

BEFORE THE  
Federal Communications Commission  
WASHINGTON, D.C.

In the Matter of )  
)  
)  
Expanding the Economic and Innovation ) Docket No. 12-268  
Opportunities of Spectrum Through Incentive )  
Auctions )  
)  
)

**COMMENTS OF COMCAST CORPORATION  
AND NBCUNIVERSAL MEDIA, LLC**

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January 25, 2013

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**COMMENTS OF COMCAST CORPORATION AND NBCUNIVERSAL MEDIA, LLC**

Comcast Corporation (“Comcast”) and NBCUniversal Media, LLC (“NBCUniversal”) (collectively, “Comcast”), submit these comments in response to the Commission’s Notice of Proposed Rulemaking (“*Notice*”) in the above-captioned proceeding.<sup>1</sup>

**I. INTRODUCTION AND SUMMARY**

Over the last 30 years, the Commission has made a number of groundbreaking decisions that have allowed innovators in a variety of industries to use spectrum to deliver services that had been the realm of science fiction just years before. Digital broadcast television, unlicensed services like Wi-Fi and Bluetooth, and licensed mobile broadband services are but a few examples of how the Commission’s holistic and balanced approach to spectrum management has produced immeasurable public interest benefits. The success of the Commission’s spectrum policies is founded on the recognition that each of these services plays an important role in the

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<sup>1</sup> *In re Expanding Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, 27 FCC Rcd. 12357 (2012) (“*Notice*”).

wireless ecosystem – disseminating critical news and information to the communities they serve, offering enriching and entertaining programming to their audiences, and providing platforms for even more innovation and investment. The Spectrum Act<sup>2</sup> embraces and codifies the bipartisan policies that have guided the Commission for many years and that have provided the foundation for the success of the wireless ecosystem in the United States, and it provides the Commission with the authority to move forward with even more groundbreaking spectrum management policies.

Properly executed, the incentive auction has the potential to transition a meaningful amount of spectrum to support the continued development of robust mobile broadband services, while preserving the key role that broadcasters play in their local communities and unleashing the next generation of unlicensed wireless services. As the Commission undertakes the complex process of implementing policies and rules for the broadcast spectrum incentive auction, its primary guide must be the statute.

First, Congress was very clear that the Commission *must* preserve broadcasters’ ability to serve their local communities if they choose not to participate in the auction. Many viewers – over 20 million households nationwide – rely primarily on their local broadcast stations for critical news and information, particularly in emergencies, and all viewers benefit from the broadcast industry continuing its tradition of delivering innovative services that meet the needs of local communities. Congress plainly intended the Commission to ensure that broadcasters would continue in that role. To accomplish that goal, the Commission should protect all valid

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<sup>2</sup> Middle Class Tax Relief and Job Creation Act of 2012, Pub.L. No. 112-96, §§ 6001 *et seq.* (Feb. 22, 2012) (“Spectrum Act”).

construction permits or other Commission authorizations held by broadcasters to modify their stations or operate at variance from licensed parameters. The Commission also must ensure that broadcasters are able to serve the same geographic coverage area and the same viewers post-auction as provided for under the current rules (and not just the same *amount* of coverage area, or the same *number* of viewers). In doing so, the Commission must account for co-channel and adjacent-channel interference among broadcast stations, as well as interference associated with licensed wireless microphone operations. And the Commission should adopt the “down from 51” band plan, including robust guard bands that can protect licensed users. This band plan also provides the Commission with the ability to ensure the continued operation of wireless microphones. Taking these steps will preserve the ability of broadcasters to serve their communities and facilitate continued innovation as the industry moves forward, while simultaneously giving the Commission sufficient flexibility to transition spectrum from broadcasters to unlicensed and licensed mobile broadband use.

Second, the statute is clear that parties affected by the auction process – i.e., broadcasters remaining on the air but moved to another channel and multichannel video programming distributors (“MVPDs”) – are entitled to reimbursement for costs “reasonably incurred.” In light of the limited amount of funds available for reimbursement and the short timeframe for executing the reimbursement process, the Commission should permit broadcasters and MVPDs to submit cost estimates and receive reimbursements before any actual costs are incurred, with a “true-up” process after the repacking and channel reassignment process has been completed.

Third, the statute grants the Commission substantial flexibility in the allocation of spectrum for unlicensed use. Wireless services operating on unlicensed frequencies have become increasingly important, and they have an enormous, positive impact on consumers’ lives,

the economy, and job growth. These services also help to relieve some of the bandwidth pressure on licensed mobile wireless broadband networks. However, more and more data are traversing Wi-Fi networks, and existing unlicensed bands are increasingly congested. To address these challenges, the Commission must allocate additional spectrum across a number of different bands for unlicensed use. The Commission can begin that process in this proceeding by allocating at least 20 MHz of contiguous spectrum in the 600 MHz band for unlicensed use. A 20 MHz allocation should be considered the minimum amount of spectrum necessary to support today's Wi-Fi services, and would be an important step in the Commission's efforts to use all of the tools at its disposal to address the realities facing today's – and tomorrow's – wireless ecosystem.

Finally, the statute explicitly requires the Commission to ensure that must carry rights and responsibilities are neither expanded nor reduced as a result of the repacking process.

Although this should be a straightforward directive to implement, the Commission must take care to address any potential ambiguities regarding changes in carriage rights.

The Commission's task in this proceeding is daunting, but it is also an important opportunity to ensure that wireless services – including broadcasting and unlicensed services – continue to serve the critical needs of communities and to grow as platforms for innovation and investment. By adhering to the statutory directives regarding the preservation of television broadcast service, the prompt reimbursement of costs, and the provision of sufficient spectrum to support robust unlicensed services, the Commission can ensure that the incentive auction is a success.

## **II. THE COMMISSION MUST ENSURE THE CONTINUED VITALITY OF BROADCASTERS, PARTICULARLY THOSE THAT DO NOT PARTICIPATE IN THE INCENTIVE AUCTION.**

Broadcasters play a central role in the lives of consumers across the United States, offering critical public safety information during emergencies, providing the most trusted source of local news and information, facilitating informed discourse on the important public issues of the day, and entertaining with groundbreaking video programming. The Commission has made clear time and again that broadcast services are an essential component of its mission to “make available . . . to all the people of the United States . . . a rapid, efficient, Nation-wide, and world-wide wire and radio communication service.”<sup>3</sup> For nearly a century, broadcasters have been continuous innovators, investing in new and better ways to serve their communities; they continue that tradition today. For example, broadcasters recently completed the digital television (“DTV”) transition, introducing significant new services, such as broadcast HDTV and multicasting. Broadcasters also have begun to provide mobile broadcasting services that allow consumers to access broadcast content where they want it, when they want it, and on the devices they want it. As the Commission moves forward in this proceeding, it must preserve broadcasters’ ability to meet the evolving needs of the communities they serve, including through innovative services and technologies.

The public interest standard set forth in the Communications Act embodies Congress’s core communications values, including the Commission’s obligation to ensure that broadcasters can meet the unique needs of local communities and provide a reliable source of public safety

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<sup>3</sup> See, e.g., *DTV Consumer Education Initiative*, Report and Order, 23 FCC Rcd. 4134 ¶ 58 (2008); *Public Interest Obligations of TV Broadcast Licensees*, Notice of Inquiry, 14 FCC Rcd. 21633 ¶ 23 (1999).

information when Americans need that information the most. Congress built this goal into the Spectrum Act when it required the Commission to use “all reasonable efforts” to preserve broadcasters’ coverage areas and populations served. This is consistent with Congress’s longstanding approach to broadcasting.

In light of this obligation and the critical services broadcasters provide to their communities, the Commission should give full effect to Congress’s intent by protecting *all* construction permits granted as of February 22, 2012, including those that have not been completed;<sup>4</sup> avoiding any changes to broadcasters’ coverage areas or the population they serve;<sup>5</sup> and adopting the “down from 51” band plan. These proposals will maximize protection for all licensees and ensure that broadcasters that do not relinquish their spectrum can continue to meet the needs and interests of their communities and develop new and innovative services for the benefit of their viewers.

**A. Broadcasters Provide Important and Innovative Services to Their Local Communities.**

The Commission has always considered the needs of specific local communities to be a “cornerstone of broadcast regulation,”<sup>6</sup> and it has designed its regulatory framework “to foster a

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<sup>4</sup> This is particularly important in some locations, such as the New York, NY, Designated Market Area (“DMA”), where destruction of the communications facilities at the World Trade Center on September 11, 2001 continues to affect a large number of television stations.

<sup>5</sup> With respect to the latter, it is important that broadcasters be allowed to continue to serve the same viewers that they serve today – not just the same number of viewers.

<sup>6</sup> *Broadcast Localism*, Report on Broadcast Localism and Notice of Proposed Rulemaking, 23 FCC Rcd. 1324 ¶ 5 (2008) (“*Broadcast Localism NPRM*”); *see also Broadcast Localism*, Notice of Inquiry, 19 FCC Rcd. 12425 ¶ 1 (2004) (“As with competition and diversity, localism has been a cornerstone of broadcast regulation for decades.”); *Deregulation of Radio*, 84 F.C.C.2d 968 ¶ 58 (1981) (“The concept of localism was part and parcel of broadcast regulation virtually from its inception.”).

system of local stations that respond to the unique concerns and interests of the audiences within the stations' respective service areas.”<sup>7</sup> These service areas comprise defined local communities with particular needs, including the need for accurate, up-to-date public safety information.<sup>8</sup> As of June 2012, more than 20.7 million households representing 53.8 million consumers in the United States receive television programming exclusively through over-the-air broadcasting.<sup>9</sup> And a study last year by the Pew Research Center confirms that more Americans – almost two-thirds – turn to their local broadcasters rather than any other source for the information they need during a crisis.<sup>10</sup> As FEMA Administrator Craig Fugate recently advised Americans in the path of Hurricane Sandy, a local broadcaster “is oftentimes the best way to get those important messages about what’s going on in the local community.”<sup>11</sup> The Commission’s recently released

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<sup>7</sup> *Broadcast Localism NPRM* ¶ 6.

<sup>8</sup> The Commission requires an applicant for a broadcast construction permit or license to certify “that it is cognizant of and will comply with its obligations as a Commission licensee to present a program service responsive to the issues of public concern facing the station's community of license and service area.” FCC, *Form 301, Application for a Construction Permit for Commercial Broadcast Station* 3 (May 2012).

<sup>9</sup> See Press Release, NAB, *Over-the-air TV Viewership Soars to 54 Million Americans* (June 18, 2012), available at <http://www.nab.org/documents/newsroom/pressRelease.asp?id=2761>.

<sup>10</sup> See Pew Research Center, *How People Learn About Their Local Community* (Sept. 2011), available at <http://pewinternet.org/~media/Files/Reports/2011/Pew%20Knight%20Local%20News%20Report%20FINAL.pdf>. The report indicates that 55 percent of Americans choose their local TV broadcaster, while another 9 percent turn first to local radio. See *id.* at 17, 35. Outside of local broadcasters, the next most popular source for information on local breaking news is the Internet, which just 16 percent of Americans turn to first. See *id.* at 17.

<sup>11</sup> See Press Release, NAB, *Statement of NAB President and CEO Gordon Smith on Broadcast Coverage of Hurricane Sandy* (Oct. 29, 2012), available at <http://www.nab.org/documents/newsRoom/pressRelease.asp?id=2828>.

report regarding the June 2012 derecho confirmed the key role that television broadcasters play during emergencies.<sup>12</sup>

The core principles underlying broadcast regulation ensure that broadcasters can both continue to protect, inform, and entertain viewers, and drive innovation and investment within the industry. The most dramatic example of television broadcasters' commitment to innovation was the transition to digital television, which allowed broadcasters to deliver an array of innovative services to their communities, including high-definition video (which dramatically improves picture quality), multicasting (which allows broadcasters to deliver multiple programming streams), and data streaming (which allows for a richer viewing experience through enhancements such as in-game stats for local sporting events).<sup>13</sup> As the digital television transition approached in 2009, Congressional leaders emphasized the important role that broadcasters play in communities across the country by encouraging Americans to take the necessary steps to "guarantee continued reception [of] the important news and public safety information that [broadcast] television provides."<sup>14</sup>

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<sup>12</sup> FCC, *Impact of the June 2012 Derecho on Communications Networks and Services*, Report and Recommendations, at 14 (Jan. 2013) available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-318331A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-318331A1.pdf) ("The key role broadcasters played during and following the derecho should also be recognized. As in many times of crisis, broadcasters served as 'first informers,' providing the public with information on the storm's path, the damage it caused, and its effects on other communications services. Even where citizens affected by the storm lost commercial power, many could still receive radio and television broadcasts on battery-powered devices. PSAPs and other public safety entities took advantage of this capability by working together with broadcasters to provide updates on 9-1-1 service and alternate ways of obtaining emergency assistance.").

<sup>13</sup> See generally FCC, *The Digital TV Transition: What is DTV*, <http://www.dtv.gov/whatisdtv.html> (last visited Jan. 24, 2013).

<sup>14</sup> Press Release, Senate Commerce Committee, Chairman Rockefeller Reminds Consumers of the Digital Television Transition (DTV) on June 12, 2009 (May 12, 2009), available at [http://commerce.senate.gov/public/index.cfm?p=PressReleases&ContentRecord\\_id=12b8ecfa-10db-47cd-](http://commerce.senate.gov/public/index.cfm?p=PressReleases&ContentRecord_id=12b8ecfa-10db-47cd-)  
(footnote continued...)

NBCUniversal is committed to continuing this tradition of meeting the needs and interests of the local communities served by its owned stations through innovative services and technologies that provide critical information to consumers whenever and wherever they need it. One example of this commitment to developing innovative and consumer-friendly technologies is mobile broadcasting. Consumers have expressed a particular eagerness to access broadcast programming “outside of the living room.”<sup>15</sup> Moreover, mobile broadcasting presents a unique opportunity to serve the public interest by combining broadcasters’ experience delivering critical public safety and emergency information with the portability of mobile devices.

In response, NBCUniversal has been a leader in bringing mobile digital television services to market, offering mobile broadcasting since 2010 and joining with other broadcast groups on the “Dyle” mobile DTV service, which launched in August 2012. Dyle uses each station’s existing digital broadcast spectrum to allow users with compatible mobile devices to watch live, local broadcast programming from participating stations in select cities.<sup>16</sup> NBCUniversal already has made eighteen (18) broadcast channels available to Dyle users, including several Spanish-language Telemundo-owned stations; together, NBCUniversal and its broadcast partners have made more than 90 channels available in 35 different markets.<sup>17</sup> These mobile services fulfill a number of important goals, including giving viewers the flexibility they

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(...footnote continued)

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<sup>15</sup> See Research Now, *Dyle Mobile TV Data Report 2* (June 2012), available at <http://www.dyle.tv/assets/Uploads/DyleReport.pdf>.

<sup>16</sup> See Dyle.tv: FAQs, <http://www.dyle.tv/faqs> (last visited Jan. 24, 2013).

<sup>17</sup> See George Winslow, *Mobile DTV Goes for a Drive*, *Broad. & Cable* (Sept. 12, 2012), available at [http://www.broadcastingcable.com/article/489347-Mobile\\_DTV\\_Goes\\_for\\_a\\_Drive.php](http://www.broadcastingcable.com/article/489347-Mobile_DTV_Goes_for_a_Drive.php).

want, relieving bandwidth pressure on licensed mobile wireless broadband networks, and providing vital communications services during emergency situations when other providers are unable to do so.<sup>18</sup>

Additionally, broadcasters and standards organizations around the world have come together to create the Future of Broadcast TV (“FoBTv”) organization, which is designed to provide a forum for dialog and coordination on key future standards issues. FoBTv recognizes that “[t]he 21<sup>st</sup> Century is an era of integration of broadcasting, internet, and communications” that is a “defining moment for the terrestrial television broadcast industry.”<sup>19</sup> FoBTv encourages standards organizations to develop global, next-generation standards that “make more efficient use of spectrum.”<sup>20</sup> Consistent with this approach, the Advanced Television Systems Committee (“ATSC”) is already working on an ATSC 3.0 standard, which focuses on

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<sup>18</sup> Notably, no television broadcast station in the areas affected by Hurricane Sandy went dark during the storm. See, e.g., *Broadcasters Work Nonstop as First Informers to Serve Their Local Communities During Hurricane Sandy*, The Future of TV (Nov. 2, 2012), at <http://blog.thefutureoftv.org/2012/11/02/broadcasters-work-nonstop-as-first-informers-to-serve-their-local-communities-during-hurricane-sandy/> (“Many stations lost power during the storm and relied on generators to provide coverage, in addition to relying on satellite, microwave trucks and mobile backpacks to submit stories.”).

<sup>19</sup> Future of Broadcast Television, *Memorandum of Understanding* at 2 (Apr. 13, 2012), available at <http://www.nercdtv.org/fobtv2012/download/FoBTv%20MOU.pdf>.

<sup>20</sup> Harry A. Jessell, *The Future of Broadcast TV is Next Month*, TVNewsCheck.com (Mar. 30, 2012), at <http://www.tvnewscheck.com/article/58452/the-future-of-broadcast-tv-is-next-month>. For example, the industry is developing Ultra-High-Definition (“UHDTV”) technology, which will be increasingly important as the display resolution and capabilities of smart phones, tablet devices, and other consumer electronics continue to advance rapidly. UHDTV will provide unprecedented levels of image clarity for consumers, offering screen resolutions of up to 7680 x 4320 pixels, which is 16 times higher than the resolution of today’s top-of-the-line HDTVs. See Steve May, *Sharp 8K4K TV Gives Glimpse into Ultra HD Future*, CNET (Sept. 7, 2011, 4:39 PM), <http://crave.cnet.co.uk/televisions/sharp-8k4k-tv-gives-glimpse-into-ultra-hd-future-50005074/>. NBCUniversal conducted a UHDTV trial during the London Olympic Games, and expects to increase the use of UHDTV in its future broadcasts. See Kim Schlechta, *The Future of Broadcast TV*, NBCUniversal Direct (Aug. 6, 2012), <http://www.nbcudirect.com/ultrahd8612/>.

increased efficiency, robustness, and integration with other delivery technologies.<sup>21</sup> Such a next-generation broadcast standard will be essential to maintaining free, over-the-air broadcasting as a relevant and vital source of information and entertainment for consumers, just as it has been for decades.

**B. Congress Directed the Commission to Preserve Broadcasters' Ability to Serve Their Communities Now and in the Future.**

Congress intended the Spectrum Act to strengthen the broadcast industry and ensure that it would remain viable and vibrant in the future. The legislative history and contemporaneous statements by Congressional leaders demonstrate that the Act's strong procedural safeguards were included to ensure that "viewers out there in America will still be able to see and watch their over-the-air public and private broadcasters."<sup>22</sup> And the text of the Spectrum Act itself includes specific provisions designed to accomplish this goal.

In particular, Congress directed the Commission to "make all reasonable efforts to preserve" the existing coverage area and population served of each broadcast station.<sup>23</sup> During markup, Congress specifically rejected alternate language that could have allowed the auction and repacking process to permanently reduce broadcasters' existing coverage, as long as the

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<sup>21</sup> See Skip Pizzi, NAB, *ATSC 3.0: Next Generation Broadcast Television*, National Association of Broadcasters, [www.atsc.org/cms/bootcamp/ATSC3.pdf](http://www.atsc.org/cms/bootcamp/ATSC3.pdf) (last visited Jan. 24, 2013).

<sup>22</sup> 158 Cong. Rec. H914 (daily ed. Feb. 17, 2012) (statement of Rep. Greg Walden); see also *Spectrum Reform: Promoting Job Creation, Innovation, and Public Safety*, Fact Sheet, House Energy & Commerce Committee, Feb. 17, 2012, <http://energycommerce.house.gov/fact-sheet/spectrum-reform-promoting-job-creation-innovation-public> (stating that the purpose of broadcaster protections is "to ensure individuals who rely on over-the-air broadcasting will not lose access").

<sup>23</sup> Spectrum Act § 6403(b)(2).

process resulted in “substantially similar” coverage.<sup>24</sup> The choice was intentional; the chairman of the House Subcommittee on Communications and Technology described the Spectrum Act as providing the “best protection [for broadcasters] of any competing legislation.”<sup>25</sup> The Commission acknowledged in the *Notice* that “section 6403(b)(2) imposes significant technical constraints on the Commission’s repacking authority under the Spectrum Act.”<sup>26</sup>

The Commission must construe the Spectrum Act’s mandate that it “make all reasonable efforts to preserve” broadcasters’ current existing coverage areas and populations served in a way that gives full effect to Congressional intent. The *Notice*, however, proposes that the “all reasonable efforts” mandate should be understood to depend on “all of the circumstances involved,”<sup>27</sup> suggesting that the Commission thinks Congress intended a complex balancing act, with the rights of broadcasters and viewers under the Act in one hand and the efficiency of the repacking process in the other.<sup>28</sup> But no such balancing test appears in the Act or its legislative

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<sup>24</sup> Compare Spectrum Act § 6403(b)(2) with Wireless Innovation and Public Safety Act of 2011, H.R. 3509, 112th Cong., § 302(b)(3)(B) (2011). H.R. 3509 would have asked the Commission to “ensure, to the extent technically feasible, in the public interest, and consistent with the goals of the auction, that spectrum usage rights [resulting from the repacking process] enable a licensee to offer service that is substantially similar in service contour, population covered, and amount of harmful interference to the service offered by such licensee on the spectrum the rights to which are reclaimed by the Commission.” H.R. 3509 § 302(b)(3)(B).

<sup>25</sup> 158 Cong. Rec. H914 (daily ed. Feb. 17, 2012) (statement of Rep. Greg Walden).

<sup>26</sup> *Notice* ¶ 97.

<sup>27</sup> *Id.* ¶ 105.

<sup>28</sup> *Id.* (“In addition, we believe that the benefits of the first option in facilitating an efficient repacking of television stations would significantly outweigh any disruptive effects to specific viewers that might lose service or to station owners.”).

history, and the cases cited by the Commission do not support such an interpretation.<sup>29</sup> The Commission’s own precedent does not interpret “all reasonable efforts” as involving a balancing approach.<sup>30</sup> To the contrary, that precedent establishes that the phrase “all reasonable efforts” requires a singular focus on the stated objective – here, preserving the integrity of broadcasters’ coverage areas and populations served.<sup>31</sup> Compliance with the Spectrum Act’s mandate,

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<sup>29</sup> None of the cases cited in the *Notice* condones the balancing approach suggested by the Commission. In *Wilbur v. Correctional Services Corp.*, the Eleventh Circuit stressed that a court’s obligation to make “all reasonable efforts” to reconcile an apparent inconsistency in a jury verdict meant that “[i]f there is a view of the case which makes the jury’s answers consistent, the court must adopt that view and enter judgment accordingly.” 393 F.3d 1192, 1200 (11th Cir. 2004) (quoting *Griffin v. Matherne*, 471 F.2d 911, 915 (5th Cir.1973)) (affirming judgment for defendant notwithstanding verdict awarding plaintiff damages where jury returned interrogatories rejecting defendant’s liability but still awarding damages). Far from authorizing a balancing test, the Eleventh Circuit’s opinion makes clear that reconciling the apparent inconsistency should be the court’s priority. Similarly, in *Brotherhood of Maintenance of Way Employees v. Union Pacific R.R. Co.*, the Seventh Circuit explained that “the duty to exert every reasonable effort requires a party to do more than discharge its legal obligations.” 358 F.3d 453, 458 (7th Cir. 2004) (holding that the duty to exert “every reasonable effort” to resolve labor dispute did not require employer to comply with union’s unilateral demand for expedited arbitration where employer had already engaged in arbitration procedures prescribed by collective bargaining agreement).

The Commission’s reliance on the Supreme Court’s opinion in *Rompilla v. Beard*, 545 U.S. 374 (2005), to justify a balancing approach is particularly misplaced. In *Rompilla*, the court held that a public defender’s repeated and varied attempts to establish a mitigation defense during sentencing not only failed the “all reasonable efforts” test, but also amounted to unconstitutional ineffective assistance of counsel warranting *habeas corpus* relief simply because the public defender did not examine one particular set of documents. *Id.* at 375.

<sup>30</sup> See, e.g., *In re Three Trees Communications, Inc.*, Notice of Apparent Liability for Forfeiture, 22 FCC Rcd. 2027 (2007) (noting licensee’s representation that it would make “all reasonable efforts” to comply with employment rules); *In re International Satellite, Inc.*, Memorandum Opinion & Order, 5 FCC Rcd. 35 (Jan. 3, 1990) (granting extension of conditional authorization where satellite system provider had made “all reasonable efforts” to establish its system); *In re Pacific Telecom Cable, Inc.*, 4 FCC Rcd. 8061, 8066 (1989) (requiring cable landing licensee to make “all reasonable efforts to ensure participation by U.S. interests in the ownership of the international portion” of the cable); *In re Pan American Satellite*, Order, 2 FCC Rcd. 7011 (1987) (finding that “all reasonable efforts” to establish satellite system included requisite sale of television stations, scheduling of a timely launch date, and completion of required inter-governmental consulting process).

<sup>31</sup> See also, e.g., *United States v. Hayes*, 722 F.2d 723 (11th Cir. 1984) (holding that trustee failed to make “all reasonable efforts” to comply with subpoena where trustee made two personal trips to Switzerland attempting to convince document custodian to release responsive documents); *Eulich v.* (footnote continued...)

therefore, requires the Commission to focus first and foremost on preserving the ability of broadcast stations to continue to serve the needs and interests of their viewers.

**C. The Commission Should Adopt the Following Proposals to Satisfy the Congressional Mandate.**

To ensure that the Commission conducts the auction and repacking in a manner that satisfies Congress’s directive in the Spectrum Act to use “all reasonable efforts” to preserve broadcasters’ coverage area and population served, the Commission should adopt the following proposals.

1. The Commission Must Preserve All Licensees’ Granted Construction Permits and Other Authorizations, Including Those Not Yet Completed.

The Commission proposes to interpret the requirement to preserve a station’s coverage area and population served “as of the date of the Act” as applying only to broadcast facilities that were licensed, or for which an application for license to cover authorized facilities already was on file with the Commission, as of February 22, 2012.<sup>32</sup> The Commission also proposes to protect the facilities authorized in granted, but unbuilt, construction permits for *new* full power television stations as of February 22, 2012.<sup>33</sup> To give full effect to Congressional intent, however, the Commission must also protect granted, but unbuilt, construction permits and other authorizations held by *existing* licensees, as well.

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(...footnote continued)

*United States*, No. 3-99-CV-1842-L, 2004 U.S. Dist. LEXIS 9727 (N.D. Tex. 2004) (holding that trustee failed to make “all reasonable efforts” to secure trust documents because, *inter alia*, trustee failed to retain local counsel in the Bahamas and institute an action to recover the documents).

<sup>32</sup> Notice ¶ 98.

<sup>33</sup> *See id.* ¶¶ 113-114.

Under the Commission’s rules, modifying the licensed facilities of an existing broadcast station is a multi-step process that begins with an application for a construction permit for modified facilities.<sup>34</sup> Once that application is granted, the licensee has three years to construct the approved facilities.<sup>35</sup> Once construction is completed, TV stations may begin operation under program test authority under Section 73.1620 of the rules, provided that an application for a license to operate on the facilities as constructed is filed within 10 days of initiating operation.<sup>36</sup> The *Notice* proposes to protect only those existing licensees that have reached this last stage of the process, i.e., only licensees operating under a granted license or pursuant to program test authority as of February 22, 2012. This would exclude from the coverage area and population served protections those licensees that have been granted construction permits for modified facilities but have not reached the program test authority phase.<sup>37</sup> But, as parties have already explained,<sup>38</sup> excluding granted (but not yet built) construction permits, whether for new or modified facilities, is neither required by the statute nor in the public interest.

The facilities provided for in a granted construction permit – as well as the coverage area and population served – already have been found by the Commission to be in the public

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<sup>34</sup> See 47 C.F.R. §§ 73.3533, 3538, 3572.

<sup>35</sup> See *id.* § 73.3598(a).

<sup>36</sup> See *id.* §§ 73.1620, 3536.

<sup>37</sup> *Notice* ¶ 98 n.151.

<sup>38</sup> See, e.g., Letter from Robert Koplak, KRBK-TV, to Marlene H. Dortch, FCC, GN Docket No. 12-268 (Nov. 29, 2012) (explaining KRBK’s “unique and highly specific circumstances” and urging the Commission to preserve KRBK’s coverage area and population served despite not meeting the criteria proposed in the *Notice*).

interest,<sup>39</sup> and holders of those permits are protected from encroachment by proposals for new or modified stations.<sup>40</sup> For these reasons, even if construction of such facilities is still pending, preservation of coverage areas and populations served within the meaning of the Spectrum Act requires the protection of granted construction permits.<sup>41</sup> To do otherwise is inconsistent with the prior Commission decisions finding that grant of the construction permit serves the public interest.<sup>42</sup>

2. Licensees That Are Involuntarily Moved to a Different Channel Should Retain Their Current Coverage Area and Population Served.

The Commission's proposal to interpret the statutory term "coverage area" to mean a full power station's service area as defined in Section 73.622(e) is reasonable for the reasons stated

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<sup>39</sup> Predictions of signal coverage for the purpose of the Commission's rules are based on field strength estimates that in turn are based on the effective radiated power, antenna height and antenna pattern used by the station. *See* 47 C.F.R. § 73.684. Modifications of these operational parameters generally require prior Commission approval. *See id.* § 73.1690(b). The FCC's decisions in all such matters are made pursuant to the public interest standard. *See* 47 U.S.C. § 309(a).

<sup>40</sup> *See* 47 C.F.R. § 73.616(d) ("The protected facilities of a post-transition DTV allotment shall be the facilities (effective radiated power, antenna height and antenna directional radiation pattern, if any) authorized by a construction permit or license. . . ."); *see also id.* § 73.616(e) ("An application will not be accepted if it is predicted to cause interference to more than an additional 0.5 percent of the population served by another post-transition DTV station.").

<sup>41</sup> Moreover, given the stringent requirements associated with the three-year construction period, it cannot reasonably be argued that holders of unbuilt construction permits have been dilatory. *See, e.g., Birach Broadcasting Corporation*, Memorandum Opinion and Order, 18 FCC Rcd. 1414 (2003) (discussing Commission's enforcement of construction permit timelines); *Birach Broadcasting Corp.*, Memorandum Opinion and Order, 23 FCC Rcd. 3141 ¶¶ 4, 9-14 (2008) (same).

<sup>42</sup> In addition, stations in the New York DMA that, prior to September 11, 2001, were licensed to transmitter locations at the World Trade Center will require flexibility as they rebuild these destroyed facilities. Some of these stations also may hold authorizations, such as STAs, for operation at variance from their licensed facilities and may have modification applications pending to address the destruction of the World Trade Center facilities, and these, too, should be protected. The *Notice* specifically recognizes that the Commission has flexibility under the Act to grant protection to additional facilities where appropriate. *Notice* ¶ 113.

in the *Notice*.<sup>43</sup> However, the Commission’s proposal for implementing this mandate should be modified in one important way: a station assigned a new channel in the repacking process should be allowed to substantially replicate the station’s existing antenna pattern, not simply the total square kilometers served.<sup>44</sup> And the Commission must allow for any adjustments to the effective radiated power (“ERP”) of the station that may be necessary in light of the new channel assignment to preserve the station’s pre-auction service area.<sup>45</sup>

The following example illustrates why this is necessary to meet the Act’s “all reasonable efforts” mandate. Consider two co-channel stations that are close enough geographically to have a large area of interference within each station’s service area. Today, the stations likely would accept this otherwise objectionable interference to the extent the interference area falls outside each station’s DMA.<sup>46</sup> But a repacking approach that results in interference within a station’s

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<sup>43</sup> *Id.* ¶ 99.

<sup>44</sup> This approach comports with the Commission’s “second option” for preserving the population served by each station, which preserves service to the same specific viewers for each station. *Id.* ¶ 106.

<sup>45</sup> The Commission proposes to “make all reasonable efforts to preserve the existing coverage areas of stations whose operations exceed the antenna height (but not ERP) limits.” *Notice* ¶ 100 n.157. The Commission should preserve existing coverage areas with respect to antenna heights *and* ERP limits. Where the Commission has already determined that a station’s existing ERP and coverage area furthers the public interest, such determination should be given effect after the repacking process. Excluding existing ERP limits from consideration would be unfair to a licensee that has obtained prior Commission authorization. Moreover, to the extent the Commission hopes that some stations would voluntarily move from UHF to VHF channels, this approach would disincentivize stations from doing so. As demonstrated during the digital transition, a station that moves to a low VHF channel may need to increase its power level to preserve its coverage area, given the poor propagation characteristics of low VHF channels in the digital environment. Thus, an unwillingness to grant ERP increases above stated limits would significantly affect a station’s decision to voluntarily move from UHF to VHF.

<sup>46</sup> This example is not merely hypothetical, as the interference scenario described presently exists with respect to WCAU and WPXW. *See* NBC Telemundo License Co., FCC Form 301, Application for Construction Permit for Commercial Broadcast Station, File. No. BPCDT – 20080620AKG, at Ex. 48 (Sept. 26, 2008).

DMA could deny viewers in that DMA access to the news, information, and entertainment programming most critical and pertinent to them. For example, if, as a result of the repacking, a station in Philadelphia is forced to accept interference in its DMA from a station in New York City, viewers in the Philadelphia DMA may be denied the Philadelphia broadcast channel, even though the Philadelphia broadcaster likely is providing news and information – including emergency information – that is more relevant to those viewers. This problem cannot be solved by simply ensuring that the affected station has the same *number* of viewers post-repacking. That approach would still leave some viewers without access to the television station that is most likely to provide the local news and information most important to them.

Moreover, such a result would unnecessarily disrupt local ad revenues for the broadcaster. Broadcasters have long-established commercial relationships with local advertisers seeking to reach specific populations, typically because the advertisers' businesses are located within that broadcaster's service area. If the station can no longer reach certain viewers inside the DMA, advertising on that station becomes less valuable to those local businesses, and the business relationships developed over decades will be put at risk.

For these reasons, preserving the actual population served (or proposed to be served in granted construction permits), in which no individual channel reassignment could reduce another station's specific population served as of February 22, 2012 by more than 0.5 percent, most closely aligns with the statutory mandate that the repacking process preserve a station's existing population coverage. This is consistent with the current standard for acceptable *de minimis* interference for new broadcast applications.<sup>47</sup> This approach will give broadcasters the greatest

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<sup>47</sup> See 47 C.F.R. § 73.616(e).

certainty that they can continue to make the investments necessary to provide their communities with local news, information, and entertainment programming.

The best way to achieve this result is for the Commission to adopt rules providing that: (1) the interference analysis is conducted on a cell-by-cell basis as provided for in OET Bulletin 69; and (2) cells for which “Error Code 3” is returned by the Longley-Rice terrain sensitive propagation model will nonetheless be analyzed for coverage area and for interference from undesired signals.<sup>48</sup> While such an approach will require new baseline calculations of the area and population served by a station, new calculations are required in any event to account for 2010 census data, so new baseline calculations should not add to the Commission’s administrative burden.<sup>49</sup>

Preserving television stations’ specific coverage areas and populations served also is important because the individuals most likely to be affected are viewers on the edges of a station’s current service area. These viewers tend to be removed from any urban center, frequently live in the more rural areas served by a station, and typically rely more heavily on

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<sup>48</sup> The Longley-Rice software returns Error Code 3 when terrain changes rapidly from one cell to an adjacent cell. The Commission’s current protocol for Error Code 3 is simply to assume interference free service in such a cell. This assumption effectively allows interference to exist without analysis, which is not a reasonable approach, and therefore does not meet the “all reasonable efforts” standard. See Comments of Hammett & Edison, Inc., MB Docket No. 07-91, ¶ 2 (Aug. 10, 2007).

<sup>49</sup> The *Notice* mentions another option for preserving the population served by a station under which existing interference would be allowed to continue if it is caused by the same station both before and after the repacking, even if the interference resulted from different channel assignments. *Notice* ¶¶ 107-108. As acknowledged by the Commission, this proposal “would give the Commission significantly less repacking flexibility than under the second option.” *Id.* ¶ 107. Coupled with an increased *de minimis* interference threshold, this proposal would actually reduce the effective service areas of broadcast stations. This proposed approach should be rejected for both of these reasons.

their local broadcasters than on other sources for critical news and information.<sup>50</sup> Although the populations of the geographic areas at the edges of a station's service area are likely to be at the lower end of the range of population densities served by the station, the impact of loss of service to these areas would be significant, and these viewers cannot be ignored.

3. The Commission Should Adopt the "Down from 51" Band Plan Because It Ensures That Broadcasters Will Be Able to Continue to Serve Local Communities and Invest and Innovate in the Future.

Congress's goal of encouraging a robust broadcast service can best be advanced by adopting the "Down from 51" band plan approach.<sup>51</sup> This will create a contiguous band of frequencies allocated to television broadcasting, which will ensure continued progress and innovation in broadcasting by preventing mobile broadband operations from causing harmful interference to broadcasting operations.<sup>52</sup> This is especially important in light of the fact that a

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<sup>50</sup> See Carolyn Mille, Pew Research Center, *How People Get Local News and Information in Different Communities* 18-19 (Sept. 26, 2012), at <http://pewinternet.org/Reports/2012/Communities-and-Local-News/Main-Report/Local-news-sources-used-across-different-community-types.aspx> ("Taken together, small city/town and rural residents are more likely than those in larger cities and suburbs to rely solely on traditional forms of media for their local news. Roughly three in 10 residents in these less populated locales rely exclusively on traditional sources of information such as print newspaper and local television broadcasts (31% and 34%, respectively), compared with 21% of residents of large cities and 16% of those living in suburban communities.").

<sup>51</sup> Notice ¶ 178.

<sup>52</sup> This will also help protect against interference to set-top boxes that consumers use to access cable services. As wireless providers roll out LTE networks in the broadcast spectrum, there is some concern that LTE wireless devices operating in this band will interfere with signals in cable headends and customer premises equipment. The issue of LTE signals interfering with television equipment has been well documented by regulators and industry groups in Europe starting as early as 2009. See, e.g., Cable Europe, *Joint Effort on Mitigating Interference: A Cable Perspective* (June 30, 2010), available at [http://ec.europa.eu/enterprise/sectors/electrical/files/emc/20100630\\_cable\\_europe\\_en.pdf](http://ec.europa.eu/enterprise/sectors/electrical/files/emc/20100630_cable_europe_en.pdf) (noting that an industry group raised concerns with the European Commission regarding LTE interference in May 2009). The Commission too has previously acknowledged that bringing wireless devices online in broadcast television spectrum can cause interference with television equipment. In 2007, an OET study found that digital cable ready receivers experienced interference with prototype White Space Devices at low power and from up to ten meters away. See FCC, *Direct-Pickup Interference Tests of Three Consumer Digital* (footnote continued...)

next-generation television technical standard will eventually be adopted that will provide for even higher resolution, more robust mobile broadcasting, more efficient use of spectrum, or all of these enhancements. It will be easier to develop this standard, introduce it, and implement a proper transition if broadcasters are using contiguous spectrum.

In addition, the Commission must adopt robust guard bands that ensure continued protection for licensees (both broadcast and wireless broadband) in the adjacent bands. The Commission's recent experience with the Lower 700 MHz Band highlights the importance of considering real-world receiver performance characteristics and allocating sufficiently robust guard bands to protect licensed operations in adjacent spectrum.<sup>53</sup> In 2002, the Commission decided that the Lower 700 MHz Band would not have a guard band between mobile broadband operations in the A Block and broadcast operations on Channel 51.<sup>54</sup> The Commission auctioned the A Block in 2008 as part of Auction 73,<sup>55</sup> but there have been significant problems in

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(...footnote continued)

*Cable Television Receivers Available in 2005*, OET Report, FCC/OET 07-TR-1005 (July 31, 2007), available at [http://fjallfoss.fcc.gov/edocs\\_public/attachmatch/DOC-275668A1.pdf](http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-275668A1.pdf). NCTA has asserted in a subsequent Petition for Reconsideration and Clarification that the Commission did not go far enough in the white spaces order to protect cable television equipment from interference. See Petition for Reconsideration & Clarification of the Nat'l Cable & Telecomm. Ass'n, *In re Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186, at 6-14 (Mar. 19, 2009). Considering the weight of evidence indicating that increasingly pervasive LTE signals pose an interference risk to consumers' cable devices, it is important for the Commission to craft potential solutions that strike an appropriate balance between protecting wired cable broadband networks and promoting wireless broadband.

<sup>53</sup> See Petition for Rulemaking and Request for Licensing Freezes by CTIA – The Wireless Association & Rural Cellular Association, RM-11626 (Mar. 15, 2011) (“*CTIA/RCA Petition*”).

<sup>54</sup> See *Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59)*, Report and Order, 17 FCC Rcd. 1022 ¶ 23 (2002).

<sup>55</sup> See *Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd. 4572 (2008).

deploying mobile broadband operations in that spectrum.<sup>56</sup> In fact, the wireless industry today is petitioning the Commission to create the equivalent of a guard band for the A Block by, among other things, prohibiting future broadcast operations on Channel 51 and accelerating clearance of Channel 51 where incumbent broadcasters and A Block licensees reach a voluntary agreement to relocate.<sup>57</sup> The Commission should consider this a cautionary tale;<sup>58</sup> rather than repeating the experience with the Lower 700 MHz band, the Commission must allocate sufficient spectrum to the guard bands to protect licensed operations in the adjacent bands.

This band plan also provides the Commission with sufficient flexibility to ensure the continued operation of wireless microphones. As the Commission recognized in the *Notice*,<sup>59</sup> licensed wireless microphones and other low power devices are used extensively by broadcast stations and programming networks, particularly in connection with the production and presentation of live news, sports and entertainment programs, such as the recent coverage of the Presidential Inauguration in Washington, D.C. Usage of these devices is often regular and predictable, such as in television studios, on movie studio lots and in sports arenas, which

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<sup>56</sup> Problems began to appear almost immediately after the auction. AT&T and other licensees in the Lower 700 MHz Band realized that engineering equipment for the Lower 700 MHz band to accommodate the A Block would significantly increase the cost of deploying mobile broadband networks on their spectrum, so those parties took several steps to divorce their spectrum from the A Block spectrum. *See Promoting Interoperability in the 700 MHz Commercial Spectrum*, Notice of Proposed Rulemaking, 27 FCC Rcd. 3521 ¶ 10 (2012). This, in turn, made it difficult for A Block licensees to achieve the kind of scale necessary to build out that spectrum. *See 700 MHz A Block Good Faith Purchasers Alliance, Petition for Rulemaking Regarding the Need for 700 MHz Mobile Equipment to be Capable of Operating on All Paired Commercial 700 MHz Frequency Blocks*, RM-11592, at 2-10 (Sept. 29, 2009).

<sup>57</sup> *CTIA/RCA Petition* at 4-7, 19-23.

<sup>58</sup> *See Letter from Grant Spellmeyer, US Cellular, to Marlene H. Dortch, FCC, GN Docket No. 12-268*, at 1 (Nov. 28, 2012) (discussing the interoperability issues in the Lower 700 MHz Band and urging the Commission “to avoid future interoperability problems in the 600 MHz proceeding”).

<sup>59</sup> *See Notice* ¶ 223.

facilitates frequency coordination and interference-free operation.<sup>60</sup> However, these devices also play a critical role in covering breaking news events, which may occur at any time and in any location throughout the United States, and may be covered by multiple media outlets. The continued availability of low power auxiliary devices for use on an interference-free basis is essential for broadcasters – local stations and networks – to provide the high-quality audio that viewers expect and deserve in the coverage of breaking news events and to enable communication between production crews and on-air reporters during the often chaotic circumstances surrounding such events. And the ability of reporters in the field to communicate effectively with the viewing audience also can serve an important public safety function, as the Commission has recognized in connection with broadcast coverage of Hurricane Sandy last October, during which broadcasters performed a critical “first informer” role.<sup>61</sup>

The Commission observed in the *Notice* that the amount of spectrum available for low power auxiliary devices may be reduced both as the result of repacking and because the Commission may eliminate the two channels recently reserved for interference-free wireless microphone operation in each market.<sup>62</sup> These reductions, if adopted, will compound the pressure for suitable spectrum resulting from the removal of these devices from the 700 MHz band. Given the importance of low power auxiliary devices to the services provided by broadcasters, it is essential that the Commission ensure that sufficient spectrum is made available for interference-free operation of these devices.

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<sup>60</sup> *See id.*

<sup>61</sup> *See supra* at 7.

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Television broadcasting continues to play a central role in the lives of Americans. In the Spectrum Act, Congress directed the Commission to take the necessary steps to preserve broadcasters' ability to serve their local communities, now and in the future. The proposals set forth above provide the Commission with a reasonable path to implement Congress's directives while it transitions some broadcast spectrum to licensed and unlicensed mobile broadband use.

**III. THE COMMISSION SHOULD ALLOW FOR ADVANCED PAYMENTS BASED ON GOOD FAITH COST ESTIMATES TO FACILITATE BROADCASTER AND MVPD REIMBURSEMENT UNDER THE ACT.**

One of the most important undertakings the Commission faces in this proceeding is ensuring that it complies with the Congressional directive to “reimburse costs reasonably incurred” by stations that are involuntarily reassigned to a new channel and by MVPDs that incur costs to carry the newly assigned channels of those stations.<sup>63</sup> Because the total amount of funds available for reimbursement is limited by statute, and because the timeframe for completing the reimbursement process is a relatively short three years, the Commission must develop a process that is accurate, efficient, and fair. The approach that best meets those goals is to allow broadcasters and MVPDs to obtain reimbursement based on cost estimates submitted in advance of actual expenditures, with a “true-up” after the repacking has been completed.

The Commission has significant flexibility to design an approach that meets the goals of accuracy, efficiency, and fairness. As the *Notice* recognizes, “[t]he statute does not define the words in the phrase ‘reimburse costs reasonably incurred.’”<sup>64</sup> Judicial precedent on the

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<sup>63</sup> Spectrum Act § 6403(b)(4)(A).

<sup>64</sup> *Notice* ¶ 338 n.514 (quoting Spectrum Act § 6403(b)(4)(A)).

definition of the terms “reimburse” and “incurred” reinforces that these terms may be reasonably interpreted in different ways.<sup>65</sup> Therefore, an approach that provides for advance disbursement of funds based on reasonable cost estimates, coupled with a true-up after the repacking and associated MVPD modifications are completed, is entirely within the Commission’s authority.

The Commission has experience with reimbursing parties based on estimated costs rather than actual costs, subject to a true-up. For example, this is the approach the Commission adopted with respect to reimbursement credits issued to Nextel in the 800 MHz proceeding.<sup>66</sup> There, Nextel relinquished spectrum rights in the 800 MHz band in favor of public safety licensees while simultaneously receiving a grant of new spectrum rights in the 1.9 GHz band.<sup>67</sup> This process required substantial expenditures by Nextel, many of which were to be reimbursable. The Commission recognized the impossibility of determining, from an *ex ante* perspective, the actual cost to Nextel of clearing the 1.9 GHz band and reconfiguring its systems

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<sup>65</sup> For example, the U.S. Court of Appeals for the Eleventh Circuit has held that “reimbursement” need not match actual expenditures dollar-to-dollar, *National Coal Ass’n v. Chater*, 81 F.3d 1077 (11th Cir. 1996), but the D.C. Circuit has criticized that approach in dicta, arguing that reimbursements implicate actual cost. *Holland v. National Mining Ass’n*, 309 F.3d 808 (D.C. Cir. 2002). Of course, there must be some relationship between the reimbursement and the costs actually paid. *See Foulston Siefkin LLP v. Wells Fargo Bank of Texas N.A.*, 465 F.3d 211, 214 (5th Cir. 2006) (concluding that the trustee of a trust that permitted “reimbursement” of the trustee for “costs and expenses . . . incurred in resisting” a suit against the trust, was not entitled to *repayment* of such costs and expenses because he merely incurred but did not ultimately pay them) (emphasis in original).

<sup>66</sup> *See 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, et al.*, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, 19 FCC Rcd. 14969 (2004).

<sup>67</sup> *See id.* ¶¶ 2-5.

in the 800 MHz band and clearing the 1.9 GHz band for use, stating “we do not know at present what the costs of 800 MHz relocation and 1.9 GHz band-clearing will ultimately be.”<sup>68</sup>

As a result, the Commission established a mechanism that balanced the value of the 1.9 GHz spectrum rights granted to Nextel against a series of credits issued to Nextel, including: (1) \$1.607 billion to reflect the relinquishing of its 800 MHz rights; (2) actual costs incurred in reconfiguring incumbent operators and its own systems in the 800 MHz band;<sup>69</sup> and (3) actual costs incurred in clearing the 1.9 GHz band incumbents.<sup>70</sup> Nextel was required to make an accounting at the end of the transition period; if the credits allotted did not equal the value of the 1.9 GHz spectrum rights, Nextel would be required to make an appropriate payment to the Treasury to cover the difference.<sup>71</sup>

A similar approach can be taken here, provided the Commission establishes clear guidelines on what costs will be eligible for reimbursement. In this respect, the Commission can draw from NTIA’s experience with the Low-Power Television and Translator Upgrade Program.<sup>72</sup> There, the Digital Television Transition and Public Safety Act of 2005 (the “DTTPS

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<sup>68</sup> See *id.* ¶ 212.

<sup>69</sup> Costs incurred in reconfiguring Nextel’s own systems were to be reimbursed, or “credited,” only on an “absolutely essential to implement band reconfiguration” basis; this unique restriction was apparently intended to ensure that the Commission did not credit Nextel for any network equipment upgrades it decided to install during the reconfiguration process. See *id.* ¶ 35 n.74.

<sup>70</sup> *Id.* ¶ 330.

<sup>71</sup> *Id.* The 800 MHz rebanding process is ongoing, and the reconciliation process required by the Commission has not yet occurred. See 800 MHz Transition Administrator, *Quarterly Progress Report for Quarter Ended June 30, 2012* (Sept. 25, 2012), available at [http://www.800ta.org/content/reporting/QPR\\_06.30.12.pdf](http://www.800ta.org/content/reporting/QPR_06.30.12.pdf).

<sup>72</sup> See generally NTIA, *Low-Power Television and Translator Program* / NTIA, <http://www.ntia.doc.gov/category/low-power-television-and-translator-program> (last visited Jan. 24, 2013).

Act”) authorized a reimbursement program wherein “each licensee of an eligible low-power television station may receive reimbursement for equipment to upgrade low-power television stations from analog to digital.”<sup>73</sup> Although the statutory language imposed restrictions on NTIA that are not present here,<sup>74</sup> that program was similar because, like here, Congress established both a maximum amount of funds that could be distributed and a maximum amount of time in which the program could operate.<sup>75</sup> NTIA had to achieve the very same goals of accuracy, efficiency, and fairness that must drive the Commission’s approach here. NTIA was able to achieve these goals in part because it specified up front which particular equipment costs were reimbursable.<sup>76</sup>

The Commission should likewise provide clear guidance here on what equipment and other costs will be eligible for reimbursement. With respect to broadcasters, the eligible equipment should include, at a minimum, any new antennas, transmission lines, filters, and transmitters required as a result of the repacking process, as well as all associated costs of facilities installation and modifications that are reasonably required to operate on a new channel assignment (such as, but not limited to, antenna installation, tower strengthening and

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<sup>73</sup> Digital Television Transition and Public Safety Act of 2005, Pub. L. 109-171, § 3009(a), 120 Stat. 26 (2006).

<sup>74</sup> For example, the DTTPS Act provided that “Priority reimbursements shall be given to eligible low-power television stations in which the license is held by a non-profit corporation and eligible low-power television stations that serve rural areas of fewer than 10,000 viewers.” *Id.* The Spectrum Act includes no such directive for prioritizing funds disbursement and does not create distinctions among full power stations affected by repacking.

<sup>75</sup> *Id.* (“The Assistant Secretary shall make payments of not to exceed \$65,000,000, in the aggregate, during fiscal years 2009 through 2012, from the Digital Television Transition and Public Safety Fund. . . .”).

<sup>76</sup> *See id.*

reinforcement, additional power and cooling requirements, etc.).<sup>77</sup> Likewise, the Commission should identify eligible equipment and costs that MVPDs may incur as part of this transition. This will likely include costs for additional antennas and additional receivers at MVPD head-ends, as well as costs associated with the installation and modification of equipment. Also, costs could increase significantly if local stations' broadcast contours are changed such that an MVPD has to find a new location to install an antenna and receiver.

In both cases, the Commission should allow broadcasters and MVPDs to be reimbursed for associated labor costs, such as the installation of new antennas and wiring. The Commission may also want to anticipate higher labor costs than those in the DTV transition. The short deadline for relocation suggests that there will be very high demand – from a very limited labor pool – for the kind of expertise needed to install and adjust antennas and other equipment to ensure everything is working properly, and this potentially will increase the costs of the labor.

Although the Commission should be clear on what costs will be eligible for reimbursement, it should not try to take the extra step of divining what those costs will be until broadcasters actually see cost estimates from the consultants and contractors who will be doing the work associated with repacking. The potential costs vary substantially depending upon the details of the reassignment and the particular facilities of the station involved. For example, locating to an adjacent channel might allow some stations to use their existing antennas, but that might not be possible if several stations share an antenna (as often occurs in large markets).

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<sup>77</sup> For example, during the DTV transition, the costs of switching to an adjacent channel for a station with an antenna that did not have the appropriate capabilities involved changing out complex, elliptically polarized antennae, transmission lines (that would be more expensive depending on the height of the tower), and a channel-specific filter on the output of the transmitter. And, sometimes, a new transmitter was required, further increasing costs.

Also, any station required to move to a new channel location that is relatively far from its existing channel will almost certainly require a new antenna.

**IV. THE PROVISION OF SUFFICIENT SPECTRUM TO FACILITATE FURTHER DEVELOPMENT OF ROBUST UNLICENSED SERVICES IS ESSENTIAL FOR MEETING CONSUMERS' NEEDS, FUELING ECONOMIC GROWTH, AND ADDRESSING INCREASED DEMAND FOR MOBILE WIRELESS SERVICES.**

Over the last three decades, the Commission has made a number of important decisions that were designed to make spectrum available for unlicensed use. Those decisions have unleashed a torrent of new and innovative services that consumers and businesses have rapidly adopted. The explosive growth of services and devices using unlicensed spectrum, including Wi-Fi, Bluetooth technology, RFID tags, and smart grid applications, among many others, has been remarkable. These services have greatly benefitted consumers, created billions of dollars of economic value, supported hundreds of thousands of jobs, and provided a platform for even more innovation and investment. Wi-Fi, in particular, is now an integral part of daily life and a service upon which consumers and businesses – including mobile network operators – increasingly rely. Given these extremely positive social and economic effects, it is unsurprising that there is a bipartisan consensus that unlicensed spectrum must be a key component of the United States' spectrum policy going forward.

Unfortunately, the primary unlicensed spectrum bands are becoming increasingly congested, making it harder to deliver the kinds and quality of services that consumers and businesses have come to expect. The Commission's recent announcement that it will make available additional unlicensed spectrum in the 5 GHz band represents a significant and

necessary step to address the growing saturation of the unlicensed bands.<sup>78</sup> However, there is a pressing need for even more unlicensed spectrum, particularly in the lower spectrum bands such as the 600 MHz band at issue here. To address this need, the Commission should make available sufficient spectrum in a variety of bands, including the 600 MHz band, for unlicensed use. In particular, the Commission should allocate at least 20 MHz of contiguous spectrum in the 600 MHz band – the minimum amount of spectrum generally considered necessary for providing robust Wi-Fi services – for unlicensed use.<sup>79</sup> This approach is consistent with the statute and sound engineering principles, would allow service providers and device manufacturers to leverage the existing Wi-Fi ecosystem to deliver robust broadband services on this spectrum in a timely manner, would relieve growing bandwidth pressure on licensed mobile wireless broadband networks, and would represent a critical first step towards allocating the spectrum necessary to realize the important goals that policymakers have established for unlicensed spectrum.

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<sup>78</sup> See News Release, FCC, *FCC Chairman Julius Genachowski Announces Major Effort to Increase Wi-Fi Speeds and Alleviate Wi-Fi Congestion at Airports, Convention Centers, and in Homes with Multiple Devices and Users* (Jan. 9, 2013), available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-318326A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-318326A1.pdf).

<sup>79</sup> The IEEE 802.11 Wi-Fi specifications operate on 20 MHz channels, which makes 20 MHz the minimum amount of spectrum generally considered necessary for the provision of broadband speeds via a Wi-Fi network. See, e.g., Steven J. Vaughan-Nichols, “Four Ways to Get the Most from Your 802.11n Wi-Fi,” ZDNet, Sept. 7, 2010, at <http://www.zdnet.com/blog/networking/four-ways-to-get-the-most-from-your-802-11n-wi-fi/122> (“A Wi-Fi channel is required to be 20MHz.”). However, the newest Wi-Fi specification, 802.11n, is designed to utilize 40 MHz of spectrum over two adjacent 20 MHz channels, providing “up to six times more performance” than older specifications. See Cisco Systems, 802.11n, at <http://www.cisco.com/en/US/netsol/ns767/index.html> (last visited Jan. 24, 2013). This additional bandwidth enables significantly improved throughput that would dramatically increase the volume of high-speed data that could be offloaded from mobile broadband networks and further underscores the need to allocate a sufficient amount of unlicensed spectrum in this proceeding.

**A. Wi-Fi and Other Unlicensed Services Benefit Consumers, Drive Innovation and Economic Growth, and Produce Positive Societal Externalities.**

A wide range of parties, including FCC Commissioners,<sup>80</sup> mobile wireless providers,<sup>81</sup> technology companies,<sup>82</sup> and public interest groups,<sup>83</sup> agree that unlicensed services are critically important components of the wireless ecosystem and a boon to consumers and businesses alike. As Chairman Genachowski recently noted, “[u]nlicensed spectrum has a powerful record of driving innovation, investment, and economic growth – hundreds of billions of dollars of value

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<sup>80</sup> See, e.g., News Release, FCC, *Statement from FCC Chairman Julius Genachowski on House Passage of Voluntary Incentive Auction Legislation* (Dec. 13, 2011) (“*Genachowski Legislation Statement*”) (“Unlicensed spectrum stimulates innovation, investment, and job creation in many ways, including by providing start-ups with quick access to a testbed for spectrum that is used by millions, bringing new technologies to consumers in a rapid fashion.”); *In re Unlicensed Operation in the TV Broadcast Bands*, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd. 16807 (2008) (Statement of Commissioner Robert McDowell) (“Robust unlicensed use of white spaces will give nimble entrepreneurs the freedom to disrupt the market in positive and constructive ways that will force incumbents to keep pace with this new revolution.”); *Notice*, Statement of Commissioner Mignon Clyburn at 2 (“[I]t is estimated that unlicensed spectrum generates between 16 and 37 billion dollars each year for the U.S. economy.”).

<sup>81</sup> See, e.g., Reply Comments of Sprint Nextel Corporation, WT Docket No. 12-4, at ii (Mar. 26, 2012) (“Wi-Fi is an increasingly important factor in the provision of mobile communications service. Both through public hotspots and through in-home wireless networking, Wi-Fi is able to provide customers with fast downloads while avoiding usage caps imposed by many commercial mobile service operators.”).

<sup>82</sup> See, e.g., Letter from Paula Boyd, Microsoft Corporation, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 11-154 *et al.* (Dec. 3, 2012) (“Ms. Boyd noted the growth in demand for wireless data over the next several years and referenced expert projections indicating that by 2015 more traffic will travel over unlicensed networks than wireline networks, there will be 100 billion connected devices by 2020, and 95 percent of these connections will be technologies using unlicensed spectrum.”).

<sup>83</sup> See, e.g., Mark Cooper, “Efficiency Gains and Consumer Benefits of Unlicensed Access to the Public Airwaves,” at 7 (January 2012), *available at* [www.markcooperresearch.com/SharedSpectrumAnalysis.pdf](http://www.markcooperresearch.com/SharedSpectrumAnalysis.pdf) (“The unlicensed model has succeeded in supporting a large amount of economic activity in the wireless broadband space by bringing new and unique services to the market, increasing the value of broadband service by extending it to additional devices, and providing a lower cost, more efficient avenue to deliver data to consumers.”).

creation for our economy and consumers.”<sup>84</sup> The unlicensed model reduces regulatory and economic barriers to use of the spectrum, thereby “encouraging a deluge of technological and business model innovation” and turning unlicensed spectrum “into the most economically productive radio spectrum in the world.”<sup>85</sup>

Data about how Wi-Fi and other unlicensed services are used and the amount of investment and innovation related to unlicensed services confirm the extraordinary positive effect that unlicensed services have had on the economy. “A variety of approaches all point toward economic benefits [from unlicensed technologies] at least in the tens of billions of dollars a year.”<sup>86</sup> For example, a 2009 study used consumer survey data to derive the incremental demand for broadband services attributable to Wi-Fi, and estimated that “Wi-Fi usage in the home, for only the purpose of broadband extension, may be generating anywhere between \$4.3 and \$12.6 billion in annual economic value for consumers in the United States.”<sup>87</sup> And the value of home Wi-Fi, hospital Wi-Fi, and RFID tags “together may generate \$16 - 37 billion per year in economic value for the US economy over the next 15 years.”<sup>88</sup>

Even these estimates are conservative, however. Consider the following example:

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<sup>84</sup> Notice, Statement of Chairman Julius Genachowski at 3 (“*Genachowski Notice Statement*”).

<sup>85</sup> Richard Thanki, *The Power of the Unlicensed Economy*, AllThingsD, July 10, 2012, available at <http://allthingsd.com/20120710/the-power-of-the-unlicensed-economy/> (“*Thanki 2012 Paper*”).

<sup>86</sup> Paul Milgrom *et al.*, “The Case for Unlicensed Spectrum,” ¶ 42 (Oct. 12, 2012), available at [http://siepr.stanford.edu/?q=/system/files/shared/pubs/papers/pdf/10-036\\_Paper\\_Milgrom.pdf](http://siepr.stanford.edu/?q=/system/files/shared/pubs/papers/pdf/10-036_Paper_Milgrom.pdf) (“*Milgrom et al.*”).

<sup>87</sup> Richard Thanki, “The Economic Value Generated by Current and Future Allocations of Unlicensed Spectrum,” Final Report, Perspective Associates, at 35 (Sept. 28, 2009), available at [http://spectrumbridge.com/Libraries/White\\_Space\\_Primer/whitespaces-microsoft-study.sflb.ashx](http://spectrumbridge.com/Libraries/White_Space_Primer/whitespaces-microsoft-study.sflb.ashx) (“*Thanki 2009 Paper*”).

<sup>88</sup> *Id.* at 42.

Apple released the first version of the iPad in April of 2010 . . . , and as of the third quarter of 2011, had sold over 25 million iPads over the last year. . . . An iPad with Wi-Fi capability but no 3G capability, and with 32GB of storage, retails for \$599. Analysts have put its production cost at just under half this amount. That translates into a producer surplus on each sale of roughly \$300, and a plausible first guess is that consumer surplus is the same magnitude. If so, the value created with each iPad sale is around \$600, for a total of over \$15 billion over the last year.<sup>89</sup>

Of course, Wi-Fi is not the only reason that consumers purchase iPads. But, even if one assumes that only 10 percent of the value of the iPad is attributable to the Wi-Fi capability (likely a very conservative assumption given the importance of Internet connectivity to many of the iPad's functions), over \$1.5 billion of economic value has been created in a single year because the iPad incorporates Wi-Fi technology. The numbers begin to add up quickly when extrapolated over the entire universe of devices, services, and applications that use the Wi-Fi platform. Indeed, more recent analyses have found that “Wi-Fi enhances the annual economic value of fixed broadband connections by up to \$99 billion,”<sup>90</sup> and enhances the value of mobile wireless networks “in excess of \$25 billion.”<sup>91</sup>

In addition, there are positive externalities associated with unlicensed spectrum and, although those benefits are not easily quantified, they are readily apparent. This was convincingly demonstrated in the aftermath of Hurricane Sandy. As a result of storm damage, mobile wireless service was unavailable for large portions of the affected areas,<sup>92</sup> but many

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<sup>89</sup> *Milgrom et al.* ¶ 44 (internal citations omitted).

<sup>90</sup> *Thanki 2012 Paper.*

<sup>91</sup> *Milgrom et al.* ¶ 48.

<sup>92</sup> *See, e.g.,* Brendan Sasso, *FCC Says Hurricane Sandy Knocked Out 25 Percent of Cell Towers in Its Path*, The Hill (Oct. 30, 2012), available at <http://thehill.com/blogs/hillicon-valley/technology/264915-fcc-hurricane-sandy-knocked-out-25-percent-of-cell-towers> (“[Chairman  
(footnote continued...)”

outdoor, public Wi-Fi networks remained available to consumers, providing essential communication links in a time of need.<sup>93</sup> As one commentator noted, “When the old reliable phone networks are creaky and central offices are flooded and wireless phone networks are strained to the breaking point with demand for voice calls, one of the most precious things someone might be able to find is an open, free and reliable Wi-Fi connection.”<sup>94</sup>

Moreover, because unlicensed services are open and operate on a common technical standard – rather than closed, proprietary networks used by licensed operators – Comcast and other cable operators were able to make their Wi-Fi hotspots available to everyone in the storm-affected areas, regardless of the identity of their Internet service provider or the type of Wi-Fi-enabled device they owned. Mobile wireless providers simply could not do this, even if they wanted to, because of the closed nature of their networks and the licensed spectrum regime.<sup>95</sup> It is difficult to place a dollar amount on the benefits to the public rendered by unlicensed spectrum

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(...footnote continued)

Genachowski] emphasized that in the hardest areas, far more than 25 percent of towers were disabled . . .”).

<sup>93</sup> See, e.g., Margeurite Reardon, *Comcast Offers Free Wi-Fi Service to All in Sandy’s Path*, CNET, Oct. 31, 2012, available at [http://news.cnet.com/8301-1035\\_3-57543181-94/comcast-offers-free-wi-fi-service-to-all-in-sandys-path/](http://news.cnet.com/8301-1035_3-57543181-94/comcast-offers-free-wi-fi-service-to-all-in-sandys-path/) (“The cable operator, which with its cable partners operates 50,000 Wi-Fi hot spots in public places throughout country, said that it would make its hot spots available to anyone who needs them regardless of whether or not users are Comcast customers.”).

<sup>94</sup> Arik Hesseldahl, *After Sandy, Wi-Fi Becomes Precious Commodity*, AllThingsD (Oct. 31, 2012), at <http://allthingsd.com/20121031/after-sandy-wi-fi-becomes-precious-commodity/>.

<sup>95</sup> While AT&T and T-Mobile did allow their customers to use either company’s network in the storm’s aftermath, that was a limited arrangement that involved only those two companies’ networks and benefitted only their subscribers; it could not be replicated across the licensed mobile wireless industries because of different network standards and device compatibility issues. See, e.g., Brandon Sasso, *AT&T and T-Mobile Share Networks in Storm-Battered Areas*, The Hill (Oct. 31, 2012), available at <http://thehill.com/blogs/hillicon-valley/technology/265177-atat-and-t-mobile-share-networks-in-storm-battered-areas>.

in this situation, but it is not difficult to see the very real and tangible public interest benefits of Wi-Fi in natural disasters and other emergency situations.

**B. Unlicensed Spectrum Is a Critical Component of Any Solution to the Rising Demand for Mobile Wireless Services.**

Policymakers, industry, public interest groups, and academics have expressed the view that Wi-Fi and other unlicensed services *must* continue to be supported so that they can complement licensed services to meet rising mobile broadband demands.<sup>96</sup> The Commission recently recognized that “Wi-Fi access can potentially reduce mobile wireless providers’ need for additional spectrum to meet their subscribers’ capacity demands.”<sup>97</sup> As Sprint Nextel has explained, “[o]ne of the most effective methods of increasing the capacity of wireless data systems is moving data traffic, whenever possible, from the licensed spectrum of commercial mobile carriers to unlicensed spectrum, such as that now used for Wi-Fi.”<sup>98</sup> Similarly, AT&T

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<sup>96</sup> See, e.g., Testimony of Harold Feld, Legal Director, Public Knowledge, *Promoting Broadband, Jobs and Economic Growth through Commercial Spectrum Auctions, Hearing Before the Subcom. on Comm’n, Tech., and the Internet, House Comm. on Energy and Commerce*, at 2 (June 1, 2011) (“*Feld Testimony*”) (“Experts from industry, the public interest community, and the federal government alike have all celebrated the expanded use of unlicensed spectrum access as a compliment [sic] to expanding licensed access for purposes as diverse as rural broadband, offloading data from overburdened licensed networks, and stimulating the next generation in advanced ‘smart’ wireless technologies.”); Letter from Paula Boyd, Microsoft Corporation, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 11-154 *et al.* (Dec. 3, 2012) (“As the Commission develops spectrum policies, it should bear in mind the important role that unlicensed spectrum is playing in meeting the consumers' needs for wireless connectivity.”).

<sup>97</sup> *In re Applications of Cellco Partnership d/b/a Verizon Wireless and SpectrumCo, LLC and Cox TMI, LLC For Consent To Assign AWS-1 Licenses*, Memorandum Opinion and Order and Declaratory Ruling, 27 FCC Rcd. 10698 ¶ 123 (2012).

<sup>98</sup> Comments of Sprint Nextel Corporation, WT Docket No. 12-4, at 5, 7 (Feb. 21, 2012). “[W]ide-area Wi-Fi networks and other small-cell technologies will be necessary to supplement current wireless networks. . . . Wi-Fi is especially helpful for consumers with bandwidth-hungry smartphones, who use most of their data at homes and offices, locations often served by Wi-Fi.” Letter from David Pawlik, Skadden Arps, Counsel for Sprint Nextel, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-4, at 2 (Apr. 24, 2012).

recently announced that Wi-Fi will play an increasingly important role in AT&T's efforts to enhance its network's capabilities. Specifically, AT&T plans to include Wi-Fi technology in all of its small cell deployments and is working to seamlessly steer mobile devices to use approved Wi-Fi networks in lieu of AT&T's licensed mobile wireless network.<sup>99</sup> As an industry expert has noted, "[b]y relying on the high availability of Wi-Fi networks and hotspots, user data traffic may be sent to and from the carrier network via Wi-Fi without making use of the carrier's spectrum. High speed data may thus be offloaded from the carrier's cellular network. Consumers today regularly make use of this capability for significant downloads of data[.]"<sup>100</sup>

In short, there is widespread consensus that "Wi-Fi and other unlicensed technologies are key complements to licensed spectrum technologies, bridging the supply/demand gap, in a sustainable way,"<sup>101</sup> and any resolution of the rising demand for spectrum must rely, at least in part, on unlicensed spectrum.<sup>102</sup> "As voice and data services become more popular and demand greater amounts of bandwidth, cellular networks are increasingly strained. When traffic can be shifted ('offloaded') from cellular networks using licensed spectrum onto Wi-Fi networks, that takes advantage of the Wi-Fi's smaller cell radius to reduce congestion and use limited spectrum

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<sup>99</sup> See Tammy Parker, *AT&T: Wi-Fi Will Be in All of Our Small Cell Deployment*, FierceBroadband Wireless, Jan. 9, 2013, at <http://www.fiercebroadbandwireless.com/story/att-wi-fi-will-be-all-our-small-cell-deployments/2013-01-09> (quoting remarks by John Donovan, AT&T's Senior Executive Vice President of Technology and Network Operations).

<sup>100</sup> Declaration of Dr. David E. Borth ¶ 21, *attached as Exhibit 3 to Joint Opposition to Petitions to Deny and Comments of Verizon Wireless, SpectrumCo, and Cox*, WT Docket No. 12-4 (Mar. 2, 2012).

<sup>101</sup> Speech of Commissioner Mignon Clyburn, 2<sup>nd</sup> Annual Americas Spectrum Management Conference, at 3 (Oct. 23, 2012).

<sup>102</sup> See, e.g., *Notice*, Statement of Commissioner Jessica Rosenworcel at 2 ("Balance also requires attention to licensed and unlicensed use of spectrum. The former provides reliability and interference protection; the latter provides low barriers to entry and promotes the efficient use of limited resources. Good spectrum policy requires both.").

more intensively.”<sup>103</sup> According to the Commission, today approximately one third of mobile traffic is offloaded to Wi-Fi, as carriers increasingly develop new methods to manage capacity on their networks.<sup>104</sup> The net savings to mobile wireless broadband providers and their customers from leveraging Wi-Fi as a complement to the mobile broadband service is staggering. One study concluded that, “[i]n the absence of Wi-Fi, cellular operators would need to construct up to 450,000 new radio base stations to serve increased smartphone data traffic. This could cost \$93 billion – subjecting smartphone and tablet users to significantly higher network charges or greatly diminished service.”<sup>105</sup>

### **C. Spectrum in Low-Frequency Bands Is Especially Important for Unlicensed Services.**

The popularity and utility of unlicensed spectrum for consumers, business, and wireless providers has been a tremendous benefit to society and the economy, but it also has created a problem: the 2.4 GHz band currently used to provide unlicensed services is heavily congested.<sup>106</sup> Particularly dense areas of the country already have reached or are nearing complete saturation of the band.<sup>107</sup> And data consumption over unlicensed wireless networks is

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<sup>103</sup> *Milgrom et al.* ¶ 29.

<sup>104</sup> *Genachowski Notice Statement* at 3.

<sup>105</sup> *Thanki 2012 Paper* (emphasis added).

<sup>106</sup> See, e.g., *Dynamic Spectrum Management*, InterDigital, at 8 (Oct. 2012), available at [http://www.interdigital.com/wp-content/uploads/2012/10/InterDigital-DSM-White-Paper\\_Oct2012.pdf](http://www.interdigital.com/wp-content/uploads/2012/10/InterDigital-DSM-White-Paper_Oct2012.pdf) (“Wi-Fi currently operates in the unlicensed bands 2.4 and 5.0 GHz. . . . Wi-Fi bands are often congested, particularly in high traffic public areas.”).

<sup>107</sup> See *id.*; see also John Cox, *Wi-Fi Devices Crowd 2.4 GHz Band; IT Looks to 5 GHz Band*, Network World (Oct. 24, 2011), at <http://www.networkworld.com/news/2011/102411-wifi-unbalanced-252237.html> (“The 2.4 GHz band is congested, a symptom of the number of devices that only operate on that band, and the limitation of its [only] three non-overlapping channels.”).

increasing: for example, Cisco forecasts that mobile offloading will increase from 11 percent (72 petabytes/month) of all data traffic from mobile devices in 2011 to 22 percent (3.1 exabytes/month) in 2016.<sup>108</sup> Even taking into account spectral efficiency gains, growth of data consumption over unlicensed networks means that the 2.4 GHz band will become increasingly saturated, escalating the need for alternative unlicensed bands.

The other spectrum currently allocated for unlicensed use under current rules offers less hope for a comprehensive solution in the foreseeable future. For example, at high frequencies like 5 GHz the range of wireless signals is significantly diminished, and the radio waves are less able to penetrate walls and other obstacles.<sup>109</sup> Moreover, the Commission's current rules impose restrictions that limit the usability of the 5 GHz spectrum. For example, in many of the available channels, power emissions levels in the 5 GHz band are lower than that in the 2.4 GHz band,

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<sup>108</sup> Cisco, *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2011-2016* (Feb. 14, 2012), at [http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white\\_paper\\_c11-520862.pdf](http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf).

<sup>109</sup> See *Milgrom et al.* ¶ 65 (“Not all spectrum bands have the same properties. Specifically, spectrum between 10 and 1,000 MHz has great potential for longer-range, more reliable, and ultra low-power unlicensed applications requiring high data rates.”); *Thanki 2009 Paper* at 18 (“[T]he propagation characteristics of this spectrum [above 1 GHz] limit non-line-of-sight communications to a relatively short distance.”); Hewlett-Packard, *Wireless Overview – The Radio Modem*, at [http://www.hpl.hp.com/personal/Jean\\_Tourrilhes/Linux/Linux.Wireless.modem.html](http://www.hpl.hp.com/personal/Jean_Tourrilhes/Linux/Linux.Wireless.modem.html) (last visited Jan. 24, 2013) (“But, operating in a higher frequency band increases the noise level, obstacles and walls are more opaque to transmissions . . . and a higher bit rate require more [Signal Noise Ratio], which means a reduced range compared to 2.4 GHz products, which is bad news.”). In contrast, low-frequency spectrum, such as spectrum in the 600 and 700 MHz bands can travel many times further within buildings than spectrum in the 5 GHz band, assuming the same broadcast power across frequencies. See, e.g., Yuto Nakatsu *et al.*, *Comparison of Indoor Propagation Characteristics at 2.4 and 5 GHz for IEEE802.11n Wireless Local Area Network* (2010), available at [http://ap-s.ei.tuat.ac.jp/isapx/2011/pdf/\[WeD2-31%20SB02\\_1004.pdf](http://ap-s.ei.tuat.ac.jp/isapx/2011/pdf/[WeD2-31%20SB02_1004.pdf); *Comparison of Radio Propagation Characteristics at 700 and 2,500 MHz Pertaining to Macrocellular Coverage*, Communications Research Centre Canada (Apr. 2011), available at [http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/smse-005-11-bell-apndix3.pdf/\\$FILE/smse-005-11-bell-apndix3.pdf](http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/smse-005-11-bell-apndix3.pdf/$FILE/smse-005-11-bell-apndix3.pdf).

which further reduces the signal's potential range and ability to penetrate walls and other obstacles.<sup>110</sup> The rules also include a prohibition on outdoor use, a “listen before talk” requirement, and other requirements that limit the ability to fully utilize the 5 GHz frequencies for the provision of robust Wi-Fi.

More recently, the Commission took steps to open the White Spaces spectrum for use by unlicensed devices.<sup>111</sup> But that spectrum will not be available for widespread use for many years, if ever.<sup>112</sup> In particular, there are serious questions as to whether the unlicensed spectrum available in the White Spaces is sufficient to support the provision of robust wireless broadband services that consumers and businesses have come to expect from current Wi-Fi protocols.<sup>113</sup> While researchers and industry players are attempting to develop new broadband technologies

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<sup>110</sup> See, e.g., Hewlett Packard, *Wireless Overview – The Radio Modem*, at [http://www.hpl.hp.com/personal/Jean\\_Tourrilhes/Linux/Linux.Wireless.modem.html](http://www.hpl.hp.com/personal/Jean_Tourrilhes/Linux/Linux.Wireless.modem.html) (last visited Nov. 20, 2012) (noting that the FCC's rules limit power emissions in certain portions of the 5 GHz band); Cisco, “WLAN Radio Frequency Design Considerations,” *Enterprise Mobility 4.1 Design Guide*, p. 3-10 available at [http://www.cisco.com/en/US/docs/solutions/Enterprise/Mobility/emob41dg/ch3\\_WLAN.pdf](http://www.cisco.com/en/US/docs/solutions/Enterprise/Mobility/emob41dg/ch3_WLAN.pdf) (explaining that lower power levels reduce the coverage area of a radio network),

<sup>111</sup> See *In re Unlicensed Operation in the TV Broadcast Bands*, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd. 16807 (2008); *In re Unlicensed Operation in the TV Broadcast Bands*, Second Memorandum Opinion and Order, 25 FCC Rcd. 18661 (2010).

<sup>112</sup> See, e.g., Julie Bort, *The Next Billion Dollar Wireless Industry Has Officially Launched*, Business Insider (Dec. 22, 2011), available at <http://www.businessinsider.com/a-new-form-of-wifi-is-coming-and-its-good-news-for-many-americans-2011-12> (noting the slow pace of deployment of devices and services); Ryan Kim, *All You Need to Know About White Spaces Broadband*, GigaOm (Sept. 22, 2010), at <http://gigaom.com/2010/09/22/all-you-need-to-know-about-white-spaces-broadband/> (detailing the challenges associated with interference issues and the corresponding impact on device makers); *FCC Okays Second Area for ‘White Space’ Operations*, CommLawBlog (Apr. 19, 2012), at <http://www.commlawblog.com/2012/04/articles/unlicensed-operations-and-emer/fcc-okays-second-area-for-white-space-operations/> (noting the sparse number and very slow pace of authorizations for white space operations).

<sup>113</sup> See, e.g., Bill Ray, *Microsoft Carves Up Wi-Fi into White Spaces*, The Register, Jan. 13, 2012, at [http://www.theregister.co.uk/2012/01/13/wifi\\_nc/](http://www.theregister.co.uk/2012/01/13/wifi_nc/) (“Wi-Fi uses bands that are at least 20 MHz wide, while White Space allocations come in 8 MHz or 6 MHz chunks.”).

that would operate in the narrow White Spaces,<sup>114</sup> such development is in the relatively early stages and has not been proven successful outside of the laboratory. In the near term, at the very least, the White Spaces likely will be used to support narrowband applications, like machine-to-machine communications and smart grid functionalities,<sup>115</sup> but will not be suitable for any wide-scale provision of wireless broadband services. Notwithstanding efforts to overcome those obstacles, the repacking process that will accompany the incentive auction will significantly reduce the amount of spectrum available for use by White Spaces devices.

**D. The Commission Should Allocate at Least 20 MHz of Contiguous Spectrum for Unlicensed Use, and Congress Provided Sufficient Authority for It to Do So.**

While the facts above may make the growing demand for unlicensed spectrum appear like a daunting problem, one part of the solution is clear: allocate sufficient contiguous spectrum in the 600 MHz band for unlicensed use. Congress recognized the critical role that unlicensed wireless must play in the coming years by crafting legislation that gives the Commission flexibility to include unlicensed spectrum in the 600 MHz band plan. The spectrum at issue in this proceeding is particularly well-suited for unlicensed uses and, more specifically, future Wi-

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<sup>114</sup> See *id.*; see also Press Release, National Institute of Information and Communications Technology, *World's First TV White Space WiFi Prototype Based on IEEE 802.11af Draft Standard Developed* (Oct. 17, 2012), available at <http://www.prnewswire.com/news-releases/worlds-first-tv-white-space-wifi-prototype-based-on-ieee-80211af-draft-standard-developed-174515051.html> (describing the early stages of development of a standard that may eventually facilitate Wi-Fi services in the White Spaces).

<sup>115</sup> See, e.g., Comments of Neul Limited, GN Docket No. 12-268, at 2 (Dec. 3, 2012) (describing Neul's "machine-to-machine wireless technology which we envisage will be initially deployed in white space spectrum"); Katie Fehrenbacher, "How the White Space Ruling Could Affect the Smart Grid," GigaOm, Sept. 23, 2010, at <http://gigaom.com/cleantech/how-the-white-space-ruling-could-effect-the-smart-grid/> ("One of the areas in which white spaces could create some really novel services is the smart grid.").

Fi use. Lower frequency spectrum, such as that in the 600 MHz spectrum band, has propagation characteristics that facilitate the delivery of Wi-Fi signals, inside homes, offices, and other business,<sup>116</sup> as well as outdoors.<sup>117</sup>

If a sufficient amount of 600 MHz spectrum were available for unlicensed use (along with adequate unlicensed frequencies in other spectrum bands), the availability of Wi-Fi and other networks would be markedly increased,<sup>118</sup> and the Commission would help ensure that all available tools are used to address the rising demand for spectrum. In particular, because current Wi-Fi standards utilize 20 MHz channels,<sup>119</sup> the Commission should allocate at least 20 MHz of contiguous spectrum reclaimed using the reverse auction to unlicensed use. This would allow service providers and device manufacturers to leverage the existing Wi-Fi ecosystem to develop services and devices using this spectrum in a timely, efficient manner.<sup>120</sup> Any approach that

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<sup>116</sup> See *Milgrom et al.* ¶ 18 (“Radio waves at these [lower] frequencies travel further and penetrate walls more easily for a given power level than those at higher frequencies. These characteristics make many of these frequencies especially useful in both licensed and unlicensed applications, from 4G mobile services to long-range Wi-Fi.”).

<sup>117</sup> While Wi-Fi was almost exclusively used inside the home when it was first introduced, it is now being deployed rapidly both in indoor *and* outdoor locations. As just one example of the developments that are occurring in Wi-Fi networks, Comcast, along with four other cable operators, offers consumers access to more than 50,000 Wi-Fi hotspots, many of which are in public, outdoor locations. See <http://www.cablewifi.com/> (last visited Jan. 24, 2013).

<sup>118</sup> As Public Knowledge has recognized, “[a]llowing for an additional allocation of national unlicensed spectrum under the 1 GHz band, with its superior propagation characteristics of penetration and long distance, would allow for the creation of gigabit-capacity wireless LANs in schools, offices, high-density residential areas and mesh networks capable of several miles of coverage at a fraction of the cost of current Wi-Fi technology.” *Feld Testimony* at 7.

<sup>119</sup> See *supra* note 79.

<sup>120</sup> And, as discussed below, this approach is consistent with the authority granted to the Commission by Congress, though the Commission could consider alternative arrangements to the extent that it does not believe the statute allows it to allocate this much unlicensed spectrum.

does not meet this standard risks delaying – or foreclosing outright – the ability of service providers and device manufacturers to use the unlicensed spectrum in any meaningful or efficient way, to the detriment of consumers and business users.<sup>121</sup>

The Spectrum Act gives the Commission sufficient flexibility to design a band plan that provides both spectrum to be auctioned for licensed use *and* spectrum for unlicensed use (while fully protecting broadcasters remaining in the band). Although the language in Section 6403 regarding the forward auction is ambiguous as to the exact nature and requirements of the band plan,<sup>122</sup> the language Congress included in Section 6407 explicitly contemplates that the Commission would adopt a band plan that includes guard bands sufficient to protect licensees from harmful interference<sup>123</sup> and expressly permits the Commission to allow unlicensed use in the guard bands.<sup>124</sup> To the extent that the Commission believes any tension exists between these two provisions, it must adopt a construction that “give[s] meaning to every clause of the statute.”<sup>125</sup> In this case, the ambiguity in Section 6403 allows the Commission to construe the

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<sup>121</sup> The Commission has proposed various band plans, all of which allocate at least some portion of the guard bands and/or duplex gap for unlicensed use. The Commission should err on the side of providing more, rather than less, spectrum for unlicensed use, both to support the provision of robust unlicensed services and to ensure that interference issues are adequately addressed. Indeed, parties have highlighted the importance of ensuring that the duplex gap and guard bands are sufficiently large, in order to prevent interference. *See, e.g.*, Letter from Don Brown, IWPC, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 (Nov. 27, 2012) (attaching presentation regarding radiofrequency filters and emphasizing the need for sufficient duplex gaps).

<sup>122</sup> Spectrum Act § 6403(c)(1)(A) (directing the Commission to conduct a forward auction in which “the Commission assigns licenses for the use of the spectrum that the Commission reallocates” as part of the reverse auction).

<sup>123</sup> *Id.* § 6407(a) (“[N]othing...in section 6403 shall be construed to prevent the Commission from using relinquished or other spectrum to implement band plans with guard bands.”).

<sup>124</sup> *Id.* § 6407(c) (“The Commission may permit the use of such guard bands for unlicensed use.”).

<sup>125</sup> *See Williams v. Taylor*, 529 U.S. 362, 407 (2000) (O’Connor, J., concurring).

applicable language to permit the adoption of a band plan that includes unlicensed spectrum, whereas reading Section 6403 to mandate that all the spectrum be licensed renders Section 6407(c) a nullity. Thus, the best possible construction of the Act is that the Commission has the flexibility to develop a band plan that includes unlicensed guard band spectrum.

This approach also is consistent with the Commission’s general Title III authority because it allows the Commission to implement a band plan that achieves maximum utilization of the spectrum without raising interference concerns that would accompany any proposal to license and auction the spectrum.<sup>126</sup> The Communications Act directs the Commission to “generally encourage the larger and more effective use of radio in the public interest.”<sup>127</sup> Section 309(j) of the Act, which sets forth the “objectives” the Commission must promote in designing auctions, directs the Commission to consider such factors as “the development and rapid deployment of new technologies, products, and services,” “promoting economic opportunity and competition,” and “efficient and intensive use of the electromagnetic spectrum,”<sup>128</sup> and it *precludes* the Commission from “bas[ing] a finding of public interest, convenience, and necessity on the expectation of Federal revenues.”<sup>129</sup>

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<sup>126</sup> The Commission’s Title III authority generally, and the language in Section 309 of the Communications Act, in particular, are relevant here because Section 6402, which “authorizes the Commission to conduct incentive auctions,” is codified in Title III. *See Notice* ¶ 27. Moreover, even as to those section of the Spectrum Act that are not codified in the Communications Act, Congress has directed the Commission to “implement and enforce this title as if this title is a part of the Communications Act of 1934.” Spectrum Act § 6003(a).

<sup>127</sup> 47 U.S.C. § 303(g).

<sup>128</sup> *Id.* § 309(j)(3).

<sup>129</sup> *Id.* § 309(j)(7)(A).

Finally, the language in the Spectrum Act offers sufficient flexibility for the Commission to determine the appropriate sizes of the guard band and duplex gap. In particular, by allowing the Commission to adopt technically *reasonable* guard bands, Congress employed statutory language that permits the Commission to consider other policy goals – including facilitating unlicensed use – as part of its analysis of what is reasonable to protect licensees. In other words, by expressing the size of the guard bands in terms of what is “technically reasonable,” rather than, for example, what is technically necessary, Congress granted the Commission significant flexibility both as to the size of the guard bands and as to the considerations that the Commission may factor into its decisions regarding guard bands.<sup>130</sup> This flexibility necessarily extends to the Commission’s considerations regarding the duplex gap between the uplink and downlink frequencies, as the duplex gap serves as a type of guard band.

As a result, the Commission is well within its authority to adopt the “Down from 51” band plan proposal,<sup>131</sup> designate at least a contiguous 20 MHz block as the duplex gap, and allocate that spectrum for unlicensed use. The duplex gap would have the dual purpose of protecting the uplink operations from the downlink operations in the adjacent licensed spectrum, and providing a functional band of spectrum for unlicensed use. As discussed above, at least 20

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<sup>130</sup> This approach comports with “traditional tools of statutory construction,” including “the statute’s text, legislative history, and structure...; as well as its purpose.” *Bell Atlantic Tel. Co. v. FCC*, 131 F.3d 1044, 1047 (D.C. Cir. 1997). Moreover, the mere fact that Congress used the term “reasonable” in Sections 6407(b) (“technically reasonable”) and 6403(b)(2) (“all reasonable efforts”) does not require the Commission to attach the same meaning or approach to each provision. The Commission cannot construe the word “reasonable” in isolation. Rather, it must construe the word in the context of the phrase and provision in which it is placed. “[T]extual analysis is a language game played on a field known as ‘context.’ The literal language of a provision taken out of context cannot provide conclusive proof of congressional intent, any more than a word can have meaning without context to illuminate its use.” *Bell Atlantic*, 131 F.3d at 1047.

<sup>131</sup> See Notice ¶ 178.

MHz of contiguous spectrum would allow service providers and device manufacturers to leverage the existing Wi-Fi ecosystem to quickly and efficiently put that spectrum to its best possible use.<sup>132</sup> Anything smaller would, at best, significantly delay the benefits of the spectrum for consumers and businesses because it would force device manufacturers and service providers back to the drawing board to develop completely new standards and specifications. This process could take a decade or more before the public begins to see tangible results.<sup>133</sup> At worst, the spectrum would lie completely fallow and unused. The Commission need not and should not take that risk.

Moreover, 20 MHz is a reasonable amount of spectrum to allocate for the duplex gap in light of how much spectrum the Commission expects to have available. The duplex gap is an important component of any band plan, as it ensures that the uplink operations do not interfere with the downlink operations.<sup>134</sup> And the Commission recognized that “[a] wider duplex gap . . . could enhance mobile performance” in the licensed spectrum.<sup>135</sup> The *Notice* explained that the LTE bands specified by 3GPP included duplex gaps that ranged from 23.8 percent of the pass band to 28.6 percent of the pass band.<sup>136</sup> Other spectrum bands used for LTE, such as the advanced wireless services (“AWS”) spectrum bands, have duplex gaps *over 7 times* the size of

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<sup>132</sup> See *supra* at 30, 41-42.

<sup>133</sup> For example, work to develop the IEEE 802.11 standard for Wi-Fi networks began as early as 1991, yet the first standard that was widely incorporated into devices – 802.11b – was not introduced until nearly a decade later in 1999. See IEEE, “Official IEEE 802.11 Working Group Project Timelines,” at [http://grouper.ieee.org/groups/802/11/Reports/802.11\\_Timelines.htm](http://grouper.ieee.org/groups/802/11/Reports/802.11_Timelines.htm) (last visited Jan. 24, 2013).

<sup>134</sup> See *Notice* ¶ 178.

<sup>135</sup> *Id.*

<sup>136</sup> *Id.* ¶ 167 n.249.

the guard bands.<sup>137</sup> If the Commission reclaims its projected 120 MHz from broadcasters, then a 20 MHz duplex gap would be about 40 percent of the pass bands (which would be about 50 MHz each). And if the Commission reclaims as little as 60 MHz from broadcasters, the 20 MHz duplex gap would be 100 percent of the pass bands. In either case, a duplex gap of at least 20 MHz is both sufficient to protect the licensed operations in the adjacent bands *and* reasonable in light of the Commission's and Congress's goal to facilitate the use of a portion of the reclaimed spectrum for unlicensed use.

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Permitting the unlicensed use of spectrum has been one of the Commission's unquestioned policy successes of the past 20 years. Congress has given the Commission the tools it needs to build on that success. The Commission must take the opportunity presented, and design a band plan that ensures that unlicensed spectrum continues to be a source of investment, innovation, and job creation for years to come.

**V. THE COMMISSION MUST ENSURE THAT THE REPACKING PROCESS DOES NOT DISTURB MUST-CARRY RIGHTS.**

Congress has made clear that the repacking process must not disturb the current must-carry regime. Section 6403 of the Spectrum Act mandates that broadcast stations that voluntarily agree to relinquish spectrum in order to share a television channel do not acquire any additional carriage rights as a result of the sharing arrangement.<sup>138</sup> Specifically, the law requires that a

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<sup>137</sup> See Press Release, T-Mobile USA Inc., *T-Mobile USA Selects Infrastructure Vendors to Support \$4 Billion 4G Network Evolution Plan* (May 7, 2012), at <http://newsroom.t-mobile.com/articles/4GNetworkEvolutionVendorsSelected> (explaining that T-Mobile has selected vendors to help it build an LTE network in the AWS spectrum). In the AWS spectrum bands, the duplex gap is 355 MHz, and the pass bands are 45 MHz each. See Notice ¶ 167.

<sup>138</sup> Spectrum Act § 6403(a)(4).

station moving to a shared channel have the same carriage rights at its shared location that it would have at that same location were it not channel sharing.<sup>139</sup> The *Notice* reflects the Commission's efforts to implement the letter and spirit of this provision, which embodies Congressional intent that a broadcast station's must-carry rights neither expand nor contract as a result of the Commission's repacking process.

As the Commission acknowledges, this provision holds special relevance for those broadcasters entering sharing arrangements that include at least one full power station and one Class A station.<sup>140</sup> The Commission's interpretation of Section 6403 as limiting Class A stations that relinquish spectrum in order to share a channel with a full power station to "only those carriage rights to which a Class A station at the channel sharing location would be entitled were it not channel sharing,"<sup>141</sup> and not to the expanded carriage rights of full power stations is an appropriate application of the statute to this particular set of facts. Similarly, the Commission correctly notes that a full power station entering into a sharing agreement with a Class A station may not be able to provide the requisite signal quality to qualify for carriage on a cable system.<sup>142</sup> As the Commission has previously stated, such stations must account for the technical prerequisites for carriage when deciding whether to enter into a channel sharing agreement.<sup>143</sup>

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<sup>139</sup> *Id.*; *Notice* ¶ 28.

<sup>140</sup> *See Notice* ¶ 372.

<sup>141</sup> *Id.*

<sup>142</sup> *Id.*

<sup>143</sup> *Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to the VHF*, Report and Order, 27 FCC Rcd. 4616, 4632 ¶ 30 (2012).

## VI. CONCLUSION

In this proceeding, the Commission has a historic opportunity to address the growing demand for licensed and unlicensed broadband spectrum, while ensuring that broadcasters continue to serve an important role in their local communities. As described herein, the Commission can best ensure that this effort is a success by closely adhering to the language and intent of the Spectrum Act.

Respectfully submitted,

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January 25, 2013