700 MHz Further Notice* Reply Comments at 11.

[263] *See* Access Spectrum/Pegasus July 6, 2007 *Ex Parte*.

Guard Bands Proposal. As an initial matter, we determine that with the reconfiguration of the 700 MHz Public Safety Band, the Guard Band B Block will no longer be necessary as a guard band between the non-Guard Bands commercial spectrum, and the public safety broadband spectrum.[264] To enable a more efficient, shared interoperable broadband network, we locate the Guard Band A Block between the Upper 700 MHz Band C and D Blocks, shifting the public safety broadband allocation downward by 1 megahertz and placing it adjacent to the commercial D Block that will be used for the 700 MHz Public/Private Partnership. This new band plan addresses potential public safety narrowband interoperability issues in border areas, and frees up 2 megahertz of B Block Guard Band spectrum nationwide (except for PTPMS II's two grandfathered MEAs) to be included in the auction of commercial spectrum.

112. Finally, consistent with our tentative conclusion in the *700 MHz Further Notice*, we determine that we lack legal authority to adopt the BOP, the CII, or the Ericsson proposals because they propose a reallocation of commercial spectrum to public safety, and assignment of commercial licenses from our auction inventory without competitive bidding. We also reject the most recent Ericsson band plan proposal as well as the Access Spectrum/Pegasus Alternative Proposal and the Cyren Call proposal to the extent they are inconsistent with our actions in this Second Report and Order.

(a) Revisions to Upper 700 MHz Band Plan for Guard Bands

113. Background. As explained above, the reconfiguration of the 700 MHz Public Safety Band may result in interference to the relocated narrowband channels from existing Canadian and Mexican TV broadcasters in certain border areas. Both the BOP, and the Access Spectrum/Pegasus alternative to the BOP, propose a 1-megahertz downward shift of the public safety spectrum into the former Guard Bands spectrum at 763-764 MHz and 793-794 MHz while maintaining the full 24-megahertz public safety allocation required by Section 337 of the Act. This shift creates a 1-megahertz overlap between the consolidated narrowband channels and TV channels 63 and 68, which Canada has already agreed to clear of broadcasters. This shift also addresses the Canadian border issue for public safety operations on the reconfigured narrowband channels.

114. In addition to addressing the Canadian border issue, the Access Spectrum/Pegasus Alternative Proposal includes an agreement to consolidate the existing Guard Bands A and B Block licenses into a 2-megahertz block (comprised of paired spectrum at 762-763 MHz and 792-793 MHz). The repacking frees up an additional 2 megahertz of commercial spectrum to be added to the licenses set for auction, permitting the auction of 32 megahertz of commercial spectrum in the Upper 700 MHz Band. Finally, the alternative proposal would relocate the Guard Band B Block, which is reduced to a 2-megahertz block (comprised of paired spectrum at 775-776 MHz and 805-806 MHz). The lower half of the reconfigured B Block (at 775-776 MHz) would serve as a necessary guard band to protect the public safety narrowband channels from commercial operations in the upper half of the paired C Block.[265]

115. After the release of the *700 MHz Further Notice*, Access Spectrum/Pegasus modified their alternative proposal to request auction discount vouchers (also called bidding offset credits) to account for relinquishing spectrum to the Commission as part of the repacking plan, and for their agreement to fund the 700 MHz Public Safety Band reconfiguration.[266] They also proposed an "option-

[264] However, as discussed below, a reconfigured 1-megahertz B Block remains necessary as a guard band between the public safety narrowband channels and the upper half of the paired C Block.

[265] By contrast, the upper half of the reconfigured B Block (at 805-806 MHz) will be located between 700 MHz public safety and 800 MHz public safety spectrum rather than between commercial and public safety spectrum.

[266] Access Spectrum/Pegasus *700 MHz Further Notice* Comments at 13-14. Access Spectrum/Pegasus proposed that the vouchers be useable in any auction and fully transferable, measured by the population covered by the (continued....)

variant" of their two-sided auction proposal.[267] Access Spectrum explained that the variant was designed to address obligations to certain customers, including a right of first refusal from one customer with respect to all of its 700 MHz Guard Band licenses.[268] Access Spectrum/Pegasus also advised that one incumbent Guard Band licensee, PTPMS II, has declined to repack its three licenses into the reconfigured A Block.[269]

116. *July 6, 2007 Guard Bands Proposal.* Given the increasing complications of their alternative proposal, Access Spectrum/Pegasus, joined by other Guard Bands licensees, filed a new proposal dated July 6, 2007, which is partly based on Cyren Call's additional proposal (discussed above). Under the new proposal, all Guard Band A Block licensees (except PTPMS II) "repack" into a new Guard Band A Block located between two non-Guard Band commercial blocks (the C and D Blocks) rather than next to the public safety broadband allocation.[270] In the July 6, 2007 *ex parte* letter, Access Spectrum/Pegasus and the other Guard Bands licensees provided signed waivers of their rights to object to these license modifications and agreed to transfer their remaining B Block licenses to the Commission. They also provided that their new proposal is not conditioned upon auction discount vouchers or the two-sided auction "option variant,"[271] and each licensee affirmatively waived its right under Section 316 to object to the license modifications that would not include such mechanisms.[272] These proposals therefore are moot and it is unnecessary to reach a decision regarding the use of vouchers or a two-sided auction to achieve our goals in this proceeding. All of the incumbent Guard Bands licensees, except PTPMS II, executed the agreement. APCO and NPSTC support the July 6, 2007 Guard Bands Proposal.[273] The 4G Coalition – whose members include DIRECTV, EchoStar, Google, Intel, Skype, and Yahoo – also supports the proposal, provided that we adopt a public/private partnership involving a commercial license adjacent to the public safety spectrum in the Upper 700 MHz Band.[274]

(Continued from previous page)
surrendered bandwidth (*i.e.*, in MHz-pops), and expressed in a $/MHz-pop value equal to the gross value of winning bids in the auction of Upper 700 MHz licenses divided by the total MHz-pops auctioned. *Id.*

[267] Under the option variant, after the auction of the adjacent D Block, Access Spectrum/Pegasus could choose to either: (a) sell each repacked A Block license to the D Block licensee at the D Block's $/MHz-pop auction value; or (b) move to the reconfigured B Block within the matching service area. *Id.* at 11, n.15, App. A at 2-3.

[268] *See* Letter from Ruth Milkman, Counsel, Access Spectrum, LLC to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 96-86, 06-150, 06-169, PS Docket No. 06-229 at 2 (filed July 3, 2007).

[269] *See* Access Spectrum/Pegasus *700 MHz Further Notice* Reply Comments at 7. With respect to Radiofone, Access Spectrum/Pegasus propose that the Radiofone B Block license be grandfathered at its existing spectral location, such that the available public safety broadband spectrum in the Gulf service area would be reduced from 5 megahertz to 4 megahertz.

[270] Access Spectrum/Pegasus July 6, 2007 *Ex Parte*. Radiofone has agreed to surrender its B Block license in the Gulf (MEA 52), and will not hold any license in the relocated A Block. *See* Letter from Access Spectrum, LLC, Dominion 700, Inc., Pegasus Communications Corporation, and Radiofone Nationwide PCS, LLC, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 96-86, 06-150, 06-169, PS Docket No. 06-229 (filed July 13, 2007) ("Access Spectrum/Pegasus July 13, 2007 *Ex Parte*").

[271] Access Spectrum/Pegasus July 6, 2007 *Ex Parte*.

[272] *Id.*

[273] *See* Letter from Robert M. Gurss, APCO International, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 96-86, 06-150, and 06-169, and PS Docket No. 06-229 (filed July 9, 2007) (noting that APCO and NPSTC support the July 6, 2007 Guard Bands Proposal, provided that the Commission ensures "reimbursement for public safety narrowband licensees that incur costs to reprogram radios to the new channel allotments").

[274] *See* Letter from 4G Coalition to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 96-86, 06-150, 06-169, PS Docket No. 06-229 at 1 (filed July 11, 2007).

117. On July 26, 2007, the Guard Band licensees reaffirmed their waiver of rights under Section 316, and explained that the waiver contemplates that "the new Upper 700 MHz A Block would be afforded the same OOBE limits, cellular architecture, and frequency coordination rules as the lower adjacent Upper 700 MHz commercial block without 'open access' obligations."[275] Access Spectrum/Pegasus and Dominion advised that they will not object to modification of their Guard Band A Block licenses, effective upon publication of this Second Report and Order in the Federal Register.[276] In addition, Access Spectrum/Pegasus and Radiofone advised that they would transfer their Guard Band B Block licensees to the Commission, within five days of publication of this Second Report and Order in the Federal Register.[277] PTPMS II, the only other Guard Bands licensee, has not agreed to modification of its one A Block license, or to return its two B Block licenses to the Commission. On July 27, 2007, Arcadian Networks, Inc., which holds a limited right of first refusal regarding Access Spectrum's Guard Band licenses, advised the Commission that it supports the spectrum repacking proposal, and that its right of first refusal is not applicable to any Guard Band A Block licenses that would be conveyed as part of the spectrum repacking, or any B Block license surrendered to the Commission for cancellation.[278]

118. Discussion. We conclude that adoption of the July 6, 2007 Guard Bands Proposal will serve the public interest. Foremost, we agree with commenters that it is better to permanently address the Canadian border problem and harmonize the entire 700 MHz Band than to adopt an interim solution such as the temporary access to 1 megahertz of spectrum proposed in the *700 MHz Further Notice*. We adopt this proposal based on the agreement of all Guard Band licensees except PTPMS II, whose two Guard Band B Block licenses we grandfather, and whose one Guard Band A Block license we repack into the reconfigured Guard Band A Block.

119. We conclude that the existing Guard Band B Block is no longer needed as a guard band to protect the adjacent 700 MHz public safety users, and to the extent possible, should be consolidated with the rest of the commercial spectrum for more efficient and effective use. As noted above, Cyren Call filed a revised band plan, reflected in the July 6, 2007 Guard Bands Proposal, in which Guard Band licensees would repack into a reconfigured Guard Band A Block between two commercial blocks. We find that the public interest is best served by adoption of features of the Cyren Call and July 6, 2007 proposals because it removes the "repacked" Guard Band A Block from the critical juncture between the Upper 700 MHz D Block and the public safety broadband spectrum, which together will be used as the foundation for the 700 MHz Public/Private Partnership. We also find that the value of the spectrum rights to be relinquished by Access Spectrum/Pegasus and the other Guard Bands licensees would substantially offset any alleged "windfall" they might enjoy because of a more desirable spectral position in the band, and less restrictive technical rules.[279] The figure below depicts the revised Upper 700 MHz Band Plan.

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[275] *See* Letter from Access Spectrum, LLC, Access 700, LLC, Access 700 Holdings, LLC, Dominion 700, Inc., Pegasus Guard Band LLC, and Radiofone Nationwide PCS, LLC, to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 96-86, 06-150, 06-169, PS Docket No. 06-229 at 2 (filed July 26, 2007) ("Access Spectrum/Pegasus July 26, 2007 *Ex Parte*").

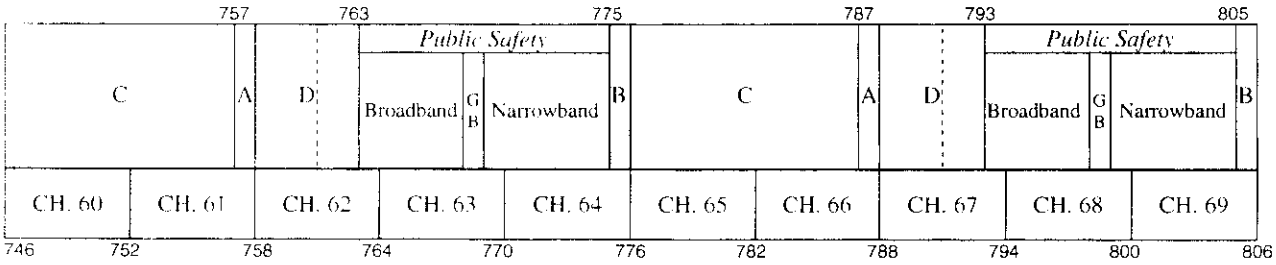
[276] *Id.* at 1.

[277] *Id.*

[278] *See* Letter from Access Spectrum, LLC, Access 700, LLC, Access 700 Holdings, and Arcadian Networks, Inc., to Marlene H. Dortch, Secretary, FCC, *Ex Parte* in WT Docket Nos. 96-86, 06-150, 06-169, PS Docket No. 06-229 (filed July 27, 2007) ("Access Spectrum/Arcadian July 27, 2007 *Ex Parte*").

[279] MetroPCS contends that the additional flexibility and capabilities that would be afforded the Guard Bands licensees under the alternative to the BOP (that were unavailable at auction) would create a "windfall" for the incumbents. *See* MetroPCS *700 MHz Further Notice* Comments at 24. Similarly, Cyren Call asserts that locating the "new" A Block between public safety and commercial spectrum would force the commercial licensee to (continued....)

FIGURE 10: REVISED UPPER 700 MHZ BAND PLAN INCLUDING GUARD BANDS



120. *Funding for Public Safety Reconfiguration.* As the result of these changes to the band plan, the Upper 700 MHz D Block now is immediately adjacent to the 700 MHz public safety broadband spectrum. In the *700 MHz Further Notice*, we anticipated that this adjacency could facilitate the transition to wireless broadband for the 700 MHz public safety broadband spectrum.[280] We find that the consolidation of public safety broadband spectrum to the lower portion of the 700 MHz Public Safety Band will provide significant benefits to the adjacent D Block licensee. Without such consolidation, the D Block licensee would be adjacent to an incompatible, narrowband system architecture, which could inhibit commercial broadband system deployment. This is particularly critical to the D Block Licensee, which must construct a shared network using both the D Block spectrum and the public safety broadband spectrum.

121. We note that the public safety community has long held that any reconfiguration of the 700 MHz public safety spectrum must not come at their expense given their inability to fund such a transition.[281] By shifting funding responsibility to the adjacent D Block licensee, we address this concern while assigning the expense to recognize the significant benefits that will accrue to the D Block licensee. Accordingly, we conclude that the D Block licensee must pay the costs of consolidating the 700 MHz public safety narrowband channels to the upper half of the 700 MHz Public Safety Band. These costs and associated implementation issues are discussed in further detail below.

122. *License Modifications.* The Commission may modify licenses where it determines that the modification serves the public interest, convenience, and necessity.[282] The U.S. Court of Appeals for the District of Columbia Circuit has held that license modifications do not have to be consensual[283] and that license holders may be moved on a service-wide basis, without license-by-license consideration.[284] It

(Continued from previous page)
purchase the A Block spectrum and result in an economic windfall to the A Block licensees. Cyren Call *700 MHz Further Notice* Comments at 32.

[280] *700 MHz Further Notice*, 22 FCC Rcd at 8132 ¶ 185.

[281] *See, e.g.*, NPSTC Reply Comments in WT Docket No. 96-86 at 7-12 (filed July 6, 2006); Letter from APCO, International Association of Chiefs of Police, International Association of Fire Chiefs, Major Cities Chiefs Association, Major Counties Sheriffs Association and National Sheriffs' Association to Catherine Seidel, Acting Chief, Wireless Bureau, FCC, *Ex Parte* in WT Docket No. 96-86 (filed July 31, 2006).

[282] 47 U.S.C. § 316(a)(1).

[283] *Peoples Broadcasting Co. v. United States*, 209 F.2d 286, 288 (D.C. Cir. 1953) (upholding the Commission's authority to modify a television station license without an application by the licensee for such a modification, noting that "if modification of licenses were entirely dependent upon the wishes of existing licensees, a large part of the regulatory power of the Commission would be nullified").

[284] *Community Television, Inc. v. FCC*, 216 F.3d 1133, 1140 (D.C. Cir. 2000). In *Community Television*, the court upheld the FCC's rules establishing procedures and a timetable under which television broadcasting would migrate from analog to digital technology.