

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

In the Matter of	)	
	)	
Service Rules for the 698-746, 747-762 and 777-792 MHz Bands	)	WT Docket No. 06-150
	)	
Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band	)	PS Docket No. 06-229
	)	

**Comments of  
United States Cellular Corporation  
on Second Further Notice of Proposed Rulemaking**

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## SUMMARY

In revamping the D Block rules, the FCC should offer multiple area licenses and thereby take advantage of smaller providers' demands for additional spectrum and abilities to deploy networks for a reliable, nationwide, interoperable, next-generation wireless suite of services. According to Professor Douglas Sicker (former Chief of the FCC's Network Technology Division and former Chair of the Network Reliability and Interoperability Council Steering Committee), the model of smaller area licenses for the D Block "offers an excellent chance for successful auctioning and successful network development."

The FCC should learn from the outcomes of Auction 73. In the auction of the 700 MHz A Block (EA licenses) and B Block (CMA licenses), 98 small and rural bidders won spectrum that covered almost the entire country and still many of them left the auction with unsatisfied demand after being priced out of A and B Block licenses. The C and D Blocks attracted lower bids and demonstrated the dangers of national or super-regional licensing. Auction 73's small and rural license winners will deploy the next generation of broadband wireless networks in many urban and rural areas. Given additional opportunities to bid on the D Block, they and others like them will be able to expand their deployments.

Creating licenses for the D Block spectrum that are no larger than Major Economic Areas ("MEAs") would make them accessible to a larger pool of bidders. The 55 National Public Safety Planning Advisory Committee ("NPSPAC") regions are of similar size to MEAs; and with over two decades of experience in meeting the wireless needs of state and local public safety authorities through regional committees operating pursuant to a national plan and FCC order, there are also distinct advantages in aligning D Block licenses with the NPSPAC

regions. If the FCC chooses to auction larger license areas, partitioning should be allowed as soon as possible after the initial license grant to facilitate participation of smaller operators.

Multiple area licenses will yield public interest benefits, including greater responsiveness to the diverse needs of public safety agencies, more opportunities for efficiency and innovation, faster build-out of a nationwide network, and increased competition for commercial services. United States Cellular Corp. (“USCC”) and other area wireless providers currently offer nationwide, interoperable services through their expertise in engineering call hand-offs and frequency coordination, as well as roaming arrangements. As in the case of USCC’s awards for highest wireless call quality, smaller providers have proven their excellence in satisfying wireless customers. In particular, smaller providers nationwide have been chosen to serve government customers and meet the needs of public safety agencies for E911, the Wireless AMBER Alerts Initiative and other services.

For the D Block, reasonable license conditions and rules for the Network Sharing Agreement (“NSA”) and Public Safety Spectrum Trustee (“PSST”) will allow multiple area licensees to implement the desired network technologies, operations and services. Having the network and services specifications stated in license conditions and the NSA before the auction will facilitate interoperability, and a faster time scale for planning and build-out. The NSA should allow regional variations to meet the diverse needs of state and local public safety agencies, and to make the public/private partnership commercially viable in all areas.

In particular, (a) the FCC should develop the technical framework in the Appendix; (b) before the auction, the PSST should develop the NSA through consultation with interested public safety agencies and potential bidders, allowing slight variations in rates and other terms applicable by level of public safety usage and cost conditions, specifying network

technology, and providing for a national committee of licensees; and (c) post-auction, public safety agencies and licensees would negotiate NSA amendments to address regional needs and update the national NSAs to reflect on-going review of technologies and service conditions.

USCC also recommends: (1) comprehensive automatic roaming for D Block licensees; (2) decreasing the reserve price and minimum opening bids, especially for less populous areas; (3) retaining default penalties for cases of delinquency and refusal to execute an NSA defined prior to the auction; (4) revising the build-out schedule; (5) revising the network reliability level; (6) a national committee of area licensees as a single, authoritative point of contact for the PSST; (7) eliminating blind bidding; and (8) auctioning without package bidding.

The Auction 73 experience, together with the current national, interoperable wireless offerings, demonstrate that multiple area licensees will more effectively promote the desired public safety network capabilities and services than a single nationwide licensee. Should the FCC choose to auction the D Block without the partnership requirement, we strongly urge the adoption of CMA or EA license areas.

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**Introduction**

United States Cellular Corporation (“USCC”) supports the FCC’s efforts to develop a commercially viable approach to the 700 MHz D Block spectrum that addresses the needs of public safety agencies for nationwide, interoperable, next-generation wireless services. Making the public/private partnership work will be challenging for any licensee or configuration of licensees. While the FCC may choose to license this spectrum without partnership conditions,<sup>1</sup> in the spirit of the Further Notice, USCC has focused its comments on ways to increase the probability of success within the framework of the partnership model, while ensuring the goals of the FCC to provide a highly reliable, nationwide, advanced broadband, interoperable public safety network.

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<sup>1</sup> Second Further Notice, para. 191. Should the FCC choose to auction the D Block without the partnership requirement, we strongly urge the adoption of CMA or EA license areas. See, e.g., Testimony of Coleman Bazelon, The Brattle Group, before the House Committee on Energy and Commerce, Subcommittee on Telecommunications and the Internet (Apr. 15, 2008) (“Bazelon”) at 21, 22.

The FCC should put aside the notion that a nationwide, interoperable network requires a single licensee.<sup>2</sup> With multiple area licenses and reasonable license conditions and rules for the Network Sharing Agreement (“NSA”), smaller providers will be able to bid on this spectrum and deploy interoperable broadband networks with nationwide coverage and the public safety suite of services. Reauctioning the D Block spectrum with areas no larger than Major Economic Areas (“MEAs”) and corresponding to the 55 National Public Safety Planning Advisory Committee (“NPSPAC”) regions also offers several advantages.

The single nationwide license for the D Block in Auction 73 made this spectrum unreachable for many smaller bidders. Through area licenses, smaller providers have demonstrated the desire and resources for acquiring additional spectrum and deploying next-generation networks. In Auction 73, U.S. Cellular’s partner, King Street Wireless, won 152 A and B Block licenses (\$401 million in provisionally winning bids<sup>3</sup> for licenses covering 486.8 million MHz-POPs). Moreover, King Street Wireless bid aggressively on, but did not win other licenses, including a bid of \$701 million on the Chicago B Block CMA license (\$7.22 per MHz-POP) that was topped by near-record bids by the nation’s two largest providers. The auction rules should allow smaller providers to participate in meeting the needs of public safety agencies for nationwide, interoperable, broadband wireless services, even though each such provider individually is unable to bid on a nationwide license. This would enable smaller providers to individually obtain area licenses and collectively build out an exceptional nationwide advanced broadband commercial-public safety network.

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<sup>2</sup> Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, Second Report and Order, 22 FCC Rcd 15289, 15420 (2007).

<sup>3</sup> Bid amounts do not reflect the effects of DE credits.

As one of the nation's strong regional providers, USCC has been a leader in providing reliable, high-quality, advanced wireless services to commercial and government customers in many areas of the nation: (1) USCC had the highest wireless call quality performance in the North Central Region in 2006-08 (J.D. Power); (2) USCC was chosen to serve a wide variety of state and local government agencies (including public safety entities) in many states, such as Illinois, Maine, Missouri, Nebraska, New Hampshire, North Carolina, Oklahoma, Oregon, Virginia, Washington, West Virginia and Wisconsin, giving USCC experience in contracting with and meeting the needs of government public safety entities; (3) USCC has deployed E911 services to operate with over 970 PSAPs and participates with law enforcement agencies in the Wireless AMBER Alerts Initiative, making USCC well-qualified to support the systems of many diverse urban and rural public safety entities; (4) USCC was a member of the Network Reliability and Interoperability Council VII – Focus Group 3A, Wireless Network Reliability, providing USCC with particular insights into constructing and operating exceptionally reliable, interoperable networks and meeting public safety needs;<sup>4</sup> and (5) during 2007, USCC added 458 cell sites in service, to a total of 6,383, and had 69% growth in its data services revenue. USCC is not alone. Numerous other regional and smaller providers have served America's wireless users, including the public safety community, with high quality wireless communications.

According to Professor Douglas Sicker (former Chief of the FCC's Network Technology Division and former Chair of the Network Reliability and Interoperability Council Steering Committee), the coordination of the wireless industry in network engineering and operations indicates that the model of smaller area licenses for the D Block "offers an excellent

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<sup>4</sup> See NRIC VII Focus Group 3A, Wireless Network Reliability Final Report 16 (Sept. 2005).

chance for successful auctioning and successful network deployment.”<sup>5</sup> The public interest – effectively meeting the needs of public safety agencies, increasing competition in broadband wireless services for commercial customers, and a more vibrant auction – requires that the D Block spectrum be auctioned through area licenses that are within the reach of smaller providers.

The remainder of these comments address two topics: (A) benefits of multiple area licenses over a nationwide license; and (B) license conditions and rules for the NSA and the Public Safety Spectrum Trustee (“PSST”) in working with multiple area licensees.

**A. Benefits of Multiple Area Licenses over a Nationwide License**

Paragraph 183 of the Second Further Notice in this proceeding notes the goal of making a nationwide, interoperable broadband network available to state and local public safety users, and asks: “Would it best serve the public interest to continue to license the D Block on a nationwide basis, or should we choose regional geographic service areas ... ?” We propose that multiple area licenses that are no larger than MEAs will best serve the public interest by more effectively promoting the goal of a nationwide, interoperable broadband network.

In the event that the FCC adopts rules for the D Block without the public/private partnership,<sup>6</sup> we strongly urge the adoption of CMA or EA licensing, which would further expand the pool of bidders.

1. Lessons from Auction 73. The successes of Auction 73 point to the solution for the D Block reauctioning. Auctioning the A Block (as EA licenses) and B Block (as CMA licenses) was far more successful than the auction of the C Block (as REAG licenses) and D Block (as a single nationwide license). The smaller license areas yielded higher dollar/MHz-

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<sup>5</sup> D. Sicker, “Multiple Area D Block Licensing” at 2 (attached hereto) (“Sicker Statement”).

<sup>6</sup> Second Further Notice, para. 194.

POPs bids and also enabled many smaller entities to bid on the spectrum and to become providers of broadband wireless services. In the D Block re-auction, the FCC should look to this example, which confirms the FCC's observation that "it may be desirable to have the broadest pool of bidders possible in order to maximize the likelihood of a successful partnership that will benefit both public safety and consumers."<sup>7</sup>

As Chairman Martin observed in his statement to the House Committee on Energy and Commerce on April 15, 2008, small and rural providers won spectrum in the A and B Blocks that "covered almost the entire country".<sup>8</sup> The 98 small and rural winning bidders of these licenses<sup>9</sup> will deploy the next generation of broadband wireless networks in many urban and rural areas. Winning bids for the total B Block CMA licenses had the highest average of \$2.67 per MHz-POP; the A Block EA licenses, many of which are impaired by proximity to ongoing channel 51 television operations, sold for an average \$1.16 per MHz-POP; while the C Block REAG licenses averaged only \$0.76 per MHz-POP.

Moreover, Chairman Martin noted that smaller providers were unsuccessful in Auction 73 "in twenty large metropolitan areas such as New York, Los Angeles, Dallas, Chicago and Atlanta."<sup>10</sup> This suggests that smaller providers had substantial unmet demand for 700 MHz area licenses. Dr. Coleman Bazelon estimated the unfilled demand in the A and B Blocks of

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<sup>7</sup> Id. at para. 161.

<sup>8</sup> Written Statement of FCC Chairman Kevin J. Martin before the House Committee on Energy and Commerce (Apr. 15, 2008) at 8-9, Exhibit 1 ("Martin").

<sup>9</sup> Of the 101 winning bidders in Auction 73, two nationwide wireless incumbents won A, B and C Block licenses, and Frontier Wireless won licenses only in the E Block.

<sup>10</sup> Martin at 9.

Auction 73 at \$9.346 billion.<sup>11</sup> Small providers' demand for spectrum likely will carry over into the re-auction of D Block spectrum as long as there are reasonable auction and service rules.<sup>12</sup>

2. Lessons from Current National, Interoperable Wireless Offerings Through Multiple Licensees. In addition to the Auction 73 experience, four facts show that we should turn away from a single nationwide license for D Block spectrum.

First, while national two-way voice and data services are currently available from many terrestrial wireless carriers, no carrier comes close to offering nationwide wireless coverage solely through its own wireless networks. Instead, each such carrier operates interconnection arrangements (call handoff and frequency coordination) with neighboring carriers, as well as roaming arrangements.<sup>13</sup> Standard industry practices offer customers nationwide interoperability for a wide range of handsets across the networks of multiple licensees.

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<sup>11</sup> Bazon at 20.

<sup>12</sup> See Testimony of Robert J. Irving, Leap Wireless International, Inc. and Cricket Communications, Inc., before the House Committee on Energy and Commerce, Subcommittee on Telecommunications and the Internet (Apr. 15, 2008) ("Irving") at 6 ("Congress and the FCC should examine whether breaking the D Block into smaller licenses makes better policy sense. If it preserves a public safety component of this spectrum, the FCC should consider allowing several different network providers to work with the public safety community.").

<sup>13</sup> See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993: Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, 23 FCC Rcd 2241, 2255 (2008) ("many regional and smaller providers are able to offer pricing plans with nationwide coverage through roaming agreements with other providers"); Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers, 22 FCC Rcd 15817, at 15828 (2007) ("The record demonstrates that automatic roaming is currently widespread due, in large part, to the offering of nationwide and regional calling plans.... Today, most wireless customers expect to roam automatically on other carriers' networks when they are out of their home service area. Accordingly, we recognize that automatic roaming benefits mobile telephony subscribers by promoting seamless CMRS service around the country, and reducing inconsistent coverage and service qualities.").

Although current network interoperations may not be what some envision for the next-generation services in the D Block, the existing multi-carrier technical and operating coordination is substantial. As the CDMA Development Group observed: “[R]oaming involves more than providing back-end services that recognize ‘roamers’ and automatically provision them on the network.... Being able to stay in touch while traveling includes being able to use SMS and Instant Messaging services, having access to email and corporate Intranets, and accessing local travel and entertainment content....”<sup>14</sup> Moreover, cooperation among carriers, standards committees and equipment manufacturers has achieved impressive interoperability.<sup>15</sup> CTIA observed that the complex environment for data and multimedia services requires close cooperation to create a positive user experience:<sup>16</sup>

- Number and variety of devices and players require carriers and their partners to deal with hundreds of combinations of networks, handsets, messaging platforms, billing systems, and user interfaces to ensure consistent delivery of content to consumers (including games, music and video programming, messages, etc.).
- Carriers and aggregators need to work together and with third-party content providers to ensure interoperability, quality user experiences, and to block objectionable content (e.g., spam).

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<sup>14</sup> CDMA Development Group, “CDMA2000 International Roaming: A Status Report” at 2-3 (March 2005). See also CDMA Development Group, “Inter-Standard Roaming White Paper” (Dec. 5, 2005) (conversion platform connecting GSM and CDMA networks, including automatic call delivery on the home cellular number, home wireless system billing and subscriber profile translation).

<sup>15</sup> Sicker Statement at 5 (“interoperability has been achieved many times in the past to create national coverage without a national license”). For example, the Wireless Application Protocol (“WAP”) Forum emphasized interoperability in defining an industry-wide specification for developing applications that work across differing wireless network technologies and bring Internet content and advanced data services to digital cellular phones and other wireless terminals. Wireless Application Protocol Forum, Ltd., Wireless Application Protocol Architecture Specification 4, 24 (Oct. 17, 2000).

<sup>16</sup> CTIA – The Wireless Association, The Mobile Connection: Wireless Broadband at 23 (presentation available at [www.ctia.org/advocacy/research/index.cfm/AID/10315](http://www.ctia.org/advocacy/research/index.cfm/AID/10315)).

Second, carriers with area licenses covering a minority of the nation’s population and geographic area offer national service plans with coverage comparable to the offerings by carriers holding licenses covering all or almost all of the nation. Again, the key to nationwide interoperable wireless services is that multiple carriers engage in interconnections and roaming arrangements across license areas. As in the case of USCC in the North Central region, some carriers offering national service plans, but with less than nationwide license footprints, have surpassed carriers with nationwide footprints in the important measure of customer satisfaction.<sup>17</sup>

Third, each major carrier holds and operates across multiple license areas. No carrier offering national service plans relies on a single nationwide license. A nationwide license or REAGs are not used in the current offerings of interoperable services, and no operator has achieved licensed-area-wide deployment for a nationwide or REAG license. Professor Sicker observes that “deployment of a broadband wireless network on a national scale by a single provider has not been undertaken to date, much less on such a tight, mandatory timescale, and such an endeavor creates substantial risk.”<sup>18</sup>

Finally, many providers offering national service plans, or contributing to the nationwide coverage of other carriers, simply cannot afford to acquire a license covering the entire nation or even an REAG, and then deploy and operate such network infrastructure. These carriers have proven their financial, technical and operating capabilities to participate in providing nationwide, interoperable, high-quality wireless services. The nationwide D Block license in Auction 73 did not allow these potential providers an opportunity to meet the needs of

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<sup>17</sup> Alltel had the highest 2008 wireless call quality performance in the West, Southeast and Southwest (tied with T-Mobile) regions according to J.D. Power. See [www.jdpower.com/telecom/ratings/wireless-call-quality-ratings-\(volume-1\)](http://www.jdpower.com/telecom/ratings/wireless-call-quality-ratings-(volume-1)).

<sup>18</sup> Sicker Statement at 8.

public safety agencies. In crafting rules for re-auctioning this spectrum, the FCC must offer multiple area licenses to draw on these smaller providers.

The FCC should look to area licenses smaller than REAGs. The Second Further Notice notes the possibility that “we choose regional geographic service areas such as REAGs.”<sup>19</sup> As demonstrated by the relatively low bids for REAGs in Auction 73, the pool of potential bidders is much larger for smaller licenses than for REAGs. Furthermore, current wireless licensees have demonstrated impressive interoperability and coordination with license areas smaller than REAGs and with many more wireless operators. The issues of sufficient pre-auction specifications for nationwide interoperability and on-going coordination with multiple licensees exist for auctioning REAGs as well as smaller area licenses. As described below, smaller area licenses offer advantages over REAGs in responsiveness to public safety entities, innovation and competition, and a national committee of licensees would facilitate coordination for smaller license areas.

3. Other Public Interest Benefits of Multiple Area Licenses. Multiple area licenses will be a big step toward successfully auctioning the D Block spectrum. Additionally, there will be several other advantages to public safety agencies and consumers using broadband services provided by multiple area licensees.

Focus on area needs of public safety agencies. Area licensees would focus on the differing needs and priorities of each area’s public safety agencies. As a representative of the New York City Police Department testified in April 2008: “The FCC should consider a more regional approach regarding the sale or auction of the D Block spectrum to allow for more

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<sup>19</sup> Second Further Notice at para. 183.

flexible solutions to a region’s specific needs.”<sup>20</sup> A national licensee with national build-out requirements may be less responsive to area needs. Each regional area licensee would be more accountable to the public safety agencies in the area it serves.

Area licensees already have experience in working with and meeting the needs of local public safety agencies for E911 service, the Wireless AMBER Alerts Initiative, and other services.

As the FCC found in 1987 when it adopted 55 NPSPAC regions, larger regions decrease the responsiveness to local needs; increase the complexity and slow the speed of the planning process; and raise the expected need for FCC staff involvement in planning and band utilization. These considerations outweighed – and continue to outweigh – the claims that larger regions encourage uniformity and broader coordination.<sup>21</sup> For over two decades, the 55 NPSPAC regional committees have been coordinating diverse local and state agencies and performing important public safety planning functions, including recently reconfiguring the 800 MHz band.<sup>22</sup>

Best practices, innovative solutions and faster deployments. Within the framework of national standards and obligations, diverse area licensees will lead to innovative, cost-effective solutions for public safety agencies. Leading economists have found that an

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<sup>20</sup> Testimony of Charles F. Dowd, New York City Police Department, before the House Committee on Energy and Commerce, Subcommittee on Telecommunications and the Internet (Apr. 15, 2008) at 3-4 (“The concept of a single nationwide licensee assumes that one system will satisfy the needs of all agencies and that is not possible.”).

<sup>21</sup> Development and Implementation of a Public Safety National Plan and Amendment of Part 90 to Establish Service Rules and Technical Standards for Use of the 821-824/866-869 MHz Bands by the Public Safety Services, 3 FCC Rcd 905, 910 (1987) (“Public Safety National Plan”).

<sup>22</sup> See Section A.5, *infra*.

industry with multiple carriers making technology, operations and service decisions using CMA and EA licenses encourages technology development, efficiencies and service improvements.<sup>23</sup> Multiple area licensees will allow public safety agencies to benchmark, identify and promote best practices. In contrast, a single national licensee is likely to be more rigid, less efficient and less responsive at a local level.

Multiple licensees in smaller areas will likely deploy networks faster in aggregate than a nationwide licensee or REAG licensees.<sup>24</sup> In particular, they will more readily deploy portions of the nationwide network that correspond to local priorities and conditions. In developing a nationwide network for public safety users, Professor Sicker finds these benefits of smaller area licenses:

Not only do numerous providers increase the paths to various innovations, but each provider will produce novel solutions in response to specific regional conditions they encounter..... More rapid deployment may be achieved in a model with regional licenses corresponding to the NPSPAC regions because the established NPSPAC organizational framework allows for rapid and efficient establishment of a private-public safety interface, the NPSPAC regional committees bring expertise and knowledge base, and it allows numerous regional providers to work in parallel.<sup>25</sup>

Increase competition for broadband wireless services. Widely distributed spectrum holdings are the lifeblood of future wireless competition. Multiple area licenses will

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<sup>23</sup> See Paper by Professor William Rogerson: “Regional/rural carriers serving small geographic areas provide an important source of competition, variety, and diversity in rural and less dense areas.” (attached to comments filed by U.S. Cellular in GN Docket No. 01-74 (May 15, 2001)); Paper by Professor Robert Weber attached to comments filed by U.S. Cellular in DA 05-1267 (June 1, 2005) (long-term benefits of diverse wireless carriers in technology deployment and competition).

<sup>24</sup> See Bazon at 1 (with the nation’s two largest wireless carriers winning most of the Auction 73 licensed spectrum, “rural build-out will be hampered”).

<sup>25</sup> Sicker Statement at 3, 8.

enable smaller and rural providers to compete more effectively for consumer broadband wireless services.

Chairman Martin correctly observed that Verizon Wireless and AT&T outbid smaller providers in the top twenty markets in Auction 73.<sup>26</sup> After Auction 73, Verizon Wireless and AT&T proclaimed the breadth and depth of their spectrum holdings to deploy 4G services and handle traffic growth in all the top markets for many years.<sup>27</sup> In contrast, re-auction of the D Block presents a unique opportunity for smaller providers to acquire spectrum for broadband services in many urban areas and to increase their ability to serve rural areas. More diversity in spectrum holdings will lead to more competition in wireless broadband services as well as greater innovation.<sup>28</sup>

More competition in wireless broadband services will benefit public safety users (by promoting best practices and innovative solutions as described above) and commercial users. As the FCC observed in the Second Further Notice: “It therefore may serve the public interest to limit eligibility for participation in the D Block auction in order to maximize the possibility that a party otherwise without significant access to spectrum potentially suitable for the provision of mobile wireless broadband services will have an opportunity to create a nationwide 700 MHz

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<sup>26</sup> Martin at 9.

<sup>27</sup> “Verizon Wireless Says Spectrum Additions From FCC’s Auction 73 Will Further Company’s Broadband Strategy” (Verizon Press Release, Apr. 4, 2008) (“We now have sufficient spectrum to continue growing our business and data revenues well into – and possibly through – the next decade....”) (“Verizon Wireless”); “AT&T Acquires Key Spectrum For Future of Wireless Broadband, More Choices for Customers” (AT&T Press Release, Apr. 3, 2008) (“AT&T...continues to have a leading spectrum position in the industry.... AT&T’s 700 MHz spectrum will cover 100 percent of the top 200 markets and 87 percent of the U.S. population....”).

<sup>28</sup> See Irving at 6 (“there is a real basis for concern that the continued aggregation of spectrum resources will only exacerbate anti-competitive behavior by the nation’s supercarriers”).

network using the D Block.”<sup>29</sup> In recent mergers and acquisitions, the FCC has addressed concerns about the anticompetitive and other harms caused by spectrum concentration by applying a 95 MHz screen.<sup>30</sup> Just as the FCC applied this screen to an acquisition of a licensee holding unbuilt 700 MHz licenses,<sup>31</sup> there should be a limit on spectrum aggregation through the D Block re-auction.<sup>32</sup>

4. Weakness of Concerns About Multiple Area Licenses. Concerns about coordinating multiple area licensees do not justify a nationwide license, as discussed further in the next section. The PSST’s efforts on specifications leading up to the NSA, along with the FCC’s work on the technical framework building on the Appendix in the Second Further Notice, will make clear each licensee’s obligations in the nationwide, interoperable, public safety network. Current coordination across the more numerous cellular and PCS market areas is more daunting than coordinating the D Block across MEAs or 55 NPSPAC regions, but has been achieved. The license conditions, NSA and on-going involvement of the PSST, together with the economic incentives for each D Block licensee to satisfy its partners and largest customers

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<sup>29</sup> Second Further Notice at para. 156.

<sup>30</sup> Applications of AT&T Inc. and Dobson Communications Corp. for Consent to Transfer Control, 22 FCC Rcd 20295, 20312-14 (2007); Applications of T-Mobile USA, Inc. and SunCom Wireless Holdings, Inc. for Consent to Transfer Control, 23 FCC Rcd 2515, 2520 (2008). The 95 MHz screen aggregates cellular, broadband PCS, SMR and 700 MHz spectrum suitable for mobile telephony.

<sup>31</sup> Application of Aloha Spectrum Holdings Company LLC (Assignor) and AT&T Mobility II LLC (Assignee) Seeking FCC Consent for Assignment of Licenses and Authorizations, 23 FCC Rcd 2234, 2237 (2008).

<sup>32</sup> Given the importance of coordination among D Block licensees and public safety agencies, (a) smaller bidders may be deterred from bidding on D Block licenses if these licenses are likely to fall into the existing domination of the 700 MHz licenses by Verizon Wireless and AT&T, (b) public safety agencies would confront large, less responsive licensees in the absence of a spectrum cap, and (c) public safety and commercial users would have less competition and innovation if the same two carriers dominated the D Block as well as other 700 MHz licenses.

(public safety agencies), would provide the framework for the area licensees to repeat the successes of current carriers with nationwide interoperable voice and data services.

Professor Sicker concludes that coordination among licensees for NPSPAC regions is manageable and should be expected based on industry experience:

We can look to a broad range of established mechanisms in the telecommunications space as examples of successful industry coordination including, but not limited to, frequency coordination, telephone number assignment, Internet address coordination, network reliability, network security and mobile subscriber roaming. Each of these has its own unique market and technology characteristic but collectively demonstrate what industry is capable of attaining.<sup>33</sup>

Another possible concern about area licenses is that some licenses would not attract bidders.<sup>34</sup> In Auction 73, all but eight out of 1,098 area licenses in the A, B, C and E Blocks were successfully auctioned. Moreover, the CMAs in the B Block and the EAs in the A Block attracted higher valuations than the REAGs in the C Block. The FCC and PSST can increase the attractiveness of less populous area licenses in the D Block by (a) modestly lowering the minimum opening bids, (b) making the service fees more commercially attractive (in areas with low volumes of public safety usage, lower charges for the D Block licensee's use of the public safety spectrum, and higher charges for public safety agencies' use of the D Block spectrum), or/and (c) decreasing NSA network/service obligations for these licenses. The FCC should be sensitive to these factors in developing the rules for the re-auction, and could make

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<sup>33</sup> Sicker Statement at 5.

<sup>34</sup> Second Further Notice, para. 184.

further adjustments if any area license is unsold and needs to be re-auctioned.<sup>35</sup> Additional options would be available with federal appropriations.

5. NPSPAC Regions. USCC urges the FCC to auction licenses no larger than the MEAs. A single nationwide license or splitting the nation into just two licenses (one urban and the other rural<sup>36</sup>) would preclude the participation of many smaller providers. In contrast, the 55 NPSPAC regions would enable smaller providers to participate, bringing a much broader pool of bidders. The NPSPAC regions have been used to coordinate state and local public safety wireless communications for over two decades, pursuant to a national plan and FCC order, and many regional planning committees have implemented wide-area 800 MHz band public safety plans and systems.<sup>37</sup> This number of license areas would be large enough to increase the likelihood that each licensee would be responsive to the needs of public safety agencies in its area, but not so large as to create serious coordination concerns.

At the request of the FCC, the NPSPAC developed the number and areas of the regions in 1987 by consensus, “taking into account experience in coordination and administration of public safety operations, and the size of the regions to be administered.”<sup>38</sup> After the NPSPAC adopted a national plan (which addressed, among other issues, interoperability, high speed data transmissions and encryption), the regional committees

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<sup>35</sup> Under these circumstances, the FCC could also consider creating a new public-safety related universal service mechanism. Such a mechanism, however, should not be established at the expense of important existing universal service priorities.

<sup>36</sup> Second Further Notice, para. 185.

<sup>37</sup> See Improving Public Safety Communications in the 800 MHz Band, 19 FCC Rcd 14969, at 14991 (2004) (“Improving Public Safety Communications”).

<sup>38</sup> Public Safety National Plan, 3 FCC Rcd at 910.

developed conforming regional plans and systems meeting the diverse needs of their state and local users.

The coordination, expertise and systems of the NPSPAC regional committees would be most effectively utilized by aligning 55 D Block licenses with the NPSPAC regions.

Professor Sicker's experience leads him to determine that the regional

committees have been able to tailor their decisions and actions to differing regional needs....Establishing commercial license regions corresponding to the NPSPAC regions will allow each region's network provider to draw on the experience of that NPSPAC in meeting its particular needs under its unique conditions and operating environment.<sup>39</sup>

6. Partitioning. Finally, the Second Further Notice does not revisit the prohibition on partitioning in the context of the public/private partnership.<sup>40</sup> Even with this prohibition, smaller providers would be able to help make the partnership successful as long as there are multiple area licenses of reasonable sizes (no larger than MEAs or the NPSPAC regions). However, if the FCC favors a nationwide license or super-regional licenses, it should allow geographic partitioning as soon as possible after the initial license grant. Leaving in place the ban on partitioning would permanently bar smaller providers from using this spectrum even on terms that would protect compliance with the license conditions and promote the interests of public safety users.

**B. License Conditions and Rules for the NSA and PSST in Working with Multiple Area Licensees**

The Second Further Notice asks about how to achieve the goals for the public/private partnership in the context of multiple area licenses. Paragraph 184 asks: “[H]ow

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<sup>39</sup> Sicker Statement at 2-3.

<sup>40</sup> Second Further Notice, para. 96, n.117.

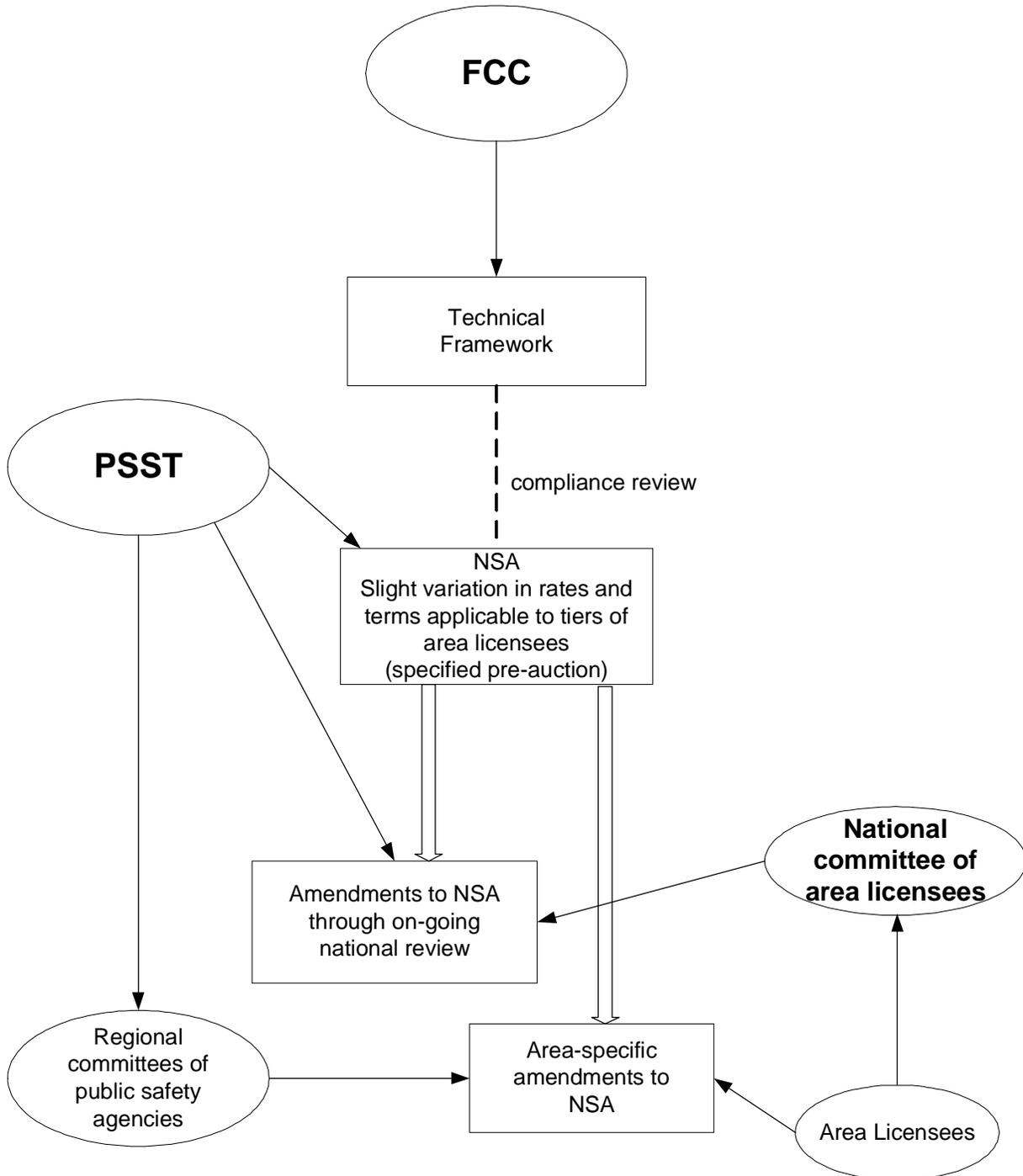
would we ensure interoperability of communications between public safety users of different regional networks? How would we ensure that interoperable communications capabilities are extended to first responders in every region in an equitable fashion?” Paragraph 186 poses these issues: “Are the needs of public safety served if the Public Safety Broadband Licensee must negotiate separate NSAs with several commercial entities, rather than a single, nationwide commercial partner? Under a regional approach, how would we ensure that interoperable communications capabilities are extended to first responders in every region in an equitable fashion? Should we mandate a ‘master’ NSA that would include minimum network specifications, which could then be modified on a regional basis with more detailed schedules?”

Working with multiple area licensees is not only feasible in meeting the goals for the public/private partnership, but likely superior to the model of a single nationwide licensee. The FCC’s work on a technical framework in the Appendix to the Second Further Notice, along with the PSST’s work leading up to the NSA, point to the feasibility of the multi-licensee approach. Reasonable rules will accommodate multiple area licenses without imposing heavy burdens on the FCC or PSST. Additionally, the precedent of the NPSPAC and its regional committees, as well as the tried-and-true coordination among numerous wireless licensees following several auctions for cost sharing and band transitions, is helpful and reassuring here.

The following chart depicts the roles of the three actors -- the FCC, PSST and area licensees -- in developing the NSA, as further described below. The FCC adopts the technical framework rules, reviews the proposed NSA for compliance with those rules, and adopts license conditions requiring the winning bidders to execute the NSA upon grant of the licenses and to form a national committee. The PSST consults with interested public safety agencies and potential bidders to develop the NSA before the auction, has on-going post-auction

work with the national committee of licensees regarding amendments reflecting changing market conditions and technologies, and forms regional committees of public safety agencies. Finally, the area licensees work with the regional committees on area-specific amendments to the NSA, and form a national committee that works with the PSST on amendments to the NSA.

# Organization Chart for Roles of FCC, PSST and Licensees in NSAs



1. License Conditions Include Rules to Promote a Broad Pool of Bidders.

Part of the failure of the D Block in Auction 73 was attributable to uncertainty at the time of the bidding on network and service conditions that would be developed through negotiations with the PSST post-auction, as well as how the FCC would resolve disputes. Any potential bidder – regardless of the geographic area covered by the license – needs more clarity to develop a valuation model than existed under the Auction 73 approach to the NSA. Major factors include service features and performance standards, capacity to serve commercial customers, scope of public safety users, fees for use of the public safety spectrum, and charges for public safety’s use of D Block spectrum.

Each area licensee will accept as license conditions – much like the build-out requirement – the technical framework. These license conditions will narrow the uncertainties about costs, revenues, operations and services. The technical framework will thereby promote effective interoperability and nationwide offerings as well as more bidders and higher bids.

USCC commends these efforts.

USCC makes recommendations on eight other parts of the license conditions and auction rules:

- Apply a comprehensive automatic roaming rule to D Block licensees that includes roaming for advanced services.
- Retain a reserve price for the licenses and minimum opening bids, but promote the commercial viability of each license in the public/private partnership by setting

lower minimum opening bids for less populous areas, and decreasing the aggregate reserve price for the D Block spectrum;<sup>41</sup>

- Retain default penalties for winning bidders that fail to make the license payment on time or fail to enter into the NSA specified prior to the auction;<sup>42</sup>
- Revise the build-out schedule to the levels in the FCC’s example in Paragraph 95;<sup>43</sup>
- Revise the requirements from 99.7 percent network reliability to a level such as 95 percent reliability over 95 percent of the defined area;<sup>44</sup>
- Require area licensees to form a national committee as a single point of contact with the PSST for on-going review and updating of the national NSA. The NSA would specify the voting process for the area licensees, including for electing national representatives;<sup>45</sup>
- Eliminate the blind bidding rule that applied in Auction 73. The licensees will be required to coordinate in their networks and services post-auction, and the identities of other bidders will be highly important in valuation during the auction;<sup>46</sup> and

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<sup>41</sup> Id., paras. 163-64.

<sup>42</sup> Id., paras. 172-75.

<sup>43</sup> “We could, for example, require the D Block licensee to provide signal coverage and offer service to at least 50 percent of the population of the nationwide license area by the end of the fifth year, 80 percent of the population of the nationwide license area by the end of the tenth year, and 95 percent of the population of the nationwide license area by the end of the fifteenth year.” Id., para. 95.

<sup>44</sup> Id., para. 73. Potential bidders will need more specificity from the FCC’s technical framework and/or the NSA as to how this performance measure will be calculated and whether it applies uniformly to all services.

<sup>45</sup> See, e.g., the precedent of the National Exchange Carrier Association which develops and files with the FCC national tariffs in which 1,150 local telephone companies concur. NECA was created pursuant to FCC orders in 1983. MTS and WATS Market Structure, 93 F.C.C. 2d 241, 333-36 (1983), 94 F.C.C. 2d 852 (1983).

- Offer licenses without package bidding in order to promote transparency and avoid the “threshold problem” for smaller bidders (coordinating multiple bidders’ interests in area licenses sufficiently to overcome a large bidder’s package bid).<sup>47</sup> In this re-auction, the FCC should aim at increasing the pool of bidders and not disadvantage smaller bidders that are able to serve areas but not super-regions. The FCC should avoid a repeat of the Auction 73 problems related to package bidding in which the rules (considered bids, dropped bids, etc.) amplified the bidding power of the few bidders with large amounts of bidding eligibility, allowing them to walk away with prime spectrum at prices barely exceeding the reserve price.<sup>48</sup>

2. NSA Specified Pre-Auction. The proposed technical framework in the Appendix is intended to lead to specifications adopted by the FCC in the next report and order in this proceeding.<sup>49</sup> Between the FCC’s adoption of that order and the commencement of the re-auction, the PSST should develop the NSA to comply with the technical framework. Each winning bidder will be required to sign the NSA as a condition to grant of the license. The following features should guide the NSA.

The contents of the NSA should address levels of details beyond the technical framework. Examples include further specifications for technology selection, roaming arrangements, rates, service levels, priority preemption mechanisms, security, and voting by area

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*(cont’d from previous page)*

<sup>46</sup> See Bazon at 14 (“[Blind bidding in Auction 73] made it much more difficult for bidders to assess how risky any strategy would be or how secure it was that its [provisionally winning bid] would stick.”).

<sup>47</sup> See Id. at 11-13 (“Package bidding [in Auction 73] did far more harm than good.”).

<sup>48</sup> See Id. at 12-13.

<sup>49</sup> Second Further Notice, Appendix, Section I.

licensees with regard to the national committee for decision-making and election of national representatives.

The NSA would provide for a standard set of specifications consistent with the needs of public safety agencies and interoperability. Furthermore, the PSST should develop provisions in the NSA that would be applicable to different tiers of license areas to reflect volume of usage by public safety entities and other relevant market conditions. The PSST would determine the tiers with the goal of making each license area commercially viable, leading to a successful auction and strong operators serving public safety users. License areas with smaller total population and lower population density require economic terms reflecting their higher per unit costs. For the license areas that generate higher volume of usage by commercial customers, incur fewer service preemptions by public safety users, and have lower costs conditions, the service requirements, charges and other terms would be more favorable to the public safety users. Conversely, for the license areas that garner weaker usage by commercial customers, incur more service preemptions by public safety users, and have higher costs conditions, the terms would be more favorable to the bidders.

The procedure should involve preparation of the draft NSA by the PSST; publication of the draft; open forums and discussions with interested parties (both potential bidders and public safety agencies); submission of final draft to the FCC; and FCC review for compliance with the technical framework, including an opportunity for public comment.

The NPSPAC experience provides guidance for the FCC's rules addressing the development of the NSA before the auction.<sup>50</sup> Pursuant to the FCC's order in 1983, the NPSPAC -- a committee representing public safety agencies nationwide -- developed a national

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<sup>50</sup> Sicker Statement at 3-4.

plan for wireless services in 800 MHz bands to support state and local public safety agencies. That national plan was submitted for review by the FCC. Regional committees subsequently developed individual regional plans that met the particular needs of the applicable region, all in compliance with the national plan. The regional plans were submitted for certification by the FCC.<sup>51</sup> The NPSPAC regional committees have been performing various spectrum and service planning and coordination functions for over two decades.

The pre-auction NSA needs to provide further clarity for potential bidders, going beyond the technical framework in the FCC's order. However, as discussed next, there will be opportunities for post-auction amendments as the area-specific licensee and public safety agencies engage in discussions of the particular needs and other issues for that area.

3. Post-Auction Amendments to the NSA. After executing the initial pre-auction NSA, needs for fine-tuning and adjustment will arise. In this process, multiple area licenses provide a better opportunity than a single nationwide license to address diverse regional public safety needs and service conditions.

After the D Block auction, winning bidders would sign the NSA and form a national committee for a single point of contact with the PSST on national issues. Each winning bidder would commit, as a term of the NSA, to participate in electing a few national representatives and to be bound by decisions of the national committee. Also, the PSST would designate a regional committee of public safety agencies in each region; the existing committees for the NPSCPAC regions could be used in the case of corresponding license areas, or committees could be formed if different license areas were adopted.

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<sup>51</sup> Public Safety National Plan, 3 FCC Rcd 910-11.

At the national level, the PSST and the national representative of the licensees would discuss technology evolution, review the experiences of the licensees and public safety agencies, and other on-going matters. They may decide to amend the NSA applicable to multiple areas, subject to FCC review for compliance with the technical framework.

Each licensee and the applicable regional committee of public safety agencies would discuss any area-specific amendments to the NSA, implementation matters, opportunities, and other on-going matters. They may decide to amend the NSA applicable to that area, subject to PSST review for consistency with the interoperability requirements of the multi-area NSA and the FCC's technical framework.

This process will protect and promote nationwide interoperability and state-of-the-art network services, while adapting to the diverse needs and service conditions in specific areas. There is also precedent to support this process. The FCC has successfully required post-auction coordination in several wireless proceedings among multiple licensees in cost sharing for band clearing. For example, the FCC required PCS and AWS licensees to undertake cost sharing in relocating incumbent spectrum users, and used industry clearinghouses to effectuate the coordination and transition.<sup>52</sup> In another proceeding, the FCC created a transition administrator to coordinate with NPSPAC regions to establish relocation schedules and cost

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<sup>52</sup> Wireless Telecommunications Bureau Finds CTIA and PCIA Qualified to Administer the Relocation Cost-Sharing Plan for Licensees in the 2.1 GHz Bands, 21 FCC Rcd 11265 (2006); Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems; Service Rules for Advanced Wireless Services In the 1.7 GHz and 2.1 GHz Bands, 21 FCC Rcd 4473 (2006); Broadband PCS Entities and Fixed Microwave Services Licensees Reminded of April 4, 2005 Sunset of Relocation Cost Compensation and Microwave Cost Sharing Rules, 20 FCC Rcd 5141 (2005); Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation, 11 FCC Rcd 8825 (1996), 12 FCC Rcd 2705 (1997), 15 FCC Rcd 13999 (2000).

reimbursement.<sup>53</sup> For another band transition, the FCC created a framework for multiple incumbent users to agree on how they would transition a particular MEA (and thereby reduce costs to each individual proponent) and then file the initiation plan with the FCC.<sup>54</sup>

Similarly, Professor Sicker – who has worked with industry and public safety committees on wireless network reliability, interoperability, and other issues – concludes that coordinating about 55 D Block licensees will be manageable and yield substantial benefits for public safety users.<sup>55</sup>

## **Conclusion**

Smaller providers were excluded from the D Block spectrum in Auction 73 because of the expense of a nationwide license and subsequent capital requirement and resources to build out a single nationwide network. Re-auctioning the D Block spectrum gives the FCC the opportunity to establish service rules that will lead to a successful D Block auction and subsequent network deployment.

The FCC must decide whether to move forward with the public-private partnership model. If the FCC decides not to continue this model, we strongly urge the adoption of CMA or EA licensing, following on the success of these license sizes in Auction 73. Moreover, the lessons from the current multi-carrier, nationwide, interoperable wireless services are that there should be multiple area licenses even under the partnership model; the licenses

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<sup>53</sup> Improving Public Safety Communications, 19 FCC Rcd 15070-75 (“In assigning oversight of the logistics of band reconfiguration to a Transition Administrator, we allow all parties involved in the relocation process a degree of flexibility that would not be achievable if we set rigid rules for the relocation process.”).

<sup>54</sup> Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, 19 FCC Rcd 14165, 14200 (2004).

<sup>55</sup> Sicker Statement at 10-11.

should be no larger than MEAs; and there are advantages to using the 55 NPSPAC regions. The FCC should develop and adopt a general technical framework; require the PSST to finalize the pre-auction NSA, allowing for slight variations in rates and other terms reflecting volume of public-safety usage and other conditions; and allow for post-auction regional amendments to reflect the diverse needs and conditions of the license areas.

This approach will likely produce a competitive auction open to smaller providers with a proven track record of service. The public interest would be served by the multi-carrier approach through more responsive, innovative approaches to meeting the needs of public safety agencies and more competition for commercial customers.

Respectfully submitted,

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June 20, 2008

Its Attorneys

**COMMENTS FROM DR. DOUGLAS C. SICKER<sup>1</sup>**  
**ON MULTIPLE AREA D BLOCK LICENSING**

INTRODUCTION

The FCC's public-private partnership license model is an innovative solution to the crucial problem of funding an interoperable, nationwide advanced wireless broadband network for public safety communications.<sup>2</sup> By moving to regional D Block licensing this public-private model can be successfully maintained and the goals of funding and timely deployment of a commercial-public safety, state-of-the art, advanced wireless broadband network can be met, while also accruing additional benefits. Regional licensing corresponding with the National Public Safety Planning Advisory Committee (NPSPAC) regions has numerous benefits and will pave the road for successful auctioning of the D Block spectrum, as well as successful deployment of the public-private network. Adopting a detailed and specific technical framework and developing a Network Sharing Agreement (NSA) prior to the auction decreases uncertainties and risks, further facilitating a successful auction and successful network deployment.

Although it is easy to perceive that multiple area licensees would likely have more difficulty coordinating with the PSBL (Public Safety Broadband Licensee) when it is already anticipated that it would be challenging for a single provider to do so, creating regional licenses that correspond to the NPSPAC regions and forming a national committee of licensees will improve overall coordination. Creating regional licenses that specifically correspond to the NPSPAC regions allows for private provider interface into an already existing organizational structure with proven working processes and institutional knowledge. The primary objective is

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<sup>1</sup> Dr. Douglas C. Sicker is an Associate Professor in the Department of Computer Science and Director of the Interdisciplinary Telecommunications Labs at the University of Colorado. Prior to this he was Director of Architecture at Level 3 Communications. And prior to this, he was Chief of the Network Technology Division at the Federal Communications Commission (FCC). His research interests include cognitive radios, spectrum policy, network security and public policy. He is currently an investigator on a number of NSF and DARPA funded projects, most of which are exploring adaptation and spectrum agility in wireless networks. He is chair of IEEE P1900.3 working group, which is a standards effort for assessing the spectrum access behavior of radio systems employing dynamic spectrum access methods. He also serves as an advisor to the DOJ's National Institute of Justice. After leaving the FCC, Dr. Sicker served on two federal advisory committees - the Network Reliability and Inter-operability Council (NRIC) and the Technical Advisory Council (TAC). He has also served on a wide variety of IEEE and ACM technical program committees. He recently was awarded a second IBM Faculty Partnership Award and received a Public Interest Award and two Special Act Awards while working at the FCC.

<sup>2</sup> The FCC notes this problem, "Importantly, we also found that this approach was the best means available to address the issue of funding for construction of a public safety communications infrastructure, which has proven a significant impediment to date." See, Second Further Notice of Proposed Rulemaking, Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, FCC08-128, para. 5 (May 14, 2008).

to create a state-of-the-art, nationwide broadband public safety network; so it is sensible to align the private partner with the public safety partner in such an advantageous manner.

Although interoperability is a significant issue that must be actively worked on by all private licensees, there is precedent for such an endeavor and this model offers an excellent chance for successful auctioning and successful network deployment. Note that other national public safety endeavors have not been undertaken by a single national provider. For example, E911 was implemented by all service providers and advanced with extensive work by the Network Reliability and Interoperability Council (NRIC), with industry, public safety and government representatives.<sup>3</sup> Lastly, it is also notable that single nationwide licenses are not common and the Commission itself noted this departure.<sup>4</sup> Clearly, interoperability has been achieved many times in the past to create national coverage without a national license.

I will examine the benefits of adopting a regional licensing plan corresponding to the NPSPAC regions from a technology policy perspective, focusing on coordination of multiple providers in planning and deployment and on interoperability, as well as the advantage of using smaller providers for public safety needs. I will first discuss the greater responsiveness and more tailored solutions that a regional licensing plan can yield. Next, I will describe that successful planning and coordination can be expected from such a model. I then discuss why we can expect multiple regional providers to effectively coordinate to achieve interoperability. Lastly, I demonstrate why multiple regional providers working in concert will result in more rapid, tailored network deployment than a single national licensee.

#### GREATER RESPONSIVENESS, TAILORED SOLUTIONS AND INCREASED INNOVATION

In response to the question of whether it would be beneficial to divide the licensing areas into high-density and rural areas to draw commercial licensees specializing in rural coverage, I would offer that moving to a model of regional licenses corresponding to the NPSPAC regions will offer greater responsiveness and more tailored solutions to regional needs. In forming and maintaining the NPSPAC regions, the committees have been able to tailor their decisions and actions to differing regional needs. A rural and high-density area division could have been chosen by NPSPAC, but was not. The NPSPAC regions have been serving the needs of public safety entities in coordinating wireless systems, and public safety entities will benefit from working with smaller area licensees that are likely to be more responsive to the differing area

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<sup>3</sup> See, The Network Reliability and Interoperability Council, NRIC VII Mission and NRIC VII Charter, <http://www.nric.org/>.

<sup>4</sup> See, *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, Second Report and Order, 22 FCC Rcd 15289, at para. 367 (2007).

needs and conditions. Establishing commercial license regions corresponding to the NPSPAC regions will allow each region's network provider to draw on the experience of that NPSPAC in meeting its particular needs under its unique conditions and operating environment.

Increased innovation is more likely to arise out of this model than that of a single provider. Not only do numerous providers increase the paths to various innovations, but each provider will produce novel solutions in response to specific regional conditions they encounter. The latter advantage may be lost in the case of a single national provider where the unique concern of one region may be considered too minor to address, or to garner immediate response or significant resources.

During my tenure at the FCC, we were continually striving to encourage the establishment of alternative, smaller providers to encourage competition and innovation. I still believe the introduction of multiple companies working in a specific field leads to innovations that best address users' needs. Additionally, in my current role as an advisor to the National Institute of Justice (NIJ), I have observed that there is "pent-up" emerging technology and innovation from small companies that is waiting to emerge in a variety of technologies, including software defined radio (SDR), cognitive radio (CR), dynamic spectrum access, open platform design, locationing and wireless security. Each of these technologies will contribute to the success of the D Block network.

Additionally, public safety entities of each region become more significant customers. Rather than being just one of many public safety entities being served by a single provider, each NPSPAC regional committee will represent entities which in aggregate comprise a major "customer" to its regional provider. Also, the economies of scale sought from a single national provider may still be achieved through smaller providers planning in parallel and purchasing in concert.

#### SUCCESSFUL PLANNING AND COORDINATION

The FCC aptly questioned whether negotiating with numerous commercial entities, rather than a single nationwide partner, would be disadvantageous. However, an efficient interface with the national PSBL could be quickly established with a simple plan to designate representatives for a national level committee of licensees. As for regional interfaces, the existing structure of NPSPAC regional committees could be utilized to achieve one-to-one regional partnerships with licensees.

Offering regional licenses aligned with the NPSPAC regions emulates a successful and established model employed by the FCC in originally creating the NPSPAC regions. This adds

the certainty of using a historically successful, established framework and organizational structure for commercial partners to model, or even mirror, in interfacing with a public safety partner as contiguous NPSPAC regional entities. The number, size and precise areas of the regions have already been determined by experienced NPSPAC members through consensus, “taking into account experience in coordination and administration of public safety operations, and the size of the regions to be administered,”<sup>5</sup> and have already been vetted by the FCC. Additionally, there is a history of successful coordination of state and local public safety wireless communications spanning over two decades. Under this “federal” system, the NPSPAC developed a national plan and the regional committees subsequently developed conforming regional plans and systems tailored to their diverse regional needs.

Taking advantage of the existing coordination, expertise and established systems of the NPSPAC regional committees will lead to more efficient and timely negotiation and planning stages. Numerous regional committees have implemented wide-area public safety plans and systems in the 800 MHz band.<sup>6</sup> Using this existing organization only adds additional benefits in coordination for the PSBL and local public safety agencies.

My experience in the Network Reliability and Interoperability Council (NRIC) was that numerous entities could collaborate to yield effective solutions. This lends support to the idea that several smaller potential bidders could coordinate effectively with the PSBL to produce an NSA, establishing detailed technical specifications for efficient nationwide, interoperable planning and deployment. While at the FCC I observed many providers work together effectively through such mechanisms as standards bodies and advisory committees to devise a variety of technical solutions. For example, the North American Numbering Council, an FCC Federal Advisory Committee, has long made technical recommendations to foster the efficient administration of the numbering plan. Likewise, potential regional licensees could work together effectively with the PSBL to establish detailed technical specifications to develop a pre-auction NSA. As is discussed in great detail in the Interoperability section, below, there are a great many examples of industry successfully planning and coordinating.

## INTEROPERABILITY

As noted in the introduction, although interoperability is an issue requiring active work, there is ample evidence of industry, government and public safety coordination in this area to warrant an NPSPAC regional licensing model. Again, a single nationwide license has seldom

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<sup>5</sup> *Development and Implementation of a Public Safety National Plan*, 3 FCC Rcd. 905, at 910 (1987).

<sup>6</sup> *See, Improving Public Safety Communications in the 800 MHz Band*, 19 FCC Rcd. 14969, at 14991 (2004).

been issued and interoperability has been achieved many times in the past to create national coverage without a national license. As pointed out earlier, the Commission itself notes this departure.<sup>7</sup> Even in most commercial mobile networks coverage is facilitated through roaming and other mechanisms. Indeed, it is more often the case that numerous providers coordinate to achieve interoperability, rather than a single provider acting in isolation, using only its own network to provide coverage. It is common for providers to effectuate coverage through interconnection and interoperability, which is evident in automatic roaming. The FCC inquired how it could “ensure interoperability of communications between public safety users of different regional networks,” asking whether to adopt obligations “to facilitate coordination between D Block licensees,” such as mandating “that each D Block licensee provide roaming to the public safety users of all other D Block regional networks?” Automated roaming is commonly used to provide interconnection, as noted above. Mandating roaming as part of the license terms would formalize a minimal requirement for interconnection / interoperability.

We can look to a broad range of established mechanisms in the telecommunications space as examples of successful industry coordination including, but not limited to, frequency coordination, telephone number assignment, Internet address coordination, network reliability, network security and mobile subscriber roaming. Each of these has its own unique market and technology characteristic but collectively demonstrate what industry is capable of attaining. The FCC has long relied on the use of private organizations to serve as frequency coordinators to assist in managing the Private Land Mobile Radio spectrum.<sup>8</sup> Likewise, public safety entities work together to manage their radio frequency resources through Public Safety Frequency Coordinators.<sup>9</sup> Roaming of subscribers among various network operators has been accomplished through automated mechanisms since the 1990’s.<sup>10</sup> This process has not been free of controversy (for example disagreements concerning the rates charged for roaming), but these controversial issues should be addressed in advance of the auctions by stipulating the conditions and resolutions mechanisms.

Industry has many examples of working together to specifically solve interoperability issues. For example, the Open Mobile Alliance has charted working groups that address many of the issues central to developing a successful D Block network. This includes, among other items, working groups on Location, Messaging, Client Management, Availability, Push to Talk,

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<sup>7</sup> See, note 4, *supra*.

<sup>8</sup> Frequency Coordinators [http://wireless.fcc.gov/services/index.htm?job=licensing\\_3&id=industrial\\_business](http://wireless.fcc.gov/services/index.htm?job=licensing_3&id=industrial_business)

<sup>9</sup> PS Freq coord. <http://www.fcc.gov/pshs/public-safety-spectrum/coord.html>

<sup>10</sup> <http://www.allianceforfairroamingaccess.com/facts.html>

Security, Architecture, Data Synchronization, and Device Management.<sup>11</sup> Of note, OMA has wide and extensive membership, which includes all of the major carriers and manufacturers.

There are also a number of examples of where industry coordination through Federal Advisory Committee oversight has resulted in well structured and smoothly operating mechanisms to ensure the proper use and coordination of interoperability and reliability functionality. For example, the NANP has for many years served to maintain the coordination and use of the numbering resources.<sup>12</sup> Likewise, similar address management has been coordinated and carried out in the Internet space through cooperative agreements. The Network Reliability and Interoperability Council (NRIC), a Federal Advisory Committee of the FCC, includes a broad range of coordination efforts to ensure that best practices are established and shared among network operators.<sup>13</sup> The FCC recognizes interoperability has been achieved by many entities working together and references NRIC's accomplishments in this proceeding, "There is a rich history of standards-setting bodies whose work draws on industry experts and other interested parties to ensure that consumer devices operate efficiently in their networks, including, for instance, the Network Reliability and Interoperability Council (NRIC) and the Open Mobile Alliance (OMA)."<sup>14</sup>

These examples demonstrate that it is possible for industry coordination of such processes and that the shared criticality of providers who enter into the D Block would foster cooperation. There is an important difference between efforts such as recent wireless E911, which was imposed after the fact on providers, and the efforts that could occur in the D Block with providers knowingly and willingly taking on these expectations at the onset. In many prior cases, the players were impelled into action after a service existed; whereas in the case of the D Block, participants would knowingly enter into the arrangement (with the obligation of complying with the NSA specifications).

In my role as Chair of the NRIC IV Steering Committee, I saw that industry could work together to effectively address the development of standards and best practices to enhance the reliability and interoperability of wireline and wireless networks. This includes extensive efforts in focus groups that map directly to many of the technical specifications as defined in the BID V.2 document, including work on 1) outage reporting mechanisms, 2) best practices for network reliability, 3) network interoperability, 4) system hardening, 5) metric specification, and 6)

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<sup>11</sup> See <http://www.openmobilealliance.org/Technical/WorkingGroupsCommittees.aspx>

<sup>12</sup> [http://www.nanpa.com/number\\_resource\\_info/code\\_admin.html](http://www.nanpa.com/number_resource_info/code_admin.html)

<sup>13</sup> NRIC <http://www.nric.org/fg/index.html>

<sup>14</sup> See, *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, Second Report and Order, *supra*, at para. 225.

disaster recovery. The most recent NRIC included a focus group for the analysis of the effectiveness of best practices aimed at E911 and public safety and a focus group on long term issues facing emergency and E911 service.<sup>15</sup> These, together with the broader scope of coverage from this advisory committee, demonstrate that industry is motivated and able to coordinate to address public safety concerns.

## RAPID AND EFFICIENT DEPLOYMENT

### *Non-incremental Deployment*

Non-incremental deployment of a broadband wireless network on a national scale by a single provider has not been undertaken to date, much less on such a tight, mandatory timescale, and such an endeavor creates substantial risk. Even large providers have achieved national networks through incremental network build-out or acquisition. Further, the national coverage of large providers is achieved in part through interconnection with and use of networks of other providers. Smaller providers are able to offer national, or close to national, coverage by interconnecting and sharing networks to a greater degree. Moving to a regional licensing plan would decrease risk significantly by allowing this known incremental build-out and interconnection model to be followed, as any single provider will be building only a portion or portions of the national network.

### *Regional Licenses Corresponding to NPSPAC Regions*

In its Second Further Notice of Proposed Rulemaking, the FCC noted that it originally developed a national D Block license because it saw this as the “most practical means of speeding deployment,”<sup>16</sup> but asked for comments as to whether it should “adopt a regional geographic service area basis”<sup>17</sup> and “the appropriate geographic service area for the D Block.”<sup>18</sup> Adopting regional licenses corresponding to the NPSPAC regions is appropriate and there are benefits that would speed deployment in a way that a single provider working on a national scale could not. This structure would likely have the advantage of adjusting the NSA, networks and services to specific regional issues and also speeding implementation of national decisions to the regional level.

An interface of regional providers matched to existing regional public safety regions would be advantageous in fully representing unique regional needs. It would also likely reduce

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<sup>15</sup> See <http://www.nric.org/fg/index.html>

<sup>16</sup> *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, Second Further Notice of Proposed Rulemaking at para. 9, 183 (May 14, 2008).

<sup>17</sup> *Id.* at para. 3.

<sup>18</sup> *Id.* at para. 183.

overhead in coordination to have each NPSPAC region coordinate with its own regional provider for planning and implementation specifics. A single provider operating on a national scale could model their interface with the PSBL in such a way, but it would be more challenging. In the case of a single large provider operating on a national scale, an internal organizational structure already exists, and drastically altering this structure to align with the NPSPAC regions would require significant internal reorganization and time to do so. In other words, designing something from scratch for a particular model is easier than retro-fitting an existing structure.

As specified in the BID, version 2.0, the extensive reliance on open protocols, open design, and COTS equipment should help to facilitate multiple providers efficiently deploying a national network. From a technical standpoint, we should ask the question - how does moving to regional licenses impact the technical complexity of the problem? To answer this question we evaluate the technical criteria in detail in the following section.

#### More Rapid Deployment

In understanding the impact of the use of multiple licenses, as opposed to a single nationwide license, we should consider whether the task can be decomposed / divided and the nature of this decomposition / division. Many engineering tasks require a serial process of solving one problem and then moving to the next, meaning that these problems do not lend themselves to parallelism (working on multiple aspects of the problem at the same time). The task of deploying a private/public partnership in the D Block is a task that can be divided; moreover, it can be argued that it is a task that should be divided, simply to ensure that the stringent timelines can be met.

More rapid deployment may be achieved in a model with regional licenses corresponding to the NPSPAC regions because the established NPSPAC organizational framework allows for rapid and efficient establishment of a private-public safety interface, the NPSPAC regional committees bring expertise and knowledge base, and it allows numerous regional providers to work in parallel. Adopting a plan where each NPSPAC region has its own provider, and all providers and all NPSPAC regions have direct national representation, allows for great efficiency in deployment. This allows parallel deployment of regional networks to form a nationwide network. Speed of deployment is greatly enhanced over a single provider model when regional networks are built in concert, and a national network is achieved through coordination of the provider national committee and the PSBL.

I note that an NPSPAC regional licensing plan would be more efficient and less burdensome to the PSBL than a model using RFPs to contract for services. While RFPs have been used successfully in other contexts, such a model would burden the PSBL with the task of

calling for bids, reviewing bids and negotiating with the numerous bidders, whereas the FCC has a working auction mechanism in place and the expertise to call for bidders, qualify them and authoritatively carry out the process to determine winning bidders.

In addition, a pre-determined technical framework would significantly reduce planning time and achieve uniformity in parallel network deployment. A pre-auction NSA also reduces planning and negotiation time and brings uniformity, while slight regional modifications allow for tailored solutions to public safety needs in differing regions.

### ROLE OF TECHNICAL FRAMEWORK AND PRE-AUCTION NSA

In addition to regional licensing, a more developed technical framework and pre-auction NSA will speed negotiation and facilitate planning and coordination. The FCC should adopt its idea to develop a more detailed technical framework, using comments from interested parties, and incorporate it into rules as part of the license terms. This provides for a more rapid negotiation, as the technical framework will be used as a basis for the NSA and will serve as a premise for initial and ongoing network planning. In its FNPRM the FCC posed the question, “should we mandate a “master” NSA that would include minimum network specifications, which could then be modified on a regional basis with more detailed schedules?” An NSA should be developed pre-auction: optimally it would have detailed technical specifications, with only minor modifications and amendments made post-auction to allow for regional differences. Not only does this greatly reduce uncertainties and risks, but it will speed the negotiation timeline. As discussed above, the PSBL and interested providers should be able to efficiently coordinate to develop a detailed NSA. This will allow interested parties to enter the bidding already prepared or planning to meet particular technical specifications, thus speeding deployment as well.

As stated in the previous section, the extensive reliance on open protocols, open design, and COTS equipment specified in the BID, version 2.0, should help to facilitate multiple providers efficiently deploying a national network. Again, we should ask the question - how does moving to regional licenses impact the technical complexity of the problem? To answer this question, we need to evaluate the technical criteria.

**Architecture:** As earlier discussed, the system architecture will be more decomposed in its physical design than one might assume looking at the BID document. The point being that the actual network design will include a diverse set of interconnection points and will include a hierarchy of connected networks (regardless of whether there is one or more licenses).

**Network Platforms and Services:** Within the standards for a nationwide interoperable network, it would be likely that certain regions of the country may wish to make use of different technology

and services depending on their needs and service conditions. Regional providers could facilitate efficiently meetings regional needs and conditions. However, the specifics such as the 1) technical requirements, 2) standardized interfaces, 3) standardized application capabilities (e.g., push-to-talk) and 4) reliance on COTS technology should ensure that the system provides what the users need, while also ensuring interoperability within and between service providers.

Network Reliability, Availability and Hardening: Each of these parameters is mostly influenced by the design and implementation of a robust system and the means of ensuring these goals has been a long time focus of the industry and of the NRIC. Therefore, these are issues less dependent on whether the network is deployed and operated by regional providers or a national operator, and more dependent on design and best practices.

Security, Network Priority and QoS: These issues are highly dependent on the establishment of standards and the agreement to deploy and cooperate in the use of these standards. For example, there would need to be agreed upon QoS standards that network providers would deploy and recognize.

It is not my intention to imply that having multiple providers will not add some additional complexity, but rather that it is something that is manageable and that many of the technical issues are largely unaffected by moving toward regional licenses.

## CONCLUSION

In conclusion, an NPSPAC regional licensing model supports the FCC's goal of creating a state-of-the-art, nationwide, interoperable, advanced broadband public safety network, while retaining the advantages and efficiencies the FCC seeks to create in a private-public partnership. This regional licensing by NPSPAC region lends itself to successful planning and coordination by taking advantage of a proven organizational structure of the NPSPAC. Regional providers also lead to greater local responsiveness, more tailored solutions and increased innovation. It has been demonstrated in numerous cases that industry, government and public safety can successfully coordinate to achieve interoperability, supporting the idea that regional licensees can be expected to effectively work together to do so as well. Regional licensing also addresses uncertainty and risk, as it uses a known method of licensing and network build-out, rather than the uncertainty of a single provider attempting to deploy a national network non-incrementally. Additionally, numerous regional providers working in concert can more rapidly deploy a national network than a single provider. This model, coupled with a detailed technical framework and NSA developed in advance of the auction, will lead to a successful auction and more rapid deployment of a national interoperable network that is more tailored to unique regional public safety needs.