

# 700 MHz Device Flexibility Promotes Competition

Peter Cramton<sup>1</sup>

9 August 2010

## 1 Summary

The Commission should intervene to prevent the balkanization of the 700 MHz spectrum. AT&T and Verizon Wireless, the near-duopoly holders of low-frequency (below 1 GHz) mobile broadband spectrum, intend to adopt restrictive device practices: AT&T devices may only work on the lower B and C Blocks, which are predominantly held by AT&T, and Verizon Wireless devices may only work on the Verizon Wireless' upper C Block. Such restrictive practices used as a competitive blocking tactic would undermine competition, reduce consumer choice, slow the build out of broadband in rural areas, prevent roaming in the 700 MHz band, reduce the value of the 700 MHz A Block spectrum and the spectrum not held by AT&T and Verizon Wireless, and harm future spectrum auctions.

To maximize the societal value of the 700 MHz spectrum, devices utilizing the paired blocks should be capable of operating on all of the 700 MHz paired spectrum. This interoperability has been the practice for each of the major mobile broadband bands (cellular at 800 MHz, PCS at 1.9 GHz, and AWS at 1.7/2.1 GHz). This practice should continue. Requiring device flexibility strengthens competition from other 700 MHz spectrum winners, both current (the lower A Block winners) and future (the upper D Block winner). All customers, but especially rural and public safety customers, will benefit from device flexibility.

Device flexibility and interoperability in the 700 MHz bands brings many advantages. It allows all operators and consumers to enjoy scale economies. A greater variety of handsets will be available at lower cost. Service will improve, especially in rural areas, as a result of greater coverage and seamless roaming. Public safety will enjoy improved reliability and capacity, and make better use of commercial networks.

The wireless industry is moving to Long Term Evolution (LTE) for 4G communications and the US is in a unique position of deploying the first nationwide LTE network in the world. This convergence to a single technology allows interoperability across carriers, improving service and competition. But these benefits are lost if handsets are restricted to operate on carrier-specific low frequency bands as AT&T and Verizon Wireless intend. Device flexibility will have an enormous impact on the future products deployed for 4G LTE. The FCC has the opportunity to set a standard that will benefit consumers for years to come.

The need for the regulatory intervention stems from the extreme market power that AT&T and Verizon Wireless are exerting with respect to the low-frequency spectrum and their growing dominance in mobile broadband. The "Big Two" (AT&T and Verizon Wireless) intend to leverage this market power through restrictive device practices on carrier-specific band plans designed after the 700 MHz auction

---

<sup>1</sup> This paper was funded by the Rural Cellular Association. Peter Cramton is Professor of Economics at the University of Maryland and Chairman of Market Design Inc. His research focuses on auctions and market design. Most of his recent work has addressed design and incentive questions in auctions. He has served as an auction expert in thirty-three major spectrum auctions worldwide. He has advised the FCC and eight foreign governments on the design and implementation of spectrum auctions. His research on spectrum auctions and related topics is available at [www.cramton.umd.edu](http://www.cramton.umd.edu). He received his B.S. in Engineering from Cornell University and his Ph.D. in Business from Stanford University.

The Commission should instead require device flexibility—that all mobile broadband devices using paired 700 MHz spectrum be capable of operating on all of the 700 MHz paired spectrum. This remedy maximizes the use of the 700 MHz spectrum. It maximizes economies of scale, since all devices would support both the lower band and the upper band. And it gives all carriers, including those focused on regional, rural, or public safety markets, an opportunity to make full use of the 700 MHz spectrum. Only then can the promise of the 700 MHz spectrum be realized.

Failure to act will further cement the Big Two’s dominant position. Excessive concentration will undermine competition and innovation, slow the deployment of services for rural and public safety customers, encourage warehousing of spectrum, and reduce revenues in future auctions. The American consumer and public safety user will not receive the economic benefits of global production of innovative devices for 4G on 700 MHz.

## 2 Spectrum bands and technologies

An essential input for all carriers is the radio spectrum over which communications occur. There are four major spectrum bands (700 MHz, Cellular, AWS, and PCS) used for mobile broadband, as shown below. The spectrum is scarce with only 340 MHz of paired spectrum in total. The original cellular spectrum was given to operators. In each region, the FCC granted each of two operators a 25 MHz license. Since 1994, all spectrum licenses have been auctioned to the highest bidder. The broadband auctions to date have raised about \$70 billion for the U.S. Treasury.

**Major Paired Spectrum Bands for Mobile Broadband**

Band	Bandwidth (MHz)	Frequencies (MHz)	Auction Dates	Revenue (Billion \$)
Low frequency (< 1 GHz)				
700 MHz	80	698-717 728-746 746-768 776-798	3/08	19.0
Cellular	50	824-849 869-894	Not auctioned	0
High frequency (> 1 GHz)				
AWS	90	1710-1755 2110-2155	9/06	13.7
PCS	120	1850-1910 1930-1990	3/95, 5/96, 7/97, 4/99, 1/01	39.8

Source: FCC.gov

Note: 700 MHz auction does not include D block or public safety.

Two of the bands (700 MHz and Cellular) are low frequency (below 1 GHz) and two are high frequency (above 1 GHz). This distinction is important. Low-frequency waves travel further and pass through walls and other obstructions more easily. As a result, these bands are especially well-suited for providing coverage. The 700 MHz and Cellular bands allow a region to be covered with many fewer cell sites and thus at much lower cost.

Wireless technology has evolved rapidly since the mid-1990s. Currently, three different technologies are used: CDMA, GSM, and iDEN. Mobile phones are built for specific technologies and spectrum bands, although it is common for a particular phone to support many different bands and multiple technologies. For each of the three bands in use today, there is interoperability within the entire band; that is, if the device works on any frequency block within a particular band, it works throughout the band. This interoperability allows seamless roaming across networks supporting the particular technology, and across technologies if the phone supports multiple technologies.

For 4G communications, the industry is moving toward a common technology standard: Long Term Evolution (LTE). The convergence to a common technology should facilitate interoperability, roaming, and competition. However, these benefits will be lost if the FCC does not take action to prevent the dominant incumbents, AT&T and Verizon Wireless, from adopting carrier-specific band plans and restrictive devices.

### **3 Wireless competition**

The FCC has long understood the importance of wireless competition and has taken steps to foster competition. Before the first broadband auction in 1994, the FCC instituted a spectrum cap that prevented either of the duopoly operators from winning any of the three large PCS licenses in any geographic region. This guaranteed that there would be at least three new entrants in each region. Other auction instruments, such as bidding credits and set-asides, were used to promote small businesses and further encourage entry.<sup>2</sup> The enhanced competition resulted in rapid improvements in wireless services, dramatic declines in prices, and rapid industry growth. A competitive and innovative wireless industry was launched.

During the Bush-era, some of the pro-competitive policies were dropped. The FCC eliminated the spectrum cap on 1 January 2003. Subsequent industry consolidation resulted in four nationwide or near-nationwide operators (AT&T, Verizon Wireless, Sprint, and T-Mobile) as well as a competitive fringe of regional and rural operators. Despite this consolidation, the market had been viewed consistently as “effectively competitive” in annual FCC reviews. Unfortunately, the competitive landscape has continued to deteriorate in the last several years. As a result, in its annual review released in May 2010, the FCC for the first time since 2003 failed to conclude that the wireless industry was effectively competitive.<sup>3</sup>

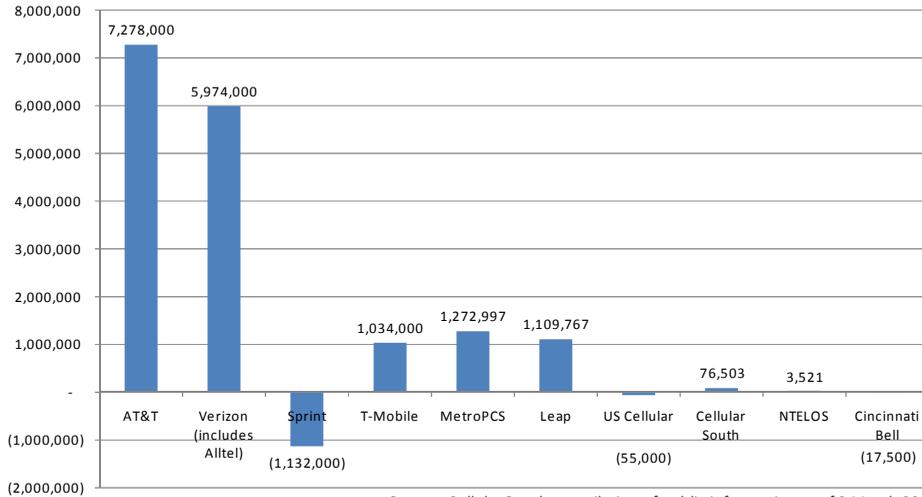
The competitive concerns arise from the growing dominance of the Big Two. These operators have increased market share steadily, while other operators have struggled to maintain share. The figures below show the total new adds (both post-paid and pre-paid customers) in 2009 for the top-ten operators, as well as the year-end 2009 total number of customers. The picture is even more extreme when one focuses on the (more lucrative) post-paid customers.

---

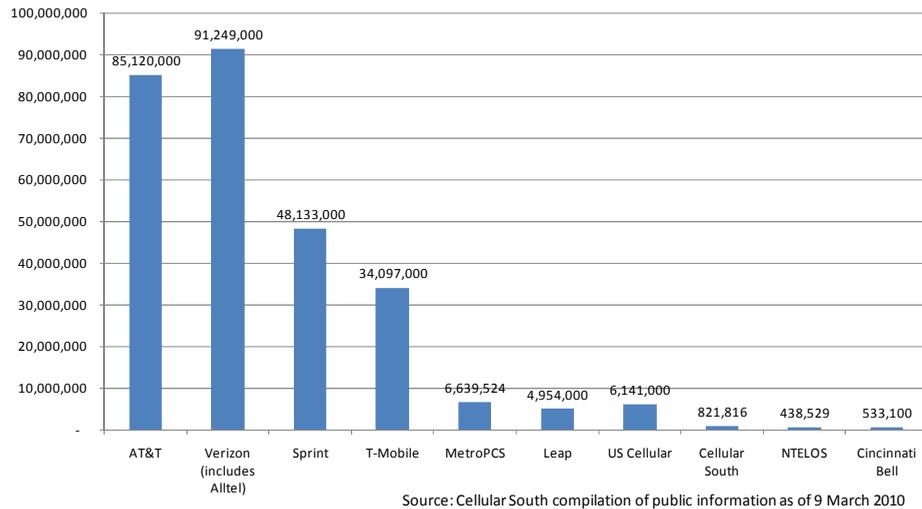
<sup>2</sup> See Cramton, Peter, Evan Kwerel, Gregory Rosston, and Andrzej Skrzypacz (2010), “Using Spectrum Auctions to Enhance Competition in Wireless Services,” Working Paper, University of Maryland.

<sup>3</sup> FCC 10-81, “Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, including Commercial Mobile Services,” 20 May 2010.

### 2009 Total Net Adds



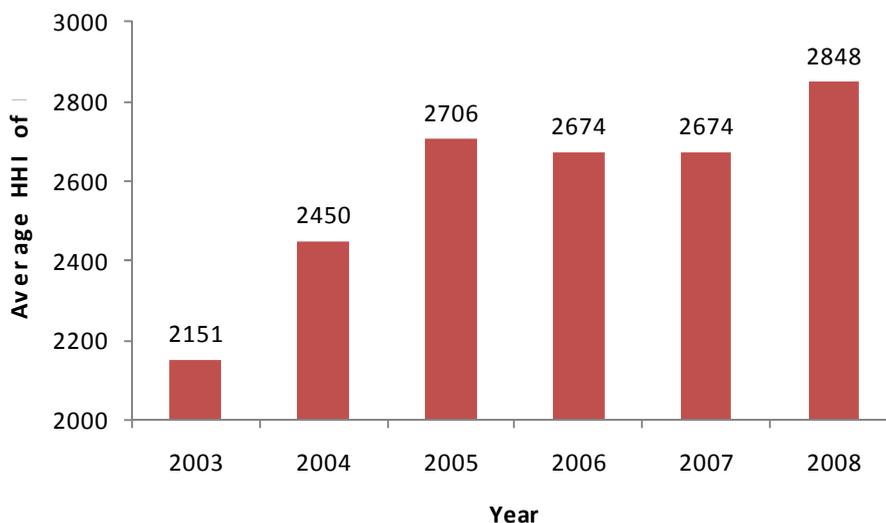
### 2009 Total Customers at Year End



The dominance of the Big Two is stronger still when one looks at earnings. The Big Two currently have a 90% share of industry EBITDA (earnings before interest, taxes, depreciation and amortization). This is troubling in an infrastructure intensive business, since as the industry matures new investment must come from these earnings. Competition is threatened both in future spectrum auctions and in the market for wireless services.

Since 2003, the standard competitive measures, such as market shares and industry concentration, have worsened. The figure below shows the Herfindahl-Hirschman Index (HHI) of market concentration as calculated for each year and within each of 172 Economic Areas (EAs). The average HHI across the 172 EAs is shown. The U.S. Department of Justice uses the HHI for evaluating mergers. A market with an HHI less than 1,000 is considered to be competitive, one with an HHI between 1,000 and 1,800 is considered to be moderately concentrated, and one with an HHI of 1,800 or greater is considered to be highly concentrated. With an average HHI of 2,848, the mobile wireless market is highly concentrated. The competitive picture is getting worse with each year.

**Mobile Wireless Market Concentration by Year<sup>4</sup>**



An important competitive advantage of the Big Two is their network coverage—customers value coverage. This coverage advantage comes in large part from the Big Two’s spectrum holdings of low-frequency spectrum (below 1 GHz). Currently, the Big Two have a near-duopoly in the original 800 MHz cellular spectrum. This low-frequency spectrum travels further than the higher-frequency PCS and AWS spectrum, and thus it allows building out less densely populated areas at much lower cost than with the other broadband spectrum. Many fewer cell towers are required with the low-frequency spectrum. This gives those holding 700 MHz spectrum a cost advantage in providing coverage.

In the 700 MHz auction of 2008, AT&T and Verizon Wireless sought to maintain their competitive advantage by bidding aggressively in the auction and foreclosing competition. Absent any spectrum cap or other restrictions, the two largest carriers were able to maintain a near duopoly in the low-frequency spectrum, winning 85% (by value) of the paired spectrum. This domination was predicted before the auction in papers urging restrictions on the quantity of low-frequency spectrum operators could bid for and hold.<sup>5</sup>

Other countries auctioning former television spectrum for mobile wireless have recognized the competitive problems of excessive concentration of this low-frequency spectrum and have taken steps to prevent it. Germany’s recent auction of 800 MHz spectrum as well as other bands limited the holders of 900 MHz spectrum to bid for only two 10-MHz blocks, while other incumbents could bid for three and new entrants could bid for four.

A duopoly position in low-frequency spectrum is especially valuable in the United States where the population density is low throughout most of the geography. Thus, it is extremely expensive to build out a large fraction of the geography with the PCS and AWS spectrum, and often uneconomic as the third carrier in the area.

As a result of the aggressive bidding of AT&T and Verizon Wireless in the 700 MHz auction, the Big Two won an overwhelming majority of the paired spectrum in the major markets. The smaller

<sup>4</sup> FCC 10-81, “Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, including Commercial Mobile Services,” 20 May 2010.

<sup>5</sup> Cramton, Peter, Andrzej Skrzypacz and Robert Wilson (2007), “The 700 MHz Spectrum Auction: An Opportunity to Protect Competition In a Consolidating Industry” submitted to the U.S. Department of Justice, Antitrust Division.

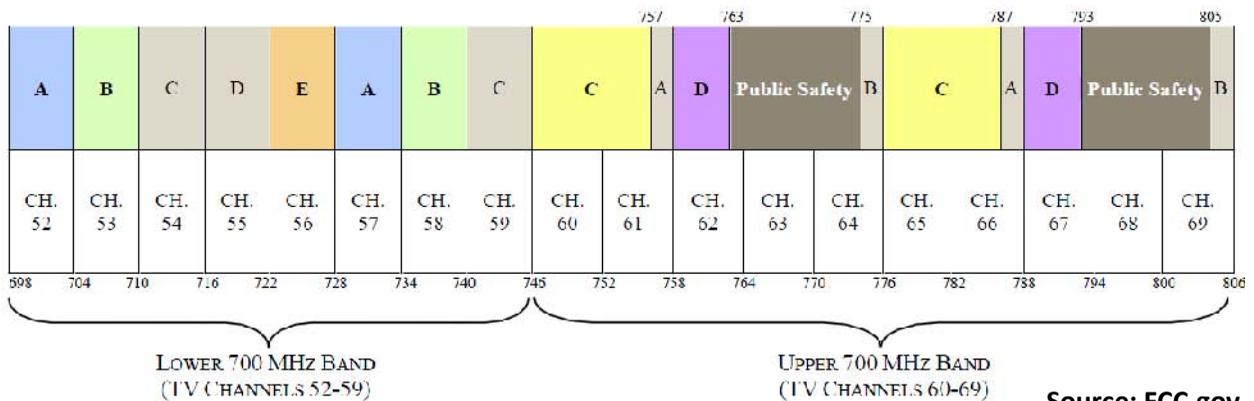
competitors were only able to win the leftovers—primarily small regions in the less expensive lower A Block and very rural Cellular Market Areas (CMAs) in the lower B Block. Verizon Wireless won all the upper C Block in the continental U.S. and Hawaii; AT&T and Verizon Wireless won nearly all of the lower B Block; and Verizon Wireless won the majority of the lower A Block. Prices were especially high for the B Block in large part because AT&T focused exclusively on the B Block, since it is adjacent to spectrum AT&T acquired in the lower C Block before the auction.

Although the auction was a failure from a competition viewpoint, the fact that regional and rural operators won licenses in the A Block appeared to open the door for more rapid build out and expanded coverage in these regional and rural areas. Historically, in many markets, small operators have been able to initiate service before the region becomes economic for either of the Big Two. This, however, requires not only spectrum, but the availability of low cost devices.

#### 4 Restrictive 700 MHz devices harm competition in the market for wireless services

The 700 MHz band plan is shown below. The spectrum is divided into a lower band (TV channels 52-59) and an upper band (TV channels 60-69). The colored blocks were auctioned in the 700 MHz auction (Auction 73); the gray blocks were auctioned earlier.

**700 MHz Band Plan for Commercial Services**



Equipment manufacturers build devices to operate within standard bands. At issue is whether the dominant operators should be able to strengthen their dominance and further “lock-in” consumers by adopting devices that only operate on carrier-specific bands, as proposed by AT&T and Verizon Wireless and shown below.

#### AT&T and Verizon Wireless Proposed 700 MHz Paired Spectrum Bands

Lower Blocks (TV channels 52-59)						Upper Blocks (TV channels 60-69)													
Band 17 AT&T			Band 17 AT&T			Band 13 Verizon		Band 14		Band 13 Verizon		Band 14							
A	B	C	D	E	A	B	C	C	A	D	PS BB	PS NB	B	C	A	D	PS BB	PS NB	B
uplink			unpaired			downlink			downlink						uplink				

AT&T and Verizon Wireless have proposed to adopt devices that will only work on their major holdings in the 700 MHz bands. In particular, devices built for AT&T may only work on the lower B and C Blocks (3GPP LTE Band 17),<sup>6</sup> predominantly held by AT&T, and devices built for Verizon Wireless may

<sup>6</sup> *Id.*

only work on Verizon Wireless' upper C Block (3GPP LTE Band 13). This balkanization of the 700 MHz spectrum will undermine competition in a number of ways.

Under this plan, customers with AT&T devices may be unable to roam using 700 MHz spectrum outside Band 17. Customers with Verizon Wireless devices may be unable to roam using 700 MHz spectrum outside of Band 13.

Roaming is essential to the business models of rural operators. Rural carriers operate in small regions, and so rural customers depend on seamless roaming when they travel outside their region. The carrier-specific bands and devices jeopardize this business model.

Equipment manufacture depends on scale economies. AT&T and Verizon Wireless are sufficiently large to achieve these economies alone. In contrast, lower A Block spectrum winners have insufficient scale to develop affordable end user devices that would work on the A Block. As a result, absent Commission intervention, the A Block spectrum likely will be orphaned for multiple years. This will especially harm customers in unserved or underserved rural areas.

Similarly, the value of the upper D Block and the public safety block in the upper band will be compromised. Without the scale economies, equipment will be expensive or unavailable. The importance of interoperability for public safety is especially great in rural markets where first responders are volunteers and more apt to rely on interoperability with commercial operators.

Finally, innovations stimulated by the open access provisions of the upper C Block will be less apt to spillover to the rest of the 700 MHz bands, since the devices built for the C Block may only work on the C Block.

Ericsson, the large equipment supplier, questioned the creation of Band 17 during the 3GPP member discussion, warning that Band 17 "goes against economies of scale and may lead to market fragmentation."<sup>7</sup> The same risk of market fragmentation applies to Band 13 for Verizon Wireless' upper C Block.

Fragmentation of the 700 MHz spectrum is not necessary. The Coalition for 4G in America has proposed a much better alternative for the 700 MHz paired spectrum: the current Band 12 (lower blocks A, B, and C) and a new upper band (blocks C, A, D, and Public Safety broadband) as shown below. The upper A Block would be returned to the Commission and combined with the D Block for auction.<sup>8</sup>

**Coalition for 4G in America Proposed 700 MHz Paired Spectrum Bands**

Lower Blocks (TV channels 52-59)					Upper Blocks (TV channels 60-69)														
Band 12				Band 12		New Upper Band					New Upper Band								
A	B	C	D	E	A	B	C	C	A	D	PS BB	PS NB	B	C	A	D	PS BB	PS NB	B
uplink			unpaired		downlink		downlink				uplink								

Band 12 and the new upper band greatly reduce the market fragmentation problem. Having devices support both Band 12 and the new upper band eliminates the market fragmentation problem entirely.

In contrast, if AT&T and Verizon Wireless are successful in fragmenting the market, the build out of 4G to rural regions and for public safety will be substantially delayed and more costly when built. This is

<sup>7</sup> See "On the introduction of Band Class 15," prepared by Ericsson and submitted to TSG-RAN Working Group 4 (Radio) meeting #47bis in Munich, Germany, June 16-20, 2008 (Band Class 15 later became Band Class 17).

<sup>8</sup> Coalition for 4G in America ex parte, 28 April 2010. WT Docket No. 06-150, PS Docket No. 06-229, GN Docket No. 09-51.

especially troubling given that the 700 MHz spectrum is ideally suited to provide rural and public safety coverage. Indeed, because of this fact, other countries have included aggressive build out requirements in rural areas as part of the license requirement for low frequency spectrum. For example, in the German 4G auction, ending May 2010, winners of the 800 MHz blocks must build out the rural areas *before* the spectrum can be used in urban areas. AT&T and Verizon Wireless instead intend to build out the urban areas and have no specific plans for the rural areas. It appears that little if any capital would flow to rural areas.

Verizon Wireless CEO Lowell McAdam acknowledges, “These rural markets would take us a while to get to.”<sup>9</sup> In an unusual and perhaps gratuitous gesture, Verizon Wireless is considering arrangements with rural carriers to extend the reach of Verizon Wireless’ network into rural areas. These arrangements, however, effectively make the rural carrier or tower owner a subcontractor in expanding the Verizon Wireless network, rather than a competitive operator, as we have seen in the past. Further, Verizon’s proposal does not address, much less resolve, the lower A Block issues discussed here.

## 5 Restrictive 700 MHz devices harm future spectrum auctions

If AT&T and Verizon Wireless are able to adopt restrictive equipment practices, preventing competition from the lower A Block winners, then the lower A Block winners will have lost their investments in the A Block spectrum. This will have a chilling effect on bidders in future spectrum auctions. New entrants and small operators will be less apt to bid if they think there is a significant risk that the dominant incumbents will take steps to prevent the success of new entrants and rural or regional operators. And when they do bid, they will bid less aggressively.

A Block bidders at the time of the auction had no way of knowing that the Big Two post-auction would be allowed to adopt carrier-specific bands that would damage the value of the A Block. All prior bands (Cellular, PCS, and AWS) have within band interoperability. An A Block bidder would assume that this practice would continue for the 700 MHz spectrum.

Importantly, the AT&T Band 17 was not proposed until April 2008,<sup>10</sup> one month *after* the 700 MHz auction ended in March 2008. An A Block bidder would assume that devices would operate on at least Band 12, which includes all three lower blocks. Also, the high prices on both the lower A and B Blocks in the 700 MHz auction would lead bidders to think that AT&T and Verizon Wireless were bidding aggressively for both the A and B Blocks, further supporting interoperability on the A Block.<sup>11</sup> The lower A Block, in fact, commanded a higher price (\$1.16) than the upper C Block (\$0.76), although both were significantly less expensive than the lower B Block (\$2.16).

Much has been said that the band plans were developed by a “consensus” through the 3GPP. Calling the 3GPP process open is a bit of a misnomer. The process was only open to you if you have engineers or other staff dedicated to meeting anywhere in the world over a two year period. As a practical matter, only the largest carriers and suppliers were present throughout the standard setting process in Europe, Asia, and the Americas.

---

<sup>9</sup> “Verizon in Talks with Rural Firms,” *Wall Street Journal*, 13 May 2010, p. B7.

<sup>10</sup> Motorola, TS36.101: Lower 700 MHz Band 15 (now Band 17), 3GPP TSG RAN WG4 Meeting #47, RA 081108 (April 5-9, 2008) (“This document is presented as a discussion paper to evaluate the need for a new operating band to support Block B and Block C in the lower 700 MHz band.”).

<sup>11</sup> Bidding was anonymous in the 700 MHz auction, so bidders did not learn who was bidding where until after the auction ended.

### Price of lower A and B Blocks and upper C Block in the 700 MHz auction (March 2008)

Block	A	B	C
Bandwidth	12 MHz	12 MHz	22 MHz
Type	paired	paired	paired
Partition	176	734	12
Price (\$/MHz-pop)	\$1.16	\$2.68	\$0.76

In many FCC spectrum auctions since 1994, competition from small bidders has been important in making the auctions competitive and in seeing that the auctions have achieved competitive revenues. The loss of these bidders likely would have a large negative impact on spectrum auctions.

These problems are especially pronounced in the upcoming upper D Block auction. Fragmented 700 MHz bands make the business plan for the D Block much more problematic. Equipment for the D Block and the complementary public safety block would be either expensive or unavailable. Roaming across the 700 MHz band would be more difficult.

The negative impact on the D Block auction would be substantial. We have already seen in the original D Block auction how sensitive potential entrants are to an unfavorable setting. Investors were unwilling to commit the substantial capital needed for entry in that auction. The D Block business plan certainly is less attractive with fragmented 700 MHz bands, but would be much more desirable with an interoperability mandate.

The FCC is also preparing to auction 60 MHz of additional AWS spectrum. Auction prices will be lower to the extent bidders are discouraged by the 700 MHz auction experience.

As part of the National Broadband Plan, the Commission has plans to free-up and auction 120 MHz of additional TV broadcast spectrum.<sup>12</sup> This plan depends in part on the spectrum auction producing sufficient revenues to compensate those broadcasters taking steps to release the spectrum. Bidding in these auctions is apt to be less competitive and revenues lower to the extent that the 700 MHz A Block winners lose value as a result of the Big Two's restrictive device practices. Investors will fear similar losses, anticipating practices favoring the Big Two to the detriment of others. Whether you agree with a freeze on deployment of non-interoperable devices or a one-year migration period to integrate interoperable devices, smaller carriers, public safety and consumers ultimately benefit from interoperability.

The Congressional Budget Office has scored spectrum auctions from 2010 to 2020 to raise just \$3 billion.<sup>13</sup> This number can be dramatically higher if Congress extends and expands the FCC's auction authority (for example, to allow incentive auctions, which encourage incumbents to free-up spectrum to more valuable uses), and if the FCC exercises the authority to promote competitive auctions and a competitive industry. Mandating interoperability within the 700 MHz bands is an important step in this direction.

If the trend to near-duopoly is allowed to continue, it will become increasingly challenging to conduct competitive auctions that yield competitive revenues.

---

<sup>12</sup> FCC, *Connecting America: The National Broadband Plan*, [www.broadband.gov/plan](http://www.broadband.gov/plan).

<sup>13</sup> Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2010 to 2020*,

## 6 The remedy

The FCC can avoid these problems by adopting a simple pro-competitive requirement: mobile broadband devices operating in the paired 700 MHz bands must be able to operate on all paired blocks. This would require the support of two band classes: the current Band 12 (lower Blocks A, B, and C) and a new upper band (Blocks C, A, D, and Public Safety) as proposed by the Coalition for 4G in America.

**Coalition for 4G in America Proposed 700 MHz Paired Spectrum Bands**

Lower Blocks (TV channels 52-59)					Upper Blocks (TV channels 60-69)														
Band 12				Band 12		New Upper Band				New Upper Band									
A	B	C	D	E	A	B	C	C	A	D	PS BB	PS NB	B	C	A	D	PS BB	PS NB	B
uplink			unpaired		downlink		downlink					uplink							

This remedy maximizes the use of the entire paired 700 MHz spectrum. It maximizes economies of scale, since all devices would support both the lower band and the upper band. And it gives all carriers, including those focused on regional, rural, or public safety markets, an opportunity to make full use of the 700 MHz spectrum.

## 7 Flexible 700 MHz devices are both feasible and economical

Such a requirement is consistent with past practice. Devices using the original cellular spectrum can operate on both blocks; devices using the PCS broadband spectrum make use of all PCS blocks; and most recently, devices using the AWS spectrum make use of all AWS blocks. Consumers benefit from this device flexibility, especially with respect to enhanced roaming and coverage.

AT&T and Verizon Wireless argue that such a requirement, while technically feasible, would increase the weight and cost of the devices, and substantially delay implementation.<sup>14</sup> The argument is far from convincing. Wireless Strategy explains how a device can use all the paired blocks, including public safety, with just two duplexers (one for Band 12 and one for the new upper band) and how any interference issues on lower Block A arising from channel 51 can be addressed in standard ways.<sup>15</sup>

Future technological innovation will strengthen the already strong case in favor of device flexibility. The size, weight and dollar cost of making devices operate on all 700 MHz paired bands will fall over time. And the benefits of flexibility will increase as networks are built and customers and services are added. Mandating flexibility likely will lower equipment costs, rather than raise them, as scale economies are enjoyed across the entire band.

## 8 Not acting will undermine competition

If the Commission does not intervene promptly the consequences are predictable and undesirable. Verizon Wireless has announced plans to launch LTE in 25-30 markets later this year. Verizon Wireless will deploy these markets with carrier-specific Band Class 13 devices which cannot be adapted to operate on other 700 MHz networks. AT&T plans to follow with its own LTE launch at Band Class 17 in 2011. Once these launches take place, it will be too late to prevent the harms identified above. If the Commission fails to act, AT&T and Verizon Wireless will further cement their dominant position. The Big

<sup>14</sup> AT&T Comment, 31 March 2010; AT&T Reply Comment, 30 April 2010; Verizon Wireless Comment, 31 March 2010; and Verizon Wireless Reply Comment, 30 April 2010. RM Docket, No. 11592

<sup>15</sup> Wireless Strategy, "700 MHz Band Analysis," ex parte, 10 May 2010. WT Docket No. 06-150; PS Docket No. 06-229; GN Docket No. 09-51; RM Docket, No. 11592.

Two will enjoy a significant and unfair “head start” in 4G—a result historically disfavored and avoided by the FCC.<sup>16</sup> The market will continue its move to a near duopoly, in which AT&T and Verizon Wireless have increasing power in setting prices and policies, and enjoy both cost and coverage advantages. Both competition and innovation will be threatened. Coverage for rural customers will be slowed and roaming services compromised. The development of an interoperable public safety network will be slower, more costly, and less powerful and reliable. Significant portions of the 700 MHz paired spectrum will lie unused for years. And revenues in future auctions will be reduced.

These consequences are at odds with the Commission’s objectives as they appear in the enabling legislation for spectrum auctions (Section 309(j)). The objectives stress the deployment of services in rural areas, the avoidance of excessive concentration of licenses, the efficient and intensive use of the spectrum, and the recovery of a portion of the value of the spectrum for taxpayers. The status quo leads instead to excessive concentration, orphaning and warehousing of spectrum, slow build out to rural areas, and low revenues.

## 9 Conclusion

The Commission must take action now to assure that the societal value of the 700 MHz bands is not compromised by the anticompetitive behavior of AT&T and Verizon Wireless. The Big Two operators hold a near-duopoly position in the low-frequency spectrum. They seek to strengthen their competitive advantage by adopting carrier-specific bands and restrictive devices that limit the ability of rural and regional operators to compete. The negative consequences for competition and future spectrum auctions are large. The behavior will especially harm rural customers and public safety.

The remedy is for the Commission to take immediate action that requires flexible devices that operate on all 700 MHz paired spectrum. This kind of in-band interoperability is consistent with past practice in each of the other major bands (Cellular, PCS, and AWS) for mobile broadband. Interoperability would benefit all customers because competition and coverage would improve, especially in rural areas and in support of public safety.

---

<sup>16</sup> For example, the FCC had similar “head start” concerns about providing either of the two original cellular licensees with a “head start” advantage over the other carrier. See *Cellular Communications Systems*, 86 FCC 2d 469, 511, 642 (1981), *modified*, 89 FCC 2d. 58 (1982), *further modified*, 90 FCC 2d. 571 (1982), *appeal dismissed sub nom. United States v. FCC*, No. 82-1526 (D.C. Cir. Mar. 3, 1983). The FCC found that “maintaining the resale requirement until both [cellular] carriers were fully operational would help to mitigate any competitive disadvantage the second [cellular] carrier may incur during the head start period created by FCC grant of a license and construction permit to one carrier prior to the other carrier.” See *In the Matter of Interconnection and Resale Obligations Pertaining to Commercial Mobile Radio Services*, First Report and Order, 11 FCC Rcd. 18455, CC Docket No. 94-54, FCC 96-263 (1996), ¶ 5 (“*First Report and Order*”). Similarly, in the FCC’s *First Report and Order*, the Commission decided to temporarily extend the existing cellular resale rule to providers of broadband PCS and covered SMR providers in order to promote competition in these services, noting that “[b]ecause cellular, broadband PCS and covered SMR services are not yet provided on a fully competitive basis [...] carriers in these services should, for an interim period, be specifically prohibited from restricting resale or unreasonably discriminating against resellers. *First Report and Order*, ¶ 7. In the instant proceeding, resale is not an option since the restrictive band plans eliminate the ability of A Block handset equipment to operate on the lower B and lower C Block spectrum held by AT&T or the upper C Block spectrum held by Verizon Wireless.